

***Vicia* section *Narbonensis* bibliography**

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Introduction

1. Abd El Moneim, A. M. (International Cent. Agric. Res. Dry Areas (ICARDA), P.O. Box: 5466, Aleppo, Syria). Narbon vetch (*Vicia narbonensis* L.): A potential feed legume crop for dry areas in West Asia. Journal of Agronomy and Crop Science. 1992; 169(5): 347-353. CODEN: JASCEV.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /*Vicia narbonensis* BA 1993 Vol. 1 DHK/DEPHD.

Provision of feed supplies for the rapidly growing livestock population is essential in West Asia. Shortages can be alleviated by growing forage crops in the existing fallow lands. Narbon vetch (*Vicia narbonensis* L.) is a leguminous species with high yield potential, drought tolerance and cold resistance. It could be used for grain and straw production as source for animal feed in dry areas. It is good source of protein with seeds contain 28% protein yielding 364 kg per hectare protein, whilst straw contains 9% protein and yields a similar amounts of digestible protein per hectare. Nine promising lines of Narbon vetch developed at ICARDA were tested at two sites over four years under rainfed conditions. Since climatic conditions were considered to be of considerable importance, each site in each year was treated as a separate environment to give eight environments with annual rainfall varied from 195 to 504 mm. Narbon vetch possessed high seedling vigor with rapid winter growth and negligible cold damage. Grain yield varied from 0.47 to 1.90 t/ha, with a harvest index varying from 30 to 40%. The data indicated that below 300 mm rainfall the grain yield varied from 0.47 t/ha when rainfall was 195 mm to 1.4 t/ha when rainfall was 245 mm. Most of the lines had wide adaptation to dry areas in terms of both grain yield and stability. Climate, except early spring rains had little effect on biological and grain yields.

2. Abd El Moneim, A. M.; Cocks, P. S.; Swedan, Y. Yield stability of selected forage vetches (*Vicia* spp.) under rainfed conditions in West Asia. Journal of Agricultural Science (Cambridge). 1988; 111: 295-301.

Note: D.E.93/10/ DHK/DEPHD.

3. Abd El Moneim, A. M.; Khair, M. A.; Rihawi, S. Effect of genotypes and plant maturity on forage quality of certain forage legume species under rainfed conditions. Journal of Agronomy and Crop Science. 1990A; 164(2): 85-92.

Note: D.E.93/10/ ICARDA, Aleppo, Syria DHK/DEPHD.

CP, NDF and ADF were determined in herbage and pods of *Vicia villosa* subsp. *dasycarpa* [subsp. *varia*], *V. narbonensis*, 3 selections of *V. sativa*, *Lathyrus sativus* and *L. ochrus* at 66-145 and 93-163 d after germination in 1986-87 and 1987-88, resp. In vitro DM digestibility, CP content and leafiness decreased and NDF and ADF increased as the plants matured. Max. DDM and CP yields were obtained at 50-100% pod formation. *V. narbonensis* gave the highest DDM yields (4.96 and 5.82 t/ha at 132 and 145 d after germination in the 1st and 2nd year, resp.). The partitioning of DDM and CP between leaves and pods is discussed.

4. Abd El Moneim, A. M.; Khair, M. A.; Cocks, P. S. Growth analysis, herbage and seed yield of certain forage legume species under rainfed conditions. Journal of Agronomy and Crop Science. 1990B; 164: 34-41.

Note: D.E.93/10/ DHK.

(Abd el Moneim, A. M.//Khair, M.A.//Cocks, P.S., 1990)*Vicia villosa* subsp. *dasycarpa* [subsp. *varia*], *V. narbonensis*, selections of *V. sativa* from Syria, Cyprus and Italy, *Lathyrus ochrus* and *L. sativus* were sown in Nov. 1986 and 1987 at Tel Hadya, NW Syria. Total rainfall was about av. for the site (340 mm) in 1986-87 and 50% above average in 1987-1988. Phenology, LAI and DM yield were recorded at 6 dates and seed yield, harvest index and percentage pods in the biomass were determined. Max. DM yields were reached at 20-25% pod formation in *V. villosa* subsp. *dasycarpa*, 100% pod formation in the local *V. sativa* selection, *V. narbonensis* and *L. sativus* and at maturity in the other *V. sativa* selections and *L. ochrus*. DM yields were highest from *V. villosa* subsp. *dasycarpa* at the vegetative and early flowering stages and from *V. narbonensis* at later stages. Max. DM yields of *V. narbonensis* were 8.62 t/ha at the 5th cut in 1987 and 9.83 t at the 6th cut in 1988. This species also gave the highest seed yields of 2.96-3.45 t/ha.

5. Abdalla, M.; Günzel, G. Protein content and electrophoresis of seed proteins of certain *Vicia faba* stocks and their assumed ancestors. Z. Pflanzenzüchtung. 1979; 83: 148-154.

Note: D.E.93/10/.

6. Akbari, S. Blausäureuntersuchungen an Saatwicke und Zuckerhirse (Investigations on hydrocyanic acid in vetch (*Vicia sativa*) and sugar sorghum). Landwirtschaftliche Forschung. 1965; 18(1): 71-9.

Note: D.E.93/10/ /DEPHD.

Akbari (1965) The HCN content of vetch (*Vicia sativa*) seed differed considerably between varieties and was not affected appreciably by weather.

Early varieties from Turkey had high contents whereas cv. Bologna had a relatively low content. Variation was high in the medium early-medium late varieties. The late var.s tested

(cv. Luxura Vereduna/cv. Svalöfs Süswicke/cv. Wirosa) had low contents.

At the normal harvesting period (full flowering) the HCN content of the whole plant was very low; later it increased. In sugar sorghum the HCN content of the fresh plant ranged from 1500-1700 mg/1000g at earing, to 200-250 mg at milky ripeness. It was increased by N application.

D.E.: Detailed translation of selected passages:

Several fodder plants contain cyanogenic glycosides. Animals feeding on shredded plant material have no chance to select for palatability under such circumstances. On pasture, the animal can choose its diet freely, but even there the instinct of the animal can fail, e.g. after long periods of hunger (ref. Stählin, A. Die Beurteilung der Futtermittel. Methodenbuch. Neumann Verlag, Dresden-Radebeul, 1957, 12).

The total HCN content can not easily be used as the safe limit for individual species, because this amount depends on a variety of factors (ref. Coop, J. E.//Blakely, R. L. The metabolism and toxicity of cyanide and cyanogenic glycosides. NZ J. Sci. Technol. 5, 44-58, 1950; Möschlin, S. Klinik und Therapie der Vergiftung. G. Thieme Verlag, Stuttgart 1959). Especially the time unit during which the effect of HCN takes its course, and on the other hand little is known about the behaviour of the animal species and their detoxication mechanisms during short and long feeding periods with cyanogenic plants. The action of HCN is on cell respiration. Death by HCN due to asphyxiation, similar to that of CO poisoning, occurs when a certain critical limit is exceeded in the blood, which lies between 0.5-1mg HCN per kg bodyweight. Reaching this level is a function of absorption/ detoxication. When the rate of absorption exceeds the rate of detoxication and the critical limit is reached, then death occurs. The lethal dose (LD) is therefore the sum of the HCN amount detoxified + the HCN amount in the body.

The rate of detoxication is dependant 1. on the reaction of the individual 2. strongly dependant on the rate of feed intake and 3. the rate of hydrolysis of the cyanogenic glycoside (which depends on the bacterial activity, which is much more pronounced in a full rumen than in an empty one).

In a series of experiments with sheep, which were administered the cyanogenic glycoside lotaustralin, Coop & Blakely (1950) found that the LD is 4.65 mg HCN per kg Bodyweight if the total amount is absorbed over 1 hour. If the total amount of HCN is absorbed within 20 mins, as with free HCN, then the LD is 2.5 mg per kg. HCN administered evenly for 24 hrs LD= 46.6 mg/kg. The grazing situation is more complex.

Talks about the detoxification of HCN by sulfur amino acids and especially by H₂S which develops in the rumen in large quantities (HCN + S⁻→ HCNS (rhodanide)) [D.E.1. How about feeding HCN & Narbon beans together 2. If high amounts of H₂S evolve in th

erumen, then the volatile sulfur of GEC should not be so much of a problem-> Are other parts of GEC potentially a problem for ruminants?)

Animals grazing on cyanogenic pastures were observed to have so-called chronic poisonings which manifest themselves in metabolic disorders, skin and haircoat lesions, liver problems - probably through a deficiency of sulfur amino acids (Drepper, K. Stickstoffhaltige Verbindungen der Nahrung als Ursache von Stoffwechselstörungen. Zbl. Veterinärmed. 8, 833-838, 1961 [D.E. is this a Harper type aa-imbalance story?])

It was important to determine the HCN of the vetches, because the seeds, especially those unsuited for sowing, are used as a concentrate feed for horses, sheep, and to a lesser extent for milch cows, or even as a food, that is, as a substitute for lentils..

Indeed, large differences in HCN content were found between varieties. Differences between early and late varieties were highly significant (Fig. 1). Interestingly, the level of HCN was relatively constant for both years of cultivation (1962, 1963) except for the German cultivars 'Dreesbachs Rheinische' and Engelens Weihenstephaner SV', which in 1962 had a higher content of HCN, probably as a result of mould attack, rotting of the lower stem parts and the thereby early ripening.

This shows that the HCN content is of genetic control and the variability found suggests that it could be reduced by selection.

The HCN content of the growing plants, studied from 100% flowering to pod formation, which is the normal harvesting date for the green fodder of *Vicia sativa*, was with all accessions, in contrast to the seed content, very low. There were even some late accessions which had no HCN at this stage. The Turkish accessions had with 10mg HCN/kg DM again the highest HCN content measured (of 20 accessions). With increasing development (end of flowering to seed formation) an increase of the HCN content was found with all accessions, with an especially rapid rise in the early types, but this can probably be traced back to seed formation.

7. Al, Jibury LK. Range improvement of the semi arid regions by introduction of some forage crops. Advances in range management in arid lands. Proceedings of the 1st International conference on range management in the Arabian Gulf [edited by Halwagy, R.; Taha, F.K.; Omar, S.A.]. 1990, 131-134; 5 ref. London, UK; Kegan Paul International Ltd. 1990; ; ISSN: 0-7103-0360-2.

Note: Council for Scientific Research, Agriculture and Water Resources Center, Al-Jadriyah, Baghdad, Iraq. Unnumbered-Part / CAB91_90.

The results of field trials using annual winter legumes in the Jezira region, Iraq in 1980-83 are presented. Average green forage yields were 6.27, 7.85, 5.84 and 2.94 t/ha for *Vicia sativa*, *V. narbonensis*, *Medicago scutellata* and *M. truncatula*, resp; *Trifolium subterraneum* results were not included due to poor growth. *V. sativa*, *V. narbonensis* and *M. scutellata* were recommended for inclusion in crop-legume

rotations in marginal cropping areas to replace the traditional cereal-fallow system.

8. Albow, N. Alboff, N.). *Prodromus florae Colchidae*. Geneva: Impr. Romet; 1895.

Note: D.E.93/10/.

(Albow, N. (Alboff, N.), 1895)

Prodromus florae Colchidae

V. narbonensis

Imeretia (Lomakin 1893, no. 310).

9. Albrecht, C.; Kohlenbach, H. W. Die Reaktion von Kalli und Mesophyllprotoplasten von *Vicia faba* L. und *Vicia narbonensis* L. auf H₂O₂ [The reaction of calluses and mesophyll protoplasts of *Vicia faba* L. and *Vicia narbonensis* L. to H₂O₂]. *Biochemie und Physiologie der Pflanzen*. 1987; 182(6): 491-495.

Note: D.E.93/10/ Bot. Inst., J.W. Goethe-Univ., 6000 Frankfurt/ Main, German Federal Republic/LA: German/LS: English.

Wounded leaves, protoplasts isolated from pre-cultured leaves, and young callus cultures derived from leaves, roots and shoots of *V. faba* showed a strong red colour reaction to hydrogen peroxide; this was correlated with the presence of L-DOPA. Calluses and mesophyll protoplasts of *V. narbonensis* did not contain L-DOPA or show this colour reaction. Healthy leaves and protoplasts from fresh leaves of *V. faba* showed little or no colour reaction although L-DOPA was detectable. Activation of polyphenol oxidases was also necessary for the red colour (dopachrome) to form. Hydrogen peroxide could thus be used to test for polyphenol oxidase activation where L-DOPA was present.

10. Albrecht, C.; Kohlenbach, H. W. Induction of somatic embryogenesis in leaf-derived callus of *Vicia narbonensis* L. *Plant Cell Reports*. 1989; 8(5): 267-269.

Note: D.E.93/10/ getreprint/Botanisches Inst. der Johann Wolfgang Goethe-Univ., Siesmayerstrasse 70, 6000 Frankfurt am Main, German Federal Republic/urgent.

A method for the induction of somatic embryogenesis in callus cultures, using explants from mature leaves, is described. Callus developed on a solid MS medium supplemented with low concentrations of picloram and benzylaminopurine [benzyladenine]. Subsequent culture was carried out in different liquid media for 4 months. The gradual reduction of auxin and cytokinin concentrations, and the addition of glutamine and pyridoxal.HCl successfully induced the formation of somatic embryos on solid media without phytohormones.

11. Alefeld, F. Über *Vicieen*. *Bonplandia*. 1861; 9(7; 8-9): 99- 105; 99-105, 138-153.

Note: D.E.93/10/check p. No.//DEPHD.

(Alefeld, 1861b)13. *V. narbonensis* Linn. sp. 1038

Stengel am Grunde einfach, gerade; Blätter 1-3 paarig; Blättchen: die unteren rundlich, die oberen breiteiförmig, ganzrandig, sehr selten einige obere etwas gesägt; Pedunculus 1-2 blüthig; Kelchzipfel: die 2 oberen viel kürzer, die 3 unteren so lang oder länger als die Kelchröhre; Hülse schwarz, etwa 4mal so lang als hoch, mit kurzer (1 Lin.) aufgekrümmter Spitze; Samen (nur von var. *culta*) pechbraun mit schwarzen strophium bis ganz schwarz, lupisch schwach schlänglich, etwa 15 auf 1 dr.; Nabel rein oblong, 1 Lin. lang, mitten mit schneeweisser Längswulst.- Annual, Bl. blau oder weisslich blau- Um das ganze mittelländische Meer bis Krim und Kaukasus.

Var. 1. *V. n. culta* (*Vic. latifolia* Mö. *Vic. narbonensis* Reichb. f. exc.) fast kahl, obere Blättchen 2-3 paarig; Blüten 1-2 blüthig; Hülse matt, unregelmässig seitlich hin und her gebogen.

Var. 2 *V. platycarpus* (*Vic. platycarpus* Roth. bot. Beob. p. 10, so Mönch m. p. 531. *Vic. heterophylla* Reichb. fl. exc.)

Ziemlich behaart; obere Blättchen 2paarig; Blüten einzeln; Hülse glänzend, gerade; viel niederer Wuchs.-Diese scheint nur in Dalmatien und Illyrien zu wachsen. Ich bedaure diese var. noch nicht haben ziehen zu können. Nach den mir vorliegenden Exemplaren in Blüte und fast reifer frucht bleibt mir kein Zweifel, dass dies die wilde Form der var. *culta* ist. Reichenbach's Exemplare hatten nach seiner Beschreibung an den oberen Blättern gesägte foliola. Ich sah aber auch die var. *culta* aus demselben Samen schwachgesägte wie ganzgerandete Blättchen bilden.

V. serratifolia Jacq. f. austr. suppl. t. 8. (*Vic. narbonensis serratifolia* Ser. ap. DC. pr. II, p. 365.)

Pflanze von Grund an mehrstenglich, aufstrebend; Blätter 1-3 paarig; Blättchen : die unteren rundlich, die oberen breiteiförmig, immer und fast alle gesägt; Pedunculus 26 blüthig, Kelchzipfel die 2 oberen kürzer, die 3 unteren so lang oder länger als die Kelchröhre; Hülse schwarz 5-6 mal so lang als hoch, mit langer (4-5 Lin.) etwas niedergekrümmter Spitze; Samen 30 auf 1 Dr., schwarzgrau, sichtbar schlänglich-körnig; Nabel eiförmig; 1 1/6 Lin. lang (trotz der halb so grossen samen) ohne den schneeweissen Längswulst.- Bl. kornblumenblau. Bis jetzt schon in Frankreich, Corsica (Godr. et Gr.), Norditalien, Ungarn, Woiwodina (v. Alef.), Krim (Ledeb.), Griechenland (Sibth.), Cairo (v. Alef.) beobachtet.

Table contrasting the differences between *V. narbonensis* and *V. serratifolia* follows in the original text.

12. Ali, S. I. Revision of the genus *Vicia* Linn. from West Pakistan. *Bot. Notiser.*. 1967; 120: 46-56.

Note: D.E.93/10/.

(Ali, 1967) Revision of the genus *Vicia* Linn. from West Pakistan p. 50. Dsn of *V. narbonensis* in Pakistan. Lower Swat, cult., 4- 8.4.1956, R. R. Stewart 27471(RAW).

13. Al-Jibury, L. K. Range improvement of the semi-arid regions by introduction of some forage crops. Halwagy, R.; Taha, F. K.; Omar, S. A., eds. *Advances in range management in arid lands*. Proceedings of the 1st

International conference on range management in the Arabian Gulf 1990. London: Kegan Paul International Ltd.; 1990: 131-134.

Note: D.E.93/10/ getreprint/Council for Scientific Research, Agriculture and Water Resources Center, Al-Jadriyah, Baghdad, Iraq./Cocks.

(Al-Jibury, L. K., 1990) The results of field trials using annual winter legumes in the Jezira region, Iraq in 1980-83 are presented. Av. green forage yields were 6.27, 7.85, 5.84 and 2.94 t/ha for *Vicia sativa*, *V. narbonensis*, *Medicago scutellata* and *M. truncatula*, resp; *Trifolium subterraneum* results were not included due to poor growth. *V. sativa*, *V. narbonensis* and *M. scutellata* were recommended for inclusion in crop-legume rotations in marginal cropping areas to replace the traditional cereal-fallow system.

14. Allden, W. G.; Geytenbeek, P. E. A comparison of the growth of beef cattle and sheep grazing mature grain legume crops. Proc. Aust. Soc. Anim. Prod.. 1984; 15: 648.

Note: D.E.93/10/ /DEPHD.

A comparison of the growth of beef cattle and sheep grazing mature grain legume crops.

Hereford beef cattle (initial weight 293 kg) and Suffolk x Merino store lambs (32.6 kg) grazing together on four mature grain legume crops (*Lathyrus ochrus*, *Vicia faba*, *Lupinus angustifolius*, *Pisum sativum*) amature pasture of sub clover for 100 days during dry summer months.

cattle groups of 4/two reps/tmt

Lambs gained well on all grain legume crops (200-225g/day)[cf. Scott Jacques work, mature wethers growing at 57-130g/day, Narbon being superior]

Cattle made excellent gains only on (980g/day) *Vicia faba*.

The data indicated that cattle grew better on crops with large seeds, and that pod dehiscence appears to be a factor affecting cattle performance when grazing on mature stands. It was observed that cattle gained weight on lupins as long as the seeds were retained on the plant, but after the pods had shattered and the seeds were on the ground they were inaccessible to them. Field pea and Cyprus vetch shattered early in the season and only *V. faba* retained the seeds in the pods.

Sheep grazing studies on grain legume crops may bear no relationship to the performance of cattle under similar conditions.

15. Allden, W. G.; Geytenbeek, P. E. Evaluation of nine species of grain legumes for grazing sheep. Proc. Aust. Soc. Anim. Prod.. 1980; 13: 249-252.

Note: D.E.93/10/ /DEPHD.

16. Almeida, J. M. As 'orobancas' compromentem a cultura de algumas leguminosas [Broom-rape hinders the growing of some legumes]. Agricultura, Lisboa. 1959; 3: 35-6.

Note: D.E.93/10/ getreprint/Cubero.

Cultivated legumes are divided into 4 groups, according to their susceptibility to broom-rape (*Orobanche crenata*): *Vicia faba*, *V. narbonensis*, *Lathyrus sativus* and *Pisum sativum* are highly susceptible.

17. Arcangeli, G. Compendio della Flora Italiana. Torino: E. Loescher; 1882.

Note: D.E.93/10/.

(Arcangeli, 1882) Compendio della Flora Italiana p. 200(No. 1234)

V. narbonensis L. sp. 737. F. eretto, grossetto (2-5 d.): fg. inf. senza cirro con 1 coppia diff., le altre con cirro e 2-3 coppie diff. grandi ovali od ellitiche: stipole grandi, semisaettiformi: racemi brevissimi, con 1-5 fi. proporini: denti del calice disuguali: legumi cultriformi; (5-7c.), alla fine neri, con margini dentato-cigliati. O(circle with a symbol) Luoghi erbosi e selve nella Penisola e nelle isole (reg. mar. e camp.) Apr. May.

β-serratifolia Koch fg seghettato-dentate. Con la specie.

18. Arcangeli, G. La flora italiana, 2nd edn.; 1880.

Note: D.E.93/10/.

(Arcangeli, 188?) La flora italiana pp. 522-523

Vicia narbonensis

.. denti del calice disuguali: fr. cultriformi (5-7c.), neri, con margini dentato-cigliati. (I) Luoghi erbosi e slve nella Penisola, nell' Istria e nelle isole. (reg. mar. e camp.) Apr. mag. Eur. m. Danub. Cauc. Pers. b. Afr. b.

19. Ascherson, P.; Gräbner, P. Synopsis der Mittel-Europäischen Flora. Leipzig: Wilhelm Engelmann; 1909; 6(2): 984-987.

Note: D.E.93/10/ to do/check refs./DEPHD.

(Ascherson & Graebner, 1909)

p. 583

V. narbonensis

Kroatian: Divlji Bob, Velika Grahornia

mostly unbranched, rarely branched. Wing lilac-purple or blueish. Seeds: brown, almost round, flattened.

In fields, underneath sown crops, on the side of ditches, in timber clearings (Holzschlägen), at moist places almost only in the Mediterranean area. Not rare in the South-west area of the Dauphiné and Provence.

Riviera

Switzerland: Geneva, Basle. Isteinerklotz! In the coastal area of Austria, near Trieste rare, in the south of Istria isolatedly spread! Also on the islands. Kroatia, especially at the coast. On the dalmatian mainland! Hercegovina: Mostar(Beck), Trebinje(Pantocsek).

Montenegro: Boljevici(Pancic 24).

In the rest of the area (central europe) here and there introduced and gone feral, but mostly non-persistent, as in Holland. Flowering: Mai, June

Refs. to Schweinfurth (Sitzb. Anh. G. 1891. 661); Buseham (Vorges. Botanik 215ff.) re: ancestor of *V. faba*.

Baharische Erbse(Abyssinia ??) the fellahs of the egyptian delta and near Fayoum call *V. narbonensis* Bâcher, bâkar(old semitic).

V. narbonensis -> heterophylla, relatively rare-> refs.

Subspecies

V. serratifolia

less hairy, stem normally branched, more rough than with the *typus*. Side leaflets (stipules?) always serrated. Leaves normally with 3, often with 4 pairs of leaflets, these are nearly equal sided, those of the upper leaves are always clearly serrated.

In the mediterranean area and in the southeast of the area (central europe) its distribution is sprinkled. Dauphiné and Provence. Riviera. Lower Austria: near Vienna, Leitha mountains. Hungary not rare! Siebenbürgen (Transsylvania), Slavonia. In Istria rare. From Fiume, Croatia and Bosnia not recorded (Maly pers. comm.). Hercegovina (Ascherson & Kanitz Cat. cormoph. 105). Montenegro! Antivari (Grimus), Vir, Rijeka, on the Lastva Kcevska at ca. 1100m, Danilovgrad, Zagarac and Kagoti (Rohlena Sitzb. Böhm. Ges. Wiss. 1903 No. XVII. 27 1904. No. XXXVIII 43. Vebr.) (Maly pers. comm.)- In the north east occasionally introduced, but not persistent. Flowering: Mai, June refs. -> *V. serratifolia*

Distribution of the subspecies (*b. integrifolia*). Middle to south France, Iberian peninsula, Italy, Balkan peninsula, [Serbia, Bugaria, Romania, turkey, greece], Cyprus, Southern- Russia, Transkaukasus, Kleinasien (Anatolia?); North Africa).

20. Ascherson, P.; Kanitz, A. *Catalogus cormophytorum et Anthophytorum Serbiae, Bosniae, Hercegovinae, Montis Scodri, Albaniae. Claudiopoli*; 1877.

Note: D.E.93/10/.

(Ascherson & Kanitz, 1877) p.105 *V. narbonensis* var. *serratifolia*

Present in Serbia, Hercegovina, Montis Scodri, Albania. Not found in Bosnia.

21. Ascherson, P.; Schweinfurth, G., 1889. *Supplément a l'illustration de la flore d'Égypte. Mém. Inst. Égypt. II.* : p. 756 pl. 68 No. 391.

Note: D.E.93/10/ incomplete/DEPHD.

(Ascherson//Schweinfurth, 1889)p. 756

p. 68 No. 391

V. narbonensis L.

M. Könicke nous a communiqué la description de deux nouvelles variétés de cette espèce, cultivées de graines récoltées dans le Fayoum par M. Schweinfurth

Var. *aegyptiaca* Kcke. var. n.

Semina magna, 0.010 immo ad 0.013m crossa, pallide fulva, hilo pulvino longitudinal albo plus minus.

22. Bailey, E. T. *Agronomic studies of vetches and other large-seeded legumes in southern Western Australia. CSIRO Division of Plant Industries Technical Paper. 1952; No. 1.*

Note: D.E.93/10/ 21pp. /DEPHD.

(Bailey, 1952) Search for alternative grain legumes to replace peas

Plant introduction station, Muresk, was started in 1943.

Essential characteristics of the wanted legume (Bailey, 1952):

1. ability to be handled by existing machinery.
2. growth period 5- 7 months
3. Tolerance to Red-legged earth mite, alfalfa flea and immunity to the pea weevil
4. Greater tolerance to adverse conditions than peas
5. Grain and fodder yields at least equal to peas
6. A seed approximately the size of a pea, or at least large enough to be picked up from the ground by sheep
7. A residual soil cover after summer grazing (D. E. cf. S. A. Eyre Peninsula Soil survey recommendation to use pasture plants only and no grain legumes because of soil erosion (wind) problems).
8. Uniform maturity of the pods or ability to hold the seed after ripening (Non-shattering pods)
9. Ability to stand grazing during the growing period

Vicia, *Lathyrus* and *Lupinus* grown initially in 1945

Lathyrus & *Vicia* Species tested (Bailey, 1952)

L. annuus L., *L. aphaca* L., *L. articulatus* L., *L. hirsutus* L., *L. japonicus* Willd., *L. niger* (L.) Bernh., *L. ochrus* (L.) D.C., *L. pubescens* H. & A., *L. quadrimarginatus* Bory et Chaub., *L. sativus* L., *L. sylvestris* L., *L. tingitanus* L., *L. tomentosus* Lam., *L. venosus* Muhl.

V. americana Muhl., *V. ampicarpa* Dorthes, *V. angustifolia* L., *V. articulata* Hornem., *V. atropurpurea* Desf. (= *V. benghalensis* L.), *V. aurantica* Bois., *V. biennis* L., *V. bithynica* L., *V. calcarata* Desf., *V. cassubica* L., *V. cirrhosa* C. Sm. ex Webb & Benth., *V. cordata* Wulf., *V. cornigera* Chaub., *V. cracca* L., *V. dasycarpa* Tenore, *V. disperma* D.C., *V. ervilia* Willd., *V. faba* L., *V. faba* var. *equina*, *V. ferruginea* Bess., *V. fulgens* Bat., *V. globosa* Tetz., *V. globosa* Sw., *V. grandiflora* Scop., *V. hirsuta* (L.) Koch, *V. lathyroides* L., *V. leavenworthii* Torr. & Gray, *V. ludoviciana* Nutt., *V. lutea* L., *V. macrocarpa* Bertol., *V. melanops* Sib. & Sm., *V. michauxi* Spr., *V. muricata* Ser., *V. narbonensis* L., *V. obscura* Vog., *V. onobrychoides* L. (= *V. atropurpurea* Desf.), *V. peregrina* L., *V. sativa* L., *V. scandens* Murr., *V. sepium* L., *V. serratifolia* Jacq., *V. sinkiangensis* Kung., *V. striata* Bieb., *V. tetrasperma* Moench., *V. unijuga* A. Br., *V. villosa* Roth.

Reaction of the most promising legumes to insects (p. 565) (Red-legged earth mite (RLEM), alfalfa flea (AF), pea weevil (PW), respectively)

Pisum spp.

RLEM: very susceptible, AF: rarely attacked, PW: very susceptible

Lathyrus ochrus

RLEM: fairly tolerant, AF: not attacked, PW: immune

L. sativus

RLEM: susceptible, AF: rarely attacked, PW: immune

L. tingitanus

RLEM: damage apparent only in winter, AF: rarely attacked, PW: immune

Vicia articulata RLEM: resistant, AF: not attacked, PW: very rarely attacked

V. dasycarpa RLEM: fairly tolerant, AF: badly attacked in spring, PF: Immune

V. sativa RLEM: fairly tolerant, AF: sometimes attacked, PW: immune

V. sativa tolerance to RLEM appears to be a varietal characteristic, most of the strains tested are very susceptible to attack but a few have shown tolerance.

details of trials are set out in tables.

23. Barbulescu, C.; Ion, T. *Vicia Narbonensis* L. - O planta valoroasa de nutret. Probleme Agricole. 1964; 16(11): 98-100.

Note: D.E.93/10/ Address: Ing. C. Barbulescu, si Ing. Tamara Ion/Institutul agronomic 'N.balescu'/DEPHD.

A short note on the potential agricultural value of *V. narbonensis*.

24. Barral, J. A. Sagnier, H., Continued by. Dictionnaire D'Agriculture. Paris: Libraire Haclette Et Cie; 1892; Tome 4 P-Z: p. 1008.

Note: D.E.93/10/.

(Barral, 1892) p. 1008 Vesce

-On cultive surtout la vesce commune (D. E. *V. sativa*), la vesce blanche (D. E. *V. sativa*) et la vesce velue (D. E. *V. villosa*)

-La vesce blanche (*V. alba*=D.E. *V. sativa*), qu'on appelle aussi Lentille du Canada, est considéré souvent comme une variété de *V. sativa*; elle en diffère surtout par ses graines plus grosses et de couleur blanchâtre, qui sont mangées quelquefois en purée. Cette plante n'est répandue que dans quelques parties du su-ouest de la France

-On cultivé encore, mais dans des proportions très restreintes, la Vesce de Narbonne, la Vesce a grosses cosses(D.E. *V. sativa* var. *macrocarpa*?), la Vesce jaune (D.E.: *V. lutea*), la Vesce de Sibirie (D. E: *V. biennis*) etc.

-Production of *V. sativa* in France(1882) ca. 214. 000 ha (4.1 t/ ha of dry forage)

Hivernage: mixture of winter vetch and cereals

Dravière, dragée, bargelade: mixture of spring vetch and cereals

-Comme plante ornamentale: vesce écarlate (*V. fulgens*), plante annuelle à tiges de 1.5 m, à fleurs d'un rouge vif qui se succèdent toute l'été. Cette plante peut servir à garnir les treillages ou les berceaux, où elle produit un effet très heureux.

25. Bastien, Y. F. AnXII. La nouvelle MAISON Rustique Vol. I. p. 564-5.

Note: D.E.93/10/ incomplete/Rothamstedt.

Il ya aussi une vesce sauvage qu'on appelle vesce-ron, et en vieux français, arousse, arachus: elle vient d'elle-même dans les haies et dans les blés: elle donne en juin(à la fin de prairial) des fleurs qui ressemblent à celles de l'orobe, et elle m_rit au commencement d'ao_t(en humide(indéchipherable)?) sa feuille est mince, plus grande et plus épaissé que celle de la vesce

domestique; sa tige carrée, se fleur rougeâtres, et ses gousses plus courtes que celles de pois courtes que celles des lentilles; elles enferment trois ou quatre grains noirs.(D.E.: *V. monantha* or *V. narbonensis*/*V. johannis*?)

Il ya aussi une autre vesce noir qui est l'ers de anciens, ervum, ou l'orobe des apothecaires.

26. Battandier, J. A. Flore de L'Algerie, Dicotyledones. ; 1888.

Note: D.E.93/10/.

(Battandier, 1888-90)p. 270

V. narbonensis

' Assez semblable à l'espèce précédente[*V. faba*] dont elle est peut-être la forme primitive sauvage; tiges moins robustes, grimpantes; feuilles à 1-3 paires de folioles, les supérieures à vrille rameuse, gousses de 5-7 cent. sur 10-12 millm. hispides sur les bords, noircissam à maturité; graines relativement petites, brunes, globuleuses-comprimées. (4) A. R. Mars-Mai. Moissons, partout. reg. médit.

V. serratifolia Jacquin-Folioles dentées stipules incisées. R. R.

27. Bauhino, Johanne; Cherlero, Henrico. Historia plantarum universalis. Ebroduni; 1651; Vol. 2(Liber XVII): 186-187.

Note: D.E.93/10/.

28. Beck, v. G. Die Vegetationsverhältnisse der illyrischen Länder(begreifend : Südkroatien, Quarnero-Inseln, Dalmatien, Bosnien, Hercegovina, Montenegro, Nordalbanien, Sandzak, Novipazar & Serbien). Engler, a.; Drude, O., eds. Die Vegetation der Erde. Leipzig: Verlag Wilhelm Engelmann; 1901. (Sammlung pflanzengeographischer Monographien; v. Vol. IV).

Note: D.E.93/10/.

(Beck, v. 1901) Die Vegetationsverhältnisse der illyrischen Länder(begreifend : Südkroatien, Quarnero-Inseln, Dalmatien, Bosnien, Hercegovina, Montenegro, Nordalbanien, Sandzak, Novipazar & Serbien)

Pulses are frequently cultivated. The most frequently cultivated is *Vicia faba* ('bob'), followed by peas, chickpeas, vetches (*V. sativa*, >kukolj<, 'kukolj', 'grçsak').

Chickling peas (Eckerbsen) (*L. sativus*, 'grahorica', 'jasich'), (*L. cicera*, 'romac', 'ocimac') are only found in gardens.

Forages are nowhere cultivated.

V. narbonensis is listed with ruderal and weedy plants(p. 189, Chap. 4 Die Pflanzenforamtionen der mediterranen Flora) p. 276

Die Vegetation der Ebene, des Hügel- und bergwaldes im Binnenlande

Forage are only in Kroatia under cultivation, *Trifolium pratense* 'djelelina', 'leteljina', *Medicago sativa* 'zdraljka, nokotac

Pulses everywhere in planted in abundance (ofetn also in the open field). Peas, *V.faba*, more rarely Lupins and lentils.

L. tuberosa is listed with the ruderal, weed flora p. 282.

29. Beck v. Mannagetta, G. Flora von Nieder-âsterreich, part 2. ; 1893.

Note: D.E.93/10/.

(Beck v. Mannagetta, 1893) Flora von Nieder-österreich, part 2 p. 873

Vicia serratifolia

Vorkommen: In Vorhölzern an buschigen Stellen nur im Gebiete der pannonischen Flora selten und oft vorübergehend. Im Lethagebirge, bei Sommerein, (kaisersteinbruch im heiligenkreuzerwalde, bei Breitenbrunn, Winden, zwischen Gayß und Neusiedl); im Gruberholzerwalde bei gallbrunn; auf dem Nussberge bei Nussdorf(1879). IV-VI

V. narbonensis

hier nicht vorkommend unterscheidet sich.. p. 874 missing

30. Becker-Dillingen, J. Handbuch des Hülsenfrüchtlersbaues und Futterbaues. Berlin: Paul Parey; 1929; 3. Hülsenfrüchtlersbau & Futterbau. (Handbuch des gesamten Pflanzenbaues einschließlich der Pflanzenzüchtung).

Note: D.E.93/10/ DHK/DEPHD.

Becker-Dillingen(1929)pp.156-158

The Moor's pea or narbon vetch

Vicia narbonensis L.

The name narbon vetch is derived from the city of Narbonne in southern France, in ancient times Narbo Marcias.

Today's distribution of the moor's pea encompasses the Mediterranean from the Iberian Peninsula to Asia(Vorder-Asien) and North-Africa. As cultivated form the plant can also be found in Central-Europe and in Abyssinia. It is so closely related to the broadbean that Schweinfurth thought it to be its ancestor and he only changed his mind with the discovery of *V. pliniana* in Algeria.

The cultivated *V. narbonensis* is apparently not very old. Dodoens refers to it as *Wilde Boonkens* and Swarte Boonkens and J. Bauhin as *Aracus fabaceus* while C. Bauhin called it *Faba sylvestris fructu rotundo atro*.

Chromosome number 7 haploid. Annual, rarely overwintering- annual. Root build similar to that of the broad bean, more tender, but strong. The whole plant is similar to the broad bean (Fig. 35). Stems quadrangular, hollow, and, like the leaves and petioles only very isolatedly covered with hairs. Length of stem: 40-55 cm. Stem upright, unbranched or with branches from the ground up. The lower leaves with short petioles which run into a point and 1 pair of leaflets, upper leaves with tendrils and 23 pairs of leaflets. Leaflets entire, on the margins ciliate(finely haired). Leaflets inverse egg-shaped to broad- elliptic, 3-5 cm long and 2-4 cm wide. Upon drying they turn black like those of the broad bean. Stipules 14 mm long, 9 mm wide, angular, crescent shaped, differently deep serrated. The upper stipules usually carry extrafloral

nectaries. Flowers single or in pairs, 1.5-3 cm long, crown dirty lilac, Fahne(standard) often deep violet, wings violet, keel whitish with dark violet tip. Self- and cross-pollination. Seed set is mostly good. Flowering time May, June. Pods are similar to those of the broad bean, black-brown with the tip curved upwards, in between the seeds slightly compressed, 45-60 mm long, 9.5-10 mm wide, 11-12 mm high. Seeds (Fig 35) round or slightly compressed, deep black brown, 8-10 mm large; with a brown, on the inside white, oval, 2-2.5 mm long navel(hilum),. strophilium round, a little away from the hilum, inconspicuous. Thousand seed weight 180-310 g; hektoliter(100 L) weight 78-79 kg. The main criterium to distinguish between this species and *V. faba* is the seed which is round and with a hilum of only 1/2 the length to that of *V. faba*.

The seedcoat is identifiable through the short, only 20 high hourglass cells and by their curious inclusions(Einschlüsse)

The following varieties are distinguished:

var. *integrifolia* Ser. (*V. latifolia* Moench= *V. narbonensis* culta Alef. = var. *typica* Fiori et Paol.).

This variety represents the true cultivated type. The plant is almost naked (hairless). Leaflets and stipules entire (ganzrandig).

var. *serratifolia* (Jacquin) Ser. Also cultivated. Stems more branched. Leaflets and stipules serrated. Pods glandular and thorny at the sutures

Cultivation

The Moor's pea demands a bit more warmth and less moisture than the broad bean. Fruwirth gives as vegetative data a vegetation period of 114-144 days (at Vienna), and 89 days (Meran). Heat sum until flowering : 842í C (69 days), until ripening: 1657 í C (114 days) at Vienna. Germination commences at 4í C. The plant suffers at -4 íC and dies at -6 í C. The vegetation period is also shorter than that of the broad bean. Vine climate(D. E.:Wein Klima= Mediterranean climate) is demanded. Best soils are loam (D. E.: yellow brown or lean or very sandy clay, mud) and marl soils, less good are clay soils. The soil needs to be drier than broad bean soils. The position in the rotation, soil preparation and fertilizer application are as for the broad bean. Seeding rates : grain crop 150-200kg/ha broad cast, 100-150 kg/ha drilled & seeding width: 18- 25 cm; green fodder: 200-250 kg/ha broad cast, 150-220 kg/ha drilled & seeding width: 15-20 cm

The crop is sown in spring and in southern countries also in autumn. Fruwirth harvested at Vienna 8-14-30 dz/ha grain and 12- 18-35 dz/ha straw, or 220 dz/ha green fodder. Vilmorin recommends its cultivation as a mixture with oats, rye or some other cereal.

The narbon vetch is as green fodder as well as straw somewhat more tender than the broad bean. One advantage is also the lesser attack with pests, namely aphids.

31. Bertolini, A. Flora Italica Vol. 7. ; date?

Note: D.E.93/10/ incomplete/check refs./to do.

(Bertolini, date?) Flora Italica pp. 508-509

26. *Vicia narbonensis*:

Caule tetragono, erecto; foliis subtrijugis, foliolis late ovalibus, obtusis, integris, serratisve; racemis brevissimis, paucifloris; leguminibus cultriformibus, suturis calloso-setosis

V. narbonensis -> lost of refs.

Ital. vecchia salvatica Targ. Tozz. Diz. bot. 2 p. 234

Ann. Legi Bonomiae all'Osservanza in sylva Aldini, ubi copiosa, et in sylvis dis Ronzano.

Habui Genua in collibus e(x)tra portam di Granaiolo a Griolletto, et secus aquaeductum del Zerbino a Savignone, ex Pedmontio in sylvaticis ad Albam Pompejam a Bertero, ex agro Ticinensi a Prof. Balsamo-Crivellio, et ab Eq. Prof. de Notaris, Mantua inter segetes a Barbiero, Verona ad arcem di Montorio a Manganotto, et a de brachtio, ex Istria in cultis circa Polam, parenzo, et Barbana a Tommasinio, ex Istrai, et ex arvis Tergestinis a Biasoletto, ex Euganeis a Torreglia a Montinio, et in collibus prope Battaglia a Majero, ex agro Maceratensi ab Eq. Narduccio, ex Extruria Volaterris ab Amideo, in Maremma a badioa ab Eq. Ricasolo, et in litore di Piombino a prof. Giulio, Viterbio a camillio, et a Canino a Rev. Fratre Mauritio de brixia, ex via inter ad sepes, ubi communis, a Prof. Maurio, A castel Gandolfo a Brunnero, Cumis ab Orsino, ex sicilia in fruticetis ab Eq. Gussonio, Catanâ a Prof. Casentino, ex sardinia ad speses di iglesia ab Eq. Prof. de Notrais, ex Corsica a Bonifacio a serrafino, et a nebio a Soleirolio. Floret April, Majo

Latin description of flowers with a discussion of serrate leaves. read again later, need latin dictionary.

32. Béquinot, A.; Diratzouyan. Contributo alla flora dell'Armenia. Venezia: S.Lazzaro; 1912.

Note: D.E.93/10/.

(Béquinot, A./Diratzouyan, 1912) Contributo alla flora dell'Armenia p. 60

Arm. cilic.: Elbistan, n. 158

(10 VI, 1907 leg. C.S.!)

33. Bhattacharya, A. N.; Harb, M. Sheep production on natural pasture by roaming Bedouins in Lebanon. J. Range Management. 1973; 26(4): 266-269.

Note: D.E.93/10/.

V. narbonensis.

34. Bianca, G. Flora dei Dintorni d'Avola. Memoria Xa Atti dell' Academia Gioenia di Scienze naturali di Catania serie seconda, Catania, C. Galatola. 1859; XIV.

Note: D.E.93/10/ /DEPHD.

(Bianca, 1859) Flora dei Dintorni d'Avola pp. 44-46

V. narbonensis

Volg. sic. favaccia; marzo-Aprile

nei campi e nei prati, ma non molto frequente

De.E-> var. narbonensis or aegyptiaca

grani perfettamente globosi, neri e come anebbiati di fuliggine, con ombelico lineare, bianchiccio.

35. Bianor, E. C. Plantes de Mallorca. Bulleti de la Institució catalan d'història natural. 1917; Nov; Dec.

Note: D.E.93/10/.

(Bianor, 1917) Plantes de Mallorca p. 136

V. narbonensis

Teix, dans les bois près de Coll de Sóller-près de Sóller, route de Sóller à Palma- Pont d'Inca- Très rare.

36. Bieberstein, L. B. F. Flora Taurico-Caucasica Vol.II. Charkouia: Typis Academicis; 1808.

Note: D.E.93/10/.

(Bieberstein, 1808) Flora Taurico-Caucasica p. 163

V. narbonensis

In Tauriae campestribus obnua. Floret Aprili, Majo(.)

Vol III., Supplementum (1819)

V. narbonensis

circa Derbentum etiam reperitur, teste Steueno in Mem. soc. nat. cur. mosq. 4. p 53

legumina juniora undique villosa, D.E.: ->V. johannis.

37. Bilgin, Y. Experiments with the vetch plant *Vicia narbonensis*. Seker, Jan 1973, 23 (86): 18-27. Eng. sum. 1973;

Note: Kislik kocafig "*Vicia narbonensis*" denemeleri DNAL 65.8- SE4 Article /agricola78_70.

38. Birch, A. N. E. Field evaluation of resistance to black bean aphid, *Aphis fabae*, in close relatives of the faba bean, *Vicia faba*. Annals of Applied Biology. 1985A; 106(3): 561-569.

Note: D.E.2_94/reprint/Department of Biology, The University, Southampton, S09 5NH, United Kingdom/urgent DHK.

A field assessment of 26 accessions of *Vicia narbonensis* and 3 of *V. johannis* in England in 1980 confirmed the results of previous laboratory studies, which demonstrated higher levels of resistance to *Aphis fabae* in these 2 wild species than in the closely related crop species, *V. faba*. Accessions of *V. johannis* were significantly more resistant than most accessions of *V. narbonensis* for all the resistance indices measured except aphid nymph survival. The plant growth stage significantly affected the levels of resistance in both *Vicia* species, being moderate at the pre-bud stage, decreasing at flowering and increasing again at pod-fill and the onset of leaf senescence. Significant intraspecific variability in aphid resistance was found only within the 26 accessions of *V. narbonensis*, the variety *serratifolia* being more resistant than the variety *narbonensis*. Possible resistance factors and the agronomic potential of these 2 wild relatives of the faba bean are considered.

39. Birch, A. N. E. A Taxonomic study of aphid resistance in the genus *Vicia*. Southampton: University of Southampton; 1983. Ph.D. thesis.

Note: D.E.93/10/ /DEPHD.

Birch(1983); useful levels of partial resistance to *Aphis fabae* in *V. narbonensis* and *V. johannis*, is influenced by growth stage and is present to a greater extent in *V. johannis*. Susceptibility increased from pre-flowering/bud formation to

full flowering. It then decreased rapidly during pod formation, filling and maturity.

V. narbonensis flowered earlier than the slower growing *V. johannis*, thus it was more susceptible to aphids/ *V. johannis* is densely covered with trichomes on leaf lamina, veins, stem internodes and pods. *V. faba* is less susceptible to aphids when sown in autumn(Kennedy1958). Thus susceptible growth stages not in presence of aphids-> if Birch would have done his sowings in autumn, then different picture may have emerged.

ref. Fedchenko (1948) and Duke (1981) *V.n.* seed for animal and occasional human consumption, cover crop for erosion control, green manure

Resistance to *Aphis fabae*1) Davidson & Fisher,1922 *Ann.Of Applied Biology* 10,35-54. 2)Bond & Lowe *Ann. Appl. Biol.* 81,21-32

Winterhardiness -30deg C & Bruchid resistance 3) Elçi, S.(1975). *Gıda Tarım ve Hayancılık Bakanlığı Ziraat İşleri Genel Murdurhigu Yayvinlari.* D-167 (*Vicia, vetches*) pp20-37

40. Birch, A. N. E.; Titecote, M. T.; Bisby, F. A. *Vicia johannis* and wild relatives of the faba bean: a taxonomic study. *Econ. Bot.* 1985; 39(2): 177-190.

Note: D.E.93/10/ Biol. Dep., Building 44, Univ. Southampton, Southampton SO9 5NH, United Kingdom/reprint/DEPHD.

Cluster analysis of data on 43 characters in 47 accessions representing *V. faba*, *V. narbonensis*, *V. serratifolia*, *V. johannis* and *V. galilaea* revealed that (1) *V. johannis* is clearly separable from *V. narbonensis* and (2) *V. faba* is more distinct from *V. narbonensis* and *V. johannis* than they are from one another. Petal colour at anthesis could be used to distinguish between *V. faba*, *V. narbonensis* and *V. johannis*, and between the 2 varieties of *V. johannis*. Geographical distribution of the material studied suggested that *V. johannis* is found in Turkey and Europe despite being omitted from the major published floras. *V. johannis* and *V. narbonensis* were found to possess agronomically useful characters, including frost tolerance and resistance to *Aphis fabae* and *Botrytis fabae*.

41. Birch, N.; Wratten S. D. Patterns of aphid resistance in the genus *Vicia*. *Ann. appl. Biol.* 1984; 104: 327-338.

Note: D.E.93/10/reprint.

42. Birnbaum, K.; Werner, E., Eds. Thiel's *Landwirt-schaftliches Konversationslexikon.* Leipzig: Thiel; 1882; Vol 7: 762-765.

Note: D.E.93/10/ /DEPHD.

(Birnbaum, K./Werner, E., 1882) The cultivation of vetches was unknown to peoples in antiquity. Vetches

are in part cultivated for their seeds, for green manure but mainly for the sowing of green feed; as human food they are unsuited, with the exception of the red summer vetch and the canadian vetch(*V.sativa alba*) with white seeds whose white flour(ca 10%) has been used to stretch wheat flour for breadmaking in France.

Cultivated for forage are common vetch, single or in mixture with oats, also some peas and horsebeans, sometimes also with corn(*Zea mays*) or summer barley; The pea-like vetch , supposed to gain a height of 2-2.8m on shady ground, a substitute for *Espartette*; winter vetch, already frequently recommended in 1773, but its culture has not reached any great extent; bird vetch, only cultivated in England, woolly vetch; asiatic vetch; hairy vetch or the black lentil, especially for sandy soils.

For grain production mainly *V. sativa* is used.

The large or narbonne vetch distinguishes itself through its large seeds and through the pleasant scent of its flowers, cultivation is rare because of the inferiority of its seeds in comparison to *V.faba* and of its herbage when compared with *V.sativa.* yield 14-20 metric hundredweights(ctr.) grain, and 15- 25 metr.ctr. straw.

Vetch seeds are a very concentrated, protein rich feed and are especially useful for the production of animal power or meat as a supplement to voluminous feeds, but they are taken by the animals with some reluctance because of their content of bitter substances. Horses still like them best.

Detoxification like that used for Lupins has been recommended.

Vetches should not be fed in large quantities, because they may otherwise have a detrimental effect on the health of the animals, especially pregnant and young animals.

Horses when fed too much vetch without enough work are supposed to have contracted brain damage from the strong and heavy vetch feed.

43. Bisby, F. A.; Goyder, D. J.; Khattab, A. Close relatives of *Vicia faba*. *Vicieae Database Project*, unpublished document prepared for the International Food Legume Research Conference. 1986.

Note: D.E.93/10/ getreprint.

44. Bock, Hieronymus other synonym: *Tragus*, also try *Sebezius*(1577). *Kreutterbuch.* ; 1551.

Note: D.E.93/10/ getreprint/kew.

Vicia narbonensis/*Aracus fuchsii*

Everything on legumes please, or the whole book on microfilm?

45. Bois, D. *Les plantes alimentaires chez tous les peuples et a travers les ages- Histoire, utilisation, culture.* Paris: Paul Lechevalier; 1927.

Note: DE4_94/DEPHD.

46. Boissier, E. *Flora Orientalis.* Geneva & Basel: H. Georg; 1872; Vol. 2.

Note: D.E.93/10/ /DEPHD.

(Boissier, 1872) *Flora Orientalis* *Vicia narbonensis*
Hab in cultis et collinis totius fere ditionis a Grecia (Sprun!) et macedonia (friv!), ad Aegyptum (Wiest!), Babyloniam (Noe!), prov. Transcaucasicas et Persiam borealem (ledb. Szow!). Fl. vere. Arabice Nomane Berri
Ar. geogr. Europa australis, Africa borealis
V. serratifolia
hab. in cultis Cypri et Argolidis (Sibth!), Thracie (Friv!), prov. Transcausicarum ad flumen Kouban (Stev.)
Ar. geogr. Europa australis, regio Danubialis, Africa borealis.

47. Boissier, E. Voyage botanique dans le midi de l'Espagne, pendant l'année 1837. Vol. II. enumeration des plantes du royaume du grenade, additions et corrections. Paris: Gide et Cie; 1839.

Note: D.E.93/10/.

Boissier, 1839-45 Voyage botanique dans le midi de l'Espagne, pendant l'année 1837. Vol. II. enumeration des plantes du royaume du grenade, additions et corrections

V. narbonensis

var. *integrifolia* Ser.

In umbrosis regionis calidae superioris, Ronda en el Tajo.

Hab. in Lusitaniâ (brot.), Hispaniâ, Galliâ australi, Italiâ (Mor. Ten. Guss.), Graecia (Bory), Africa boreali (desf.) La plante de Sibthorp Fl. Graeca est la *V. narbonensis* var. *serratifolia*.

48. Bond, D. A.; Lowe, H. J. B. Tests for resistance to *Aphis fabae* in field beans, *Vicia faba*. Ann. Appl. Biol. 1975; 81: 21-32.

Note: D.E.93/10/.

49. Bondi, A.; Meyer, Ch. Chemical composition and digestibility of palestinian cattle fodder. Rehovot, Agricultural Research Station, Bulletin. 1940; 27.

Note: D.E.93/10/
getreprint/Plitmann/Kislev/Zohary/Ladizinsky.

(Bondi, A.//Meyer, Ch., 1940)(Translated into english and edited by S.Hestrin. 1940 pp. 68. tables) The data apply to green fodder hay and concentrated feeding stuffs which are available to Palestinian farmers. The following have received consideration. Summer green forage crops- cowpea, alfalfa, teff grass, *Penicillaria*, sunflower and *Setaria italica*; winter green forage crops- Egyptian clover, field pea, horse-bean, *Lathyrus ochrus* (Cyprus vetch), sweet lupin, *Vicia sativa* (common vetch), *Vicia narbonensis*, *Vicia ervilia* and *Malva sylvestris*; hays-vetch/oat and vetch; concentrated foods, -barley, sorghums, Kersenneh, (*Vicia ervilia*), julbana (*Lathyrus sativus*), carob seed, carob pod and groundnut cake.[Herb.Abs.June 1948 No.730, p. 154].

50. Bondi, A. H.; Meyer, H. On the chemical nature and digestibility of roughage carbohydrates. J. Agric. Sci.. 1943; 33: 123-128.

Note: D.E.93/10/.

(Bondi, A. H.//Meyer, H., 1943) *Lathyrus ochrus*/*Vicia narbonensis* analyzed for hexosan, pentosan and lignin.

51. Bonnier, G. Flore complete de France, Suisse, et Belgique Vol 3. ; ?

Note: D.E.93/10/ incomplete.

(Bonnier, date?) Flore complete de France, Suisse, et Belgique Vol 3, p. 59 *V. narbonensis*

On la trouve dans les endroits humides, les champs, les bois, au bord des fossés, surtout dans la partie meridionale de la France (et on Suisse où elle est très rare)

Noms vulgaire: Fève des-chevaux, vesce -de-narbonne, Mauswicke, Römische Erbse, *Veccia salvativa*

usages et propriétés- Parfois cultivé comme plante ornementale.- Les graines renferment de la vicianine et de l'emulsine[D.E. so far no evidence found for this statement, e.g. no vicianine in *V. n.*]

Dsn:

Ne s'élève pas sur les montagnes.

France:

Midi (très rare dans l'Herault, plus commun en Provence); Ouest (manque en Bretagne);

Center (se retrouve plus au Nord aux environs de Dreux)

Suisse: rare, cité dans le canton Genève, a Leysin dans le canton de Vaud.

52. Boreau, A. Flore du centre de la France et du bassin de la Loire Vol. I. Paris: Roret; 1857.

Note: D.E.93/10/.

(Boreau, 1857) Flore du centre de la France et du bassin de la Loire Vol. I

Vicia serratifolia(.), Lieux cultivés. R.- All. Chavenon, St. Sornin, le Montet-aux Moines, st. Pourcain, Montard.- a Limagne - Cher. Bois de St. Florent.- Ind. Bois de R'e à la Ferté près Renilly.- M.E.L.Puy-Notre-Dame, les Cavennes de Montreuil-Bollay

Obs. *V. narbonensis* du Midi, a les folioles et les stipules entieres, au légèrement denticulés, et le fruit couvert sur toute sa surface le poils bulbeux à la base.

53. Bornmüller, J. Symbolae ad Floram Anatolicam. Repertorium specierum novarum regni vegetabilis, F. Jedde(ed.) Beihefte (supplement)[Feddes Repert]. 1940; 89(1): 208-s.

Note: D.E.93/10/.

(Bornmüller, 1940) Symbolae ad Floram Anatolicam

Vicia narbonensis

Glatia: Ankara, in valle Kawakli-dere, c. 900m (V. 1929, B.no. 14044).- Prov. Pontus: Ad Tkat (IV. 1891/92; leg. cur. B. No. 320). Amasia, in vinetis, 400-600 m (24.IV. 1889; B.no. 245)

β- lutea Freyn et Sint. âsterr. Bot. Zeitschr. 1894, p. 67

Paphlagonia : tossia, in campis ad Koesen (10.V. 1892; Sint. no. 3661).

54. Bourgeois, F. Tetraploid plants from *Vicia faba* and *Vicia narbonensis* using colchicine treatments Broadbean hybrids, resistance against *Botrytis fabae*. F A B I S Newsl.

Aleppo, Syria, International Center for Agricultural Research in the Dry Areas, ICARDA. Mar 1980. (2) p. 25. 1980;

Note: DNAL SB327.F32 Foreign Includes 2 ref. Article agricola84_79.

55. Brar, GS; Gomez, JF; McMichael, BL; Matches, AG; Taylor, HM. Germination of twenty forage legumes as influenced by temperature. *Agronomy Journal*. 1991, 83: 1, 173-175; 15 ref. 1991;

Note: H.M. Taylor, Department of Agronomy, Horticulture and Entomology, Texas Technical University, Lubbock, TX 79409, USA. Numbered-Part /CAB91_90/getreprint.

In laboratory trials the effects of constant temp. (10-30°C) on germination of 20 cultivars of *Medicago rugosa*, *Trifolium subterraneum*, *T. vesiculosum*, *T. incarnatum*, *T. pratense*, *T. hirtum*, *Vicia sativa* X *V. [sativa subsp.] cordata*, *V. sativa* X *V. serratifolia* [*V. narbonensis*], *V. grandiflora*, *V. villosa*, *Pisum sativum*, *M. sativa* and *Onobrychis viciifolia* grown for 10 d in polyethylene growth pouches in the dark were studied. Temp. affected germination rate and percentage for all cultivars. 18 of the 20 cultivars showed >80% germination after 10 d in the temp. range tested. There were no significant effects of temp. between 10 and 30° on germination percentage at 10 d for *T. pratense* cv. Arlington and *M. sativa* cv. Maxidor. On av., germination rate index was highest at 20° and percentage germination at 15°.

56. Briquet, J. *Prodrome de la Flore Corse*, Vol 2(1) pp. 390- 91.

Note: D.E.93/10/.

(Briquet, date?) *Prodrome de la Flore Corse*

V. narbonensis

Hab.

Prairies maritimes, moissons, cultures, points herbeux ou ombragés des garrigues de l'étage inférieur. Avril-Mai (1). Répandu.-En Corse, les trois variétés suivantes

a var. *integrifolia* (var. *typica*)

Hab. Sans doute répandue, mais distribution excaite à établir par rapport a la var g

- de bastia à Biguglia (Salis in *Flora XVII*, Beibl. II, 61)(Sargnon in *Ann. Soc. Bot. Lyon VI*, 66)

-Nebbio(*Sleiol* ex Beret. *Fl.It.* VII, 510) d'Ajaccir à Pozzo di Borgo(Baullu, *Bull. Soc. Bot. Fr.* XXIV, sess. extr. VCVII; Coste *ibid.* XLVIII, sess extr. CXI

-Bonifacio (Seraf. ex Bert. l. c.; Revereh. *exsicc. cit.*)

b var. *intermedia*

-Bonifacio

g var. *serratifolia*

hab. parait plus rare que le var. a

-Bastia (ref. to herbarium specimen given)

-Belgodère (Fouc. et Sim. *Trais Sem. Herb. Corse* 141)

-Ghisoni

-Ajaccio (Boullu, *Ann. Soc. Bot. Lyon XXIV*, 68)

-Bonifacio.

57. Bruyning, F. F.; van Haarst, J. *Receuil des travaux chimiques des Pays-Bas et de la Belgique*. 1899; 18: 468-471.

Note: D.E.93/10/.

Bruyning, F. F./van Haarst, J.(1899)

Ritthausen concluded from his studies of proteins, that the seeds of *V. sativa* probably contain traces of amygdalin (ref. Ritthausen, J. f. *Prakt. Chemie XXIV*, p. 202). Schulze et al. (*Landw. Versuchtstationen* 34, 1891, p.298) cited this conclusion without verifying it by experiment.

We have established that the grains of the following species emit hydrocyanic acid (reaction used is described, needs translation) *Vicia sativa* (all analysed samples of different provenances), var. *dura*, var. *flore alba*, var. Bernayer, var. *Britannica*, *V. canadensis*, *V. hirsuta*, *V. angustifolia* (this latter species produces the largest amount of HCN). The following species did not give a positive reaction for HCN: *V. narbonensis*, *V. cracca*, *V. agrigentina* (D.E.: *argentina?*), *V. biennis*, *V. disperma*, *V. pannonica*, *V. cassubica*.

(also by the same authors: *J. Chem. Soc. abst.* 1900, p. 160 ref. Johanson, 1948).

58. Buhse, F. *Aufzählung der auf einer Reise durch Transkaukasien und Persien gesammelten Pflanzen in Gemeinschaft mit Dr. E. Boissier bearbeitet von Dr. F. Buhse in Riga. Nouveaux mémoires de la société impériale des naturalistes de mouscou*. 1860.

Note: D.E.93/10/.

(Buhse, 1860) *Aufzählung der auf einer Reise durch Transkaukasien und Persien gesammelten Pflanzen in Gemeinschaft mit Dr. E. Boissier bearbeitet von Dr. F. Buhse in Riga*

Vicia narbonensis L. *Ledeb. Fl. ross. I.* 665

Im *Ssamangebirge*, 2.6. 1848 (ob wild?).

59. Burger, E. C.; Knalman, M. Localization of rRNA gene sites and secondary constrictions in *Vicia narbonensis* and *Vicia sativa*. *Lokalisierung von rRNA Genorten und Sekundäreinschnürungen bei Vicia narbonensis und Vicia sativa*. *Plant Syst Evol.* Wien, Springer. 1979. v. 133 (1/2) p. 77-85. ill. 1979; ; ISSN: ISSN: 0378-2697.

Note: *Lokalisierung von rRNA-Genorten und Sekundäreinschnürungen bei Vicia narbonensis und Vicia sativa*. DNAL 450-OS7 19 ref. Article agricola84_79.

60. Burnat, E. *Flore des Alpes maritimes ou Catalogue Raisonné (y compris le Département Français de ce nom et une partie de la Ligurie occidentale)* Vol. II. Lyon: Georg + Cie; 1896.

Note: D.E.93/10/ incomplete/?? top of the next page illegible).

(Burnat, 1896) *Flore des Alpes maritimes ou Catalogue Raisonné (y compris le Département Français de ce nom et une partie de la Ligurie occidentale)* Vol. II

Vicia narbonensis.

Champs, moissons et lieux cultivés. Environs d'Oneglia! *(de Not. l.c. et herb.!; terrasses au-dessous de Bajardo!** (Cl. Bicknell leg., in herb. Burnat); environs de Menton*, rare (Ard.? ? top of the next page illegible)...

Agnes et la c////e d'Ouis(Cl. Bicknell in litt.); l'Escarène (Ard. Fl. alp. mar. l.c., avec un!); près de Drap!* (J. B. Barla in herb. Burnat); environs de Nice* (L. Marcilly cat. ms.), champs au Vinaigrier! (herb. Thuret), Antibes* (perroud in Ann. soc. bot. Lyon ann. 1883, p. 123) et golfo Jouan(Bull. soc. botan. fr. ann. 1883, p. CLXXVI); environs de Grasse!* (Lenormand, ann. 1883, in herb. Thuret).- Balbis, cité par Colla (Herb. pedem. II, 210), l'indique le *V. narbonensis* à Torre Banada près Cunco**, et Benedetti (Cat. ms.) dans les près de la Bombonina près Cuneo; mais ces auteurs n'ont pas nettement séparé cette espèce de la suivante.

Le *V. faba* est-il une forme cultivée du *V. narbonensis*? Voy à ce sujet.: A. de Candolle Orig. pl. cult. p. 253-257 et Arch. sc. phys. et nat.- Genève 15 Jan. 1887 p. 4-11, t. 10. a part qui montre dans le second travail que les deux espèces existant svlon les possibilités, avec leurs différences, depuis cinq aux six milles ans. les caractères distinctifs justifient l'opinion que les *V. faba* et *narbonensis* sont des espèces dans le sens linnéen.

V. serratifolia

Interesting discussion about species distinctions.

61. Buscalioni, A. I granuli d'amido incapsulati della *Vicia narbonensis* S.1.

Note: D.E.93/10/.

62. Butler, A. incomplete. Ph.D. thesis Institute of Archaeology, London; 1989B.

Note: D.E.93/10/ /DEPHD.

Butler table species in the *Vicieae* that have been cultivated

(ref. Aykroyd & Doughty, 1982; Davis, 1970; Duke, 1981; Ladizinsky, 198?; Summerfield & Roberts, 1985; Thulin, 1983; Townsend & Guest, 1974; Zhukovsky, 1924)

Vicia articulata
V. benghalensis
V. cracca
V. ervilia
V. faba
V. graminea
v. hirsuta
V. johannis
v. michauxii
V. narbonensis
V. pannonica
V. sativa ssp. nigra
V. sativa ssp. sativa
v. tenuifolia
V. unijuga
V. villosa

Lens culinaris

L. nigricans

lathyrus annuus

L. aphaca

L. cicera

L. clymenum

L. gorgoni

L. hirsutus

L. latifolius

L. ochrus

L. odoratus

L. pratensis

L. rotundifolius

L. sativus

L. sylvestris

L. tingitanus

L. tuberosus

Pisum sativum ssp. elatius

P. sativum ssp. sativum var. arvense

P. sativum ssp. sativum var. sativum.

63. Buyukburc, U.; Munzur, M.; Akman, R. Tek yıllık baklagil yem bitkileri + tahil karisimlarinin Samsun ili ekim nobeti icindeki yeri uzerinde arastirmalar [A research on determining the most productive annual forage legume + cereal mixtures in the crop rotation systems of Samsun province]. Genel Yayin Tarla Bitkileri Merkez Arastirma Enstitusu. 1989; 7: 76pp.

Note: D.E.93/10/ Tarla Bitkileri Merkez Arastirma Enstitusu, Ankara, Turkey/LA: Turkish/LS: English.

(Buyukburc, U.//Munzur, M.//Akman, R., 1989) In field trials in 1982-85 and 1982-83 + 1984-85 at 2 research stations, *Vicia sativa*, *V. pannonica*, *V. narbonensis* and *Pisum sativum* were grown in mixtures with barley or oats and compared with a mixture of *Trifolium resupinatum* + *Lolium multiflorum* subsp. *italicum*. The legumes and cereals/grass were sown in cross rows 17.5 and 35 cm apart, resp., and given 80 kg diammonium phosphate/ha. The plots were cut in early to mid-May. Legumes contributed 36.3-77.0% to the harvested DM. Av. total hay produced was 5.36-7.24, 7.65-8.93 and 8.06-1.06 t/ha after preceding crops of maize, wheat and tobacco, resp. Mixtures with *V. sativa* had the highest percentage of legume in the stand. Av. hay yields were significantly different between mixtures but there was no mixture which consistently gave higher yield after all 3 preceding crops.

64. Caballero, A. Flora Analitica de España. General Mola, 31. Madrid: Sociedad Anónima Española de Traductores y Autores; 1940.

Note: D.E.93/10/ /DEPHD.

(Caballero, 1940) Flora Analitica de España

Vicia narbonensis

Suelo húmedo fértil, fosas, region inferior

Alberjón, 'fabera' borda, haba loca

(habitat: damp and fertile soil, (river) banks, furrows, inlets)

translation notes;

Fabada: bean & bacon soup popular in Spain.

haba: broadbean

loca: crazy, excessive, enormous, extraordinary

.

65. Cadewall, J. Flora de Catalunya. Barcelona: Institut d'Estudios Catalans; Vol. II: p. 176-.

Note: D.E.93/10/.

(Cadewall, date?) Flora de Catalunya

V. narbonensis

geografia:

Boscós; terres de conreu del Vallès, r.; Turo de Montcada,=Camp de Tarragona(Wbb.); Cultivada (Salv.).-Maig-Juny.

66. Camara, A. de Sousa da. Existirio porventura cromosoma ramificados. [Do branched chromosomes exist?]. Rev. Agron. Lisboa. 1936; 24: 64-90.

Note: D.E.93/10/ getreprint/Silveira.

Amongst others, V. macrocarpa and V. narbonensis were studied. Lateral Satellite chromosomes are interpreted as indications of recent translocations, produced either by the processes of union and fragmentation, or fragmentation and union, or by the establishment of bridges of chromatin, according to the hypothesis presented in a previous article (Camara. A hypothesis on the mechanism of translocations. An. Inst. Sup. Agron., Lisboa 7 3023, 1936)

[Herb. Abs. Sept. 1936, p.283].

67. Camerarius, J. I. F. Hortus Medicus et Philosophicus. (bound with Camerarius J. the younger(1588) Icones accuratae nunc primae etc.) Frankfurt, a.M.: Kew: Pre Linn. Colln; 1588.

68. Camerarius, J. Kreutterbuch deß Hochgelehrten und weltberühmten Herrn D. Petri Andrae Mattilo...gemehret und verfertigt 1586, Nürnberg (printed 1626). ; 1586.

Note: D.E.93/10/ /DEPHD.

Camerarius, J. (1586)[Camerarius, Joachim (printed 1626): Kreutterbuch deß Hochgelehrten und weltberühmten Herrn D. Petri Andrae Mattilo...gemehret und verfertigt 1586, Nürnberg] and Tabernaemontanus(1588)[Tabernaemontanus, Jacob Theodor, 1588: Kräuter-Buch, zweimal neu bearbeitet und ergänzt durch Kaspar Bauhin 1664. Joh. Ludw.Königs,Offenbach,1731] Main

Kew: Camerarius, J. I. F.(1588) Hortus medicus et philosophicus

Pre Linn. Colln. A, bound with Camerarius J. the younger(1588) Icones accuratae nunc primae etc. Frankfurt, a.M.

p. 20 Arcaeus fuchsii, ut Gesnerus picturae inscripsit, vulgo Viciam Romanam vocant. Fabae sylvestri Matthioi et Piso nigro seu Phaseolo Dodonaei cognata planta

p. 59

Faba rubra, alba, maior & minor, ite sylvestris alijis Aracus. Ferula quam quatuor cubitorum vidi Monaci, unde habui, in horto illustrissimi principis. crescit etiam ad promontorium Misenu et in tota Apulia uberime, in qua propter defectum lignorem eam potiff ad insturendos focos usurpant. Martialis vocat ferulas tristes scepta paedagoguru. Namea manus discipulorum olim ceadebant magistri.

69. Capitaine, L. Les Graines des Legumineuses. Paris: Larose & Lechevalier; 1912.

Note: D.E.93/10/.

p.267 V. narbonensis resemblance to Nelumbo nucifera or Nelumbo spp.

.

70. Castleman, G. H. Lupins and other legumes seminar-February 1987.

Note: D.E.93/10/ Agronomist, Mallee Research Station.

71. Cesati, V.; Passerini, G.; Gibelli, G. Compendio della Flora Italiana Vol. II. Milano: F. Vollardi; 1886.

Note: D.E.93/10/.

(Cesati et al, 1886) Compendio della Flora Italiana Vol. II

V. narbonensis

Foglie contre paja al piu di fogioline larghe ovali, legumi sessili: fiori rossi(.). Nei campi e nei boschi nella Penisola e nelle isole. Aprile, Maggio.

72. Chassagne, M. Flore D'Auvergne. Inventaire Analytique de la Flore D'Auvergne et contrées limitrophes des départements voisins. Paris: Editions P. Lechavelier; 1957; II(149). (Encyclopédie Biogéographique et Ecologique XII.).

Note: D.E.93/10/ MPU/DEPHD.

(Chassagne, 1957) Inventaire Analytique de la Flore D'Auvergne et contrées limitrophes des départements voisins

V. narbonensis Mediterranean species of tyrrhenian origin. ancestral type, xero-heliophile, morphologie steppique, frequent dans la région pontique, couvre toute la zone méditerranéenne. Known at Puy-de-Dôme from the time of Delarbre in the 18th century, its locations have assessed since then at numerous occasions. In Limagne and behind Lecoq and Lamotte this vetch seems to have established itself on abandoned hillsides

V.n.var.hortensis Race d'originée cultivée; mutation très ancienne et fixée. Puy-de-Dôme: Introduced after 1920 with forage grain of southern origin (probably pontic) during a time after the war when the quality and cleaning of grain were neglected. First recorded on the Puy-de-Mur by Mezel 1925(!) in an important colony, homogeneous, looked as if cultivated and some stalks disseminated here and there.

It is clearly on the way to naturalization, rarely cultivated and in mixture with other forage seeds (vesce bâtarde) it is disseminated upon the spot by the pigeons which are partial to it. A distinct transition type, whether reversion to ancestral type has been noted as the var. heterophylla Rchb. Ry. since the two varieties came together in Limagne.

V. narbonensis

Espèce méditerranéenne d'origine tyrrhénienne-Th.-2n=14
Sous esp. V. serratifolia Jacq. Fl. Austr. 1778.

Type ancestral, xéro-héliophile, morphologie steppique; fréquente dans la région pontique, couvre toute la zone méditerranéenne.

Puy-de-Dôme: Connue à l'époque de Delarbre XVIII^e siècle; ses stations étaient déjà assez nombreuses en Limagne et depuis Lecoq et Lamotte cette vesce semble définitivement fixée sur les abondances des coteaux; elle reste dans la Limagne dont elle s'éloigne peu. A l'W. elle s'étend dans la Comté jusqu'au Grand Reymond près Saint Bahel(Coudert). A l'E est RR. et fugace Rocard près Lezoux 1928(!), plus répandue entre Moissat et Billom(!). Aveyron: Livinhac sur les bords du Lot (Saltel), en augmentation dans tout le département.-Allier et Loire: RR. et fugace.

Sous esp. *V. integrifolia* Ser.; *V. narbonensis* var. *hortensis* Gouan 1773; D.C.; *V. narbonensis* Willd.-Race d'origine cultivée; mutation très ancienne et fixée; comme *Trifolium hybridum*(*fistulosum*) et *V. sativa* (*notata*)

Puy-de-Dôme: Introduite après 1920 avec des graines fourragères d'origine méridionale(pontique probable) à une époque d'après guerre où la qualité et le triage étaient très négligés. Constaté pour la première fois sur le puy de Mur près Mezel 1925(!) en une colonie importante, homogène, paraissant cultivée et quelques pieds disséminés çà et là, puy de Pileyre près Vertaizon en individus isolés 1925, 1936(!), Chignat 1927(!), Courcourt près Seychalles, un seul pied, au S.W. 1928(!), vignes abondants à la base du puy Long sur pentes S. 1929(!), pentes N. de Mirabelle près Riom 1930(!), Turluron(id.), puy d'Anzelle et de Chanturgues((1935), a'Alleiz.), pont de Dallet 1937(!). Est en voie de naturalisation évidente, très rarement cultivé et en mélange avec d'autres semences fourragères(vesce bâtarde), elle est disséminée sur place par les pigeons qui en sont très friands. Depuis la réunion en Limagne de ces deux *Vicia*, on trouve entre elles des passages nets: ce ne sont pas des hybrides mais plutôt des retours ancestraux de la race cultivée au type sauvage, ils sont compris dans la var. *heterophylla* Rechb. Ry.

73. Christiansen-Weniger, D. F. Ackerbauformen im Mittelmeerraum und Nahen Osten dargestellt am Beispiel der Türkei. Frankfurt: D.L.G. Verlag; 1970: p.337.

Note: D.E.93/10/Stuttgart, Hohenheim, Agricultural School library/DEPHD.

(Christiansen-Weniger, 1970) Tarman developed three winterhardy legumes from wild types which are hardy enough to be used for autumn sowing in the Central Anatolian high plateau, they develop enough to survive the winter and give a good yield in the following spring/summer. A variety of *V. villosa* from Sivas, *Pisum arvense* from the region of Ankara and *éorum*, and *V. narbonensis* a local strain of the mid-level highlands (Tunceli).

D.E.:When in Ankara, the variety L-1541 (var. *aegyptiaca*) was presented to me by Dr.Mehmet

Munzur, Ankara Institute. According to him this line had been collected by âmer Tarman from the wild near Tunceli, Eastern Turkey.

Local villagers from Göktepe village, south of Tunceli town were able to produce a sample of *V.faba/V.narbonensis* var.*aegyptiaca*; some coumarin containing seed(fenugreek, sweet clover?) was part of the sample; it had been grown under irrigation some 20-30 years ago, the original seed had come from the bazar in Elazig(twiggle on the g).

74. Christiansen-Weniger, F.; Horn, V.; Jung, C. Bodenschutz -u. ackerbauliche Massnahmen zur Erhaltung gefährdeter türkischer Böden sowie zur Steigerung des Futterpflanzenbaus und der Tierproduktion. Giessen; 1978.

Note: D.E.93/10/DEPHD.

(Christiansen-Weniger, F./Horn, V./Jung, C, 1978) pp 137-149

Horn, Evliya, Ozbek and â. Tarman conducted cultivation experiments with *V. narbonensis*, *V. ervilia*, *V. sativa* etc.

S. Bulgurlu and â. Sari tested the composition of the three vetches in Izmir.

Horn, V., Kadaslir, I. & Kansu, S. tested the digestibility in sheep of the green forage, hay, silage, seed and straw of *V. sativa* and *V. ervilia*.

75. Chrtkova-Zertova, A. *Papilionaceae* 1 - *Vicia* and *Faba*. In: Rechinger, K. H., Ed. Flora Iranica. Graz, Austria: Akademische Druck- u. Verlagsanstalt; 1979; Vol.140: 16-57.

Note: D.E.93/10/ A. Chrtkova-Zerova, Praha /DEPHD.

Chrtkova-Zertova, A. (1979) Flora Iranica [pp 55-56] 51. *V. narbonensis* L., Spec. Plant. 737 (1753). Icon.: Tabl. 36, fig. 1.

Planta glabra. Caulis crassus, erectus, glaber. Stipulae magnae, 10-18 mm longae, dentatae, glabrae. Foliorum rhachis cuspidata vel cirrho simplice vel ramoso terminata; foliola (1-)2-3(-4)-juga, 18-40 mm longa, 15-30 mm lata, crassa, ovata, integra vel dentata (vide varietates), mucronata, glabra, margine ciliata, nervis secundariis 8-10-jugis. Pedunculus brevis, 3-4 mm longus, subglaber. Inflorescentia 1-2(-3)-flora. Flores 16-20(-22) mm longi, sordide purpurei vel violacei. Calyx 89(-12) mm longus, tubulosus, subglaber; dentes margine ciliati, inaequilongi, superiores quam inferiores breviores, quam tubus breviores, lanceolati. Corolla glabra; vexillum quam alae longius, lamina unguem +/-aequans, carina brevior. Legumen 40-55 mm longum, 9-13 mm latum, oblongum, gynopodio 1-2 mm longo, pallide brunneum vel brunnescenti-griseum usque brunneum, glabrum vel juvenile subglabrum, secus suturas albo-pilosum et tuberculatum. semina (2-)4-6, globularia usque sphaeroidea, 6-7 mm diametro, opaca, brunnea, hilum anguste ovatum, 1/9-1/10 perimetri occupans; spermotylum tubercula lucida.

Distr. gen. speciei: Europa, Africa borealis, Asia austro-occidentalis. Saepe culta (Chrtkova-Zertova,1979)

--var. *narbonensis*

Typus: Gallia, Hortus Cliffortianus, BM!

Foliola integra

Iraq: Kurd.: Arbil: Ad radices M. Baradost inter Shanidar et cavernam, 800 m, Erdtmann & Goedemans in Rech. 15652! 10-20 km SSW Shanidar, 700 m, Erdtmann & Goedemans in Rech. 15604! Kirkuk: Jarmo, Helbaek 625! Mosul: Nineveh, Hadac 1471! Sirsang, 1300 m, Anders 2355! Sul.: Sarchinar, 800 m, Hadac 1184! In planitie Sulaymaniyah, Thesiger 352!

Persia: N: Gorg.: E Gorgan, Hübl! Mohammad Reza Shah Res.: Tang-e Rah, 400-580 m, Rech. 52487!, Terme & Matine 34825-E! Tang-e Gol, 900-1000 m, Uotila 14906! Maz.: 50 km E Babol, Hübl! Gilan: In collibus 10-20 km W Astara ad viam versus Heyran, 500 m, Rech. 39898!- W: Azerb.: Rezaiyeh, Szov. 78! Kurd.: Dezh Shahpur (Marivan), 1350 m, Jacobs 6499! Kermanshah: 32 km W Kermanshah versus Karand, 1350 m, Furse 1932! 10 km NE Kermanshah, 1350 m, Bent & Wr. 518-107! Faraman, 22 km E Kermanshah, Watson in Bent & Wr. 419-603! 58 km SW Kermanshah versus Qasr Shirin, Seraj! 32 km W Shahabad, 1620 m, Pabot s.n.! Ham.: 8 km SW Hamadan, 2100 m, Pabot 1398! Lur.: Dow Rud, Koelz 15493!, 17284! Kharon, Koeie 1593!- S: Fars: Shiraz, Koelz 14759-a!, 14756!- C: Tehr.: Tehran, Kotschy.

Turcomania: In agris prope Bagyr, Litw. 1200!

Afghanistan: NE: Badaksh.: Ishkamish, 1100 m, Podlech 10670! 15 km E Taloqan, 1400 m, Podlech 10363!

Pakistan: Swat: Kanjoo, Rahman 25903

Distr. gen. varietatis: In tota area speciei.

--var. serratifolia (Jacq.) Ser. in DC., Prodr. 2: 365 (1825).

Syn.: *V. serratifolia* Jacq., Fl. austr. 5: 30, tab. 8 (1778). Typus varietatis: 'Circa Sopronium Hungariae urbem ad limites Austriae'

Foliola dentata.

Iraq: Kurd.: Arbil: Arbil, Hadac & al. 3784! Kirkuk: 6 km S Kirkuk, Hadac & al. 3792!

Distr. gen. varietatis: In area speciei passim.

76. Cidraes, A. G. As Vicias e os Lathyrus na practica da sideraçõ. (*Vicia* and *Lathyrus* species as green manure plants). Rev. Agron. Lisboa. 1945; 33: 12-.

Note: D.E.93/10/reprint.

Although, under the conditions of the trials at Elvas, *Lathyrus cicera* gave greater bulk (30,000kg/ha) than *Vicia narbonensis* (20.000 kg/ha), the latter species, autumn-sown, is considered better for use because its more rapid growth enables it to be incorporated in the soil in time for the spring sowing to follow. *Lathyrus cicera* should be used, however, for light lands incapable of producing spring cultures or wherever the late ploughing under of the green manure is immaterial. Some other species of *Vicia* and *Lathyrus* were eliminated from the trials as being insufficiently productive.(D.E.: Was the unproductive material infested with viruses?)[Herb. Abs. Oct. 1948 No.1093 pp- 239-240.

77. Clémont-Mullet, I. J. Le livre de l'agriculture D'Ibn-Al-Awam (Kitab Al-Felahah). Transl. from Arabic. Paris: Lib. A. Franck; 1866; II (1)(Chap. XXI): 87 (held at Rothamstedt library).

Note: D.E.93/10/ Vol. 1 1864/Vol. 2 1867/Rothamstedt/DEPHD.

Al Awam (ca 1150 a.D.)

The Nabathean book of Agriculture (ca. 4th century A.D., Iraq) cited by the 12th century Andalusian agriculturalist Ibn Al-Awam described a plant resembling faba beans with black odoriferous seeds. Ibn Al-Awam advised that this weed should be removed from the bean fields and used as a manure.

Ibn Al Awam(Chap XXI)

Article 1

Culture of the broad bean(féve)

Al-foul [arabic symbols], the bean, that is the baqali,[arabic symbols] One can report many species, but the best is the bean of badjani, which is black and thickened, followed by the bean of Egypt which is red and fat; after, there is the bean of Syria which is white and fat. According to Ibn-el-Façel, the bean is pleased by heavy, clayey soils of good nature and manure. It is also said that she likes moist soils and open, sunny positions, uncultivated and manured places, but one should not sow into dry soils [mais il ne faut point la semer dans un terrain sec]

According to the Book of Nabathean Agriculture the bean al- baqaly is a winter plant which can be cultivated throughout winter, up until the end of that season. The majority of soil types are suitable, exceptions are hot areas(terres), of acrid or bitter flavour, or wet and stinking which are bad for it.

Enoch said: sowing times etc. ...Il faut, dit-il, sarcler constamment les cultures de fèves; il arrive qu'il se montre parmi elles une sorte de plante qui lui ressemble, si ce n'est que la cosse de celle-ci est plus mince que celle de la féve et qu'il se trouve dans l'intérieur quelque chose de sec et de noir, qui est impur et de mauvaise odeur. Si on recueille une certaine quantité de cette plante(parasite), qu'on la fasse pourrir avec crottin d'âne, des pailles de fèves, et qu'on use de cet engrais pour le semis de fèves.

One has to, he says, constantly weed the cultures of beans; there arrives when she rises amongst others a type of plant which resembles her.

However this one's pod is more slender than that of the bean and it can be found in the interior somewhere dry and black,

(and inside can be found something dry and black)which is impure and of bad odor.

A method for the detoxification of *V. sativa alba* by leaching is described.

78. Clos, D. Les *Vicia narbonensis* L. et *serratifolia* Jacq. espèces autonomes. Bull. Soc. Bot. France. 1898; 45(3. sér. 5): 380-385.
Note: D.E.93/10/ /DEPHD.

79. Clutinho, A. x. Peireira. Flora de Portugal 2nd edn. ; 1939.
Note: D.E.93/10/.
(Clutinho, 1939) Flora de Portugal p. 431
Vicia narbonensis
(.) Maio-Jun.
Sementes comprimido-globosa, escura
-Trçs-os Montes, Estremadura (var. genuina)
-Beira lit., Estremadura (var. *serratifolia*).

80. Colla, A. Herbarium Pedemontanum Vo. II. : Agustae Taurinorum, ex typis regiis; 1834.
Note: D.E.93/10/.
(Colla, 1834) Herbarium Pedemontanum
V. narbonensis p. 210
(Eur. austr.: Asia med: Pedem in pratulo ante oppidum Exilles posito prope praecipitem aquam; in Comit Nicaensi et dumetis Liguria ALL: n. 1207. In pratis prope Exilles REfl: segus: p. 60. In summa valle Patonera alibique in collibus sed rara REfl. tor. II p. 17.
In agro Cuneensi secus fossam ante la tour de Bonada copiosam observavit.
Balbis: addit: Sardin: in collibus ad sepes Moris st: sard: I. p. 17.)
Ann: Habitus proprius, sed folia constater cirrhosa, flores 2-4. Vera *V. narbonensis* foliola gerit integerrima, nec mihi unquam occurit in Pedemontio, utique in agro Nicoensi; planta pedemontana potius pertinet ad sequentem. Cons. RE I.c. *V. serratifolia* etc.

81. Colmeiro, D. M. Enumeracion y Revision de las Plantas de la Peninsula Hispano-Lusitania é Islas Baleares Vol. 2 p. 261-262. Madrid: Imprenta de la Viuda é Hija de Fuentenebro, Bordadores, 10; 1886.
Note: D.E.93/10/ /DEPHD.
Colmeiro(1886) Enumeracion y Revision de las Plantas de la Peninsula Hispano-Lusitania é Islas Baleares Vol. 2 p. 261-262
Vicia narbonensis L. Riv. t. 57. Faba sylvestris Matthioli Cienf. Faba graeca sylvestris 1 et 2, lusitanica Grisl. *Vicia* IX Quer.
Hab. España (Cienf. Ouer) en Cataluña en el campo de Tarragona (Webb) y otras partes (Colm.), Asturias (L.P. Ming.), Costilla la Vieja en Lograño (Zubia), Castilla la Nueva en los contornos de Madrid (Lag. Colm.), pradera del Manzanares (Cut. Amo), orillas del Manzanares cerca de Madrid (Lge.), Valencia (G. Ort. Duf.), Andaluc̄Ea cerca de Ronda en el Tajo (Boiss.), Jaén (Lge.), Cazalla (Herb. ant.), Portugal(Grisl.), en Tras-Os-Montes y cultivada en la Beira boreal (Brot.), Cintra y Extremadura (Welw.), Baleares en Menorca?(Casall.)
Fl. May-Jun (V. V.)
Nombr. vulg.

Cast.:
Haba silvestre (Cienf.)
Haba loca (Ouer, Palau)
habillas de pçjaro (F. Nav.)
Astur. :Fabaraca (L. P. Ming.)
Catal. :Moreus (Costa), Fabera borda (?)
Balear.: Favera en bañetas (Trias).

82. Columella, Lucius Iunius Moderata. De Re Rustica. Richter, W.; Heine, R., Ed.; author of name & subject index, respectively. Lucius Iunius Moderata Columella. Zwölf Bücher u¼ber Landwirtschaft . Buch eines Unbekannten über baumz¼chtung. (lateinisch-deutsch). ?: Artemis Verlag.

Note: D.E.93/10/ Book 2 Chap 10/incomplete/get english edition, hold placed on Waite Copy 18.6.93, E.D. Carter has had the work on permanent loan for decades, depriving generations of agricultural students from exposure to it.

Columella, Lucius Junius Moderatus
On agriculture: with a recension of the text and an English translation by Harrison Boyd Ash.
Cambridge, Mass London; Harvard University press W. Heinemann, ltd,
1954-60
3 v.
Loeb classical library,
Latin and English on opposite pages
`First printed in 1941.`
Bibliography: v. 1, p. xxvii-xxx
Waite Main Coll Books 631 C72
Agriculture/Early works to 1800.
Chapter 10
About soil types for the individual grain legumes

Lupins are discussed first, because they require the least work, are the cheapest and are of all sown crops the best for the soil, because they are an excellent manure for impoverished vineyards and fields, and grows even on exhausted soils, keeps well in storage. They are a good winter feed for livestock if cooked or soaked, and also serve as human food. ````

After talking about food legumes ...[cicer aut cicercula, quae piso est similis(Chickpeas, faltpeas, lathyrus)

plants cultivated only for forage are Lucerne, vetch (*Vicia*), etc., fenugreek, and also *V. ervilia* (*ervum*)

For vetch there are two sowing times, the first for green fodder production is around the autumn equinox, sowing 7 modia/ iugerum, the second for which 6 modia/iugerum are used is in January and is for seed production. Both sowings can be carried out on unploughed ground, the plant is, however sensitive to dew during sowing time, and is therefore sown during the second or third hour of the day

Columella, Lucius Iunius Moderata (*Vicia ervilia*, not to be sown in March, according to farmer's opinion, because then the feed is toxic to cattle which go mad feeding on it.

Bitter vetch loves lean and dry soils, because it usually perishes in fat (luxuria) soils. One can sow it in autumn, but equally well also after the winter solstice at the end of January, or during February; but sowing has to be done

before the 1. of March, because the farmers believe, that this whole month is unsuitable for sowing of this grain, the reason being that all that is sown then is damaging to animals, especially to cattle, which are rendered hot-headed from it. *Ervum autem laetatur loco macro nec umido, quia luxuria plerumque corumpitur, potest atumno seri minus post brumam Ianuarii parte novissima vel toto Februario, dum ante Kalendas Martias, quem mensem universum negant agricolae huic legumini convenire, quod eo tempore satum pecori sit noxium et praecipue bubus, quos pabulo suo cerebrosos reddat.*[10: 34]

(D.E.: this may be related the *V. villosa* toxicity problem with cattle, because if sown too late, the plants may be at the peak of canavanine production, and cattle could easily be poisoned by the plants, whereas earlier sowing would lead to complete ripening of the crop and storage of canavanine in the seed, leaving

In the Spanish province of Baetica

Lathyrus [sativus?](*Cicera*) is fed cracked to cattle in place of *V. ervilia* (*Ervum*). After it has been reduced in particle size in an elevated mill, it is moistened with some water until it begins to get soft, and is then fed to the animals in this form, together with some regrown straw (paleis succretis). The flatpea is also a not unuseless nor unpalatable food. Its flavour is not much different to the chickpea (*cicerula*), and differs only in its colour, which is not as fresh and tends towards black. It is sown after one or two ploughings in March, depending on soil type etc. sowing rates [10:35]

Dreimonatsbohne (trimestris Faba), also talks about threshing of broad beans. Throwing the seeds with a shovel over the threshing floor

D.E. selection of equally sized weeds would be favoured?

Chapter 13

Saserna's opinion is that fields are fertilised by lupins, beans, vetch, bitter vetch, lentil, *cicerula* (*Lathyrus*?) and peas. With respect to lupins and also vetch, I have no doubt about the correctness of the statement, provided that they are cut fresh and ploughed in immediately to bury everything which was left by the sichel completely, and that it is ripened up before it dries up; then it really serves as fertiliser. 13.

83. Corleto, A.; Maisto, C. Trials on comparison of species and types of vetch for seed production [Italian]. *Annali Fac. Agr. Univ. Bari*. 1968; 22(3): 97-111.

Note: D.E.93/10/ /DEPHD.

In trials in 1964-6 near Foggia, seed production from 36 cv. of *Vicia sativa*, and from *V. narbonensis* and *V. villosa* was studied. *V. narbonensis* gave the highest annual seed yield, 2080 kg/ha (2 year- average). of the *V. sativa* cv. the highest seed yields were given by cv. Algerina (Italian provenance) and M/6900 (from Greece), both 1440 kg/ha. *V. villosa* yielded 920 kg/ha. [H. A. 41(3) Sept. 1971 No.1861, p. 277].

84. Cosson, E.; Germain, E. *Flore descriptive et analytique des Environs de Paris* Vol. 1. Paris: Fortin, Masson et Cie; 1845.

Note: D.E.93/10/.

(Cosson & Germain, 1845) *Flore descriptive et analytique des Environs de Paris* Vol. 1

V. serratifolia

(1) ou (2). Mai -Juin

P.R.- Lisière des bois et voisinage des habitations.- Bois Yon près Dreux! (Daenon)

s.v. -integrifolia.

85. Coste, L. H. *Flores descriptive et illustrée de la France*. ; 1937.

Note: D.E.93/10/.

Coste, 1937 *Flores descriptive et illustrée de la France*

V. narbonensis

-bois et broussailles, dans le Midi, l'Ouest et le center, jusqu'au Cher; Corse-.

86. Cselkó, S. von. *Wilde Wicken und Roggenschrot als Mastfutter für Ochsen*. *Wiener Landwirtschaftl. Ztg*. 1888 Apr 1; 1: 3.

Note: D.E.93/10/ Prof. stevan v. Cselkó, Ung. Altenburg.

An der chemischen Versuchstation Ung. Altenburg wurden wilde Wicken und einige Futterwicken (*Vicia sativa*, *V. narbonensis*) analysiert. -> *V. narbonensis* regarded as a cultivated plant.

87. Cubero, J. I. Interspecific hybridization in *Vicia*. in: G. Hawtin, G.; Webb, C., eds. *Faba bean improvement*. *Proceedings of the Faba Bean conference held in Cairo, Egypt, March 7-11, 1981*. The Hague, Netherlands: Martinus Nijhoff; 1982.

Note: D.E.93/10/.

88. Danckwortt, P. W. *Die Giftigkeit und die Fluorescenz von Wickensamen*. *Zeitschr. f. Untersuchung der Lebensmittel*. 1935; 69(5): 458-463.

Note: D.E.93/10/ review/translation from German (D.E. 1990).

(Danckwortt, 1935)

The stimulus for the present work was given by the intoxication of pigeons through vetch seeds, and by intoxication of pigs feeding on pea flour which was contaminated with vetch seeds. Because the powdered feed mixtures showed various luminescent colours under the fluorescence-microscope, the various *Vicia* spp. were not only assessed for their toxicity, but it was also examined whether the toxic *Vicia* spp. had a specific luminescence.

Some vetch seeds, especially of the common vetch (*V. sativa*) have long known to be containing prussic-acid glycosides. G. Bertrand (*Compt. rend. Paris* 1906, 143, 832) investigated vicianin more closely, while L. A. P. Anderson, A. Howard and J.L.Simonsen found two glycosides; vicianin which is similar to amygdalin and vicin, which upon hydrolysis gives d- glykose (Glucose?) and divicine (*Nature* 1925, 116, 260). The latter is regarded as the causal factor of Lathyrism in animals. Despite this, vetches have

been used again and again as stockfeed and for human consumption. During the war (WW I) in Berlin, 'bitter lentils', a type of common vetch, were sold, which after some time, because of their unpalatability were confiscated by the police. In the area along the river Rhine, the bitter vetch (*V. ervilia*), already known to the Romans, is still grown there today and is used for stockfeed. Dioskorides stressed that the seeds of this plant were unsuitable for humans. The literature of recent times describes the following vetches as toxic.

- V. sativa*(Fröhner, 1919; Bertrand <1907))
- V. villosa*(Fröhner, 1919; Hobmaier, 1926)
- V. cracca*(Fröhner, 1919)
- V. angustifolia* (Bertrand <1907; Kling, 1928)
- V. macrocarpa*(Bertrand <1907)
- V. narbonensis*(Bertrand <1907)
- V. hirsuta*(Bruyning & van Harst, 1899)
- V. canadensis*(Bruyning & van Harst, 1899)
- V. sepium*(Kling, 1928)

[D.E.: ref. given Berl. tierärztl. Wochenschrift 1907, 31, 597. where it is stated that Bertrand & Rivkind have demonstrated Berlin-Blue reactions in *V. angustifolia*, *Vicia macrocarpa* and *V. narbonensis* etc. Dr. G. which demonstrates that some species of vetch can be toxic[D.E. Bruyning and van Haarst found *V. narbonensis* to be negative for HCN]

O. Griebel expresses himself cautiously: ' *Vicia angustifolia* and other species contain a prussic acid yielding glycoside to which attention should be given in the analysis of stockfeeds'.

This caution seems to be appropriate, for in *V. hirsuta* no such cyanogenic glycoside could be found, although H. Harms pointed out that for human consumption the seeds should first be soaked in Sodium-hydroxide solution(Natron), then be cooked and the broth be removed several times (Verh. d. Botan. Ver. f. d. Prov. Brandenburg 1917, 59, 139)

[D.E.: Verhandlungen des Botanischen Vereins für die Provinz Brandenburg?]

Also after the consumption of *V. ervilia*, without finding a poison chemically, poisonings of humans and animals have apparently taken place. In agricultural books the advice is given that only 'healthy fruits' are allowed to be fed. Therefore, the possibility is given that through fungal infection or under certain cultural conditions, toxic compounds are produced. So, it would make sense that the same type of seed is at one time harmless and under different circumstances toxic.

HCN tests were positive for *V. sativa* samples 1. Hamburg & Breslau 2. Halle, summervetches 1 & 2, 3. Halle, Russian vetches; *V. angustifolia*. No HCN *V. ervilia*, *V. tetrasperma*, *V. pannonica*, *V. hirsuta*, *V. cracca*, *V. dumetorum*, *V. faba*, *V. villosa* (3 samples, amongst them Zottelwicken, Halle).

The paper goes on about the fluorescence of the various vetch flours, and this may be a useful

technique for the detection of different components in mixtures.

One odd observation by D. is that all three samples of *V. villosa* studied revealed a glowing violet fluorescence of the stems, and over the surface of the stems intensively fire-red fluorescent spots were found which to some extent were hanging strip like together [D.E. Is this microbiology of the phyllosphere?].

89. Dattilo, M. The productivity of autumn-spring cultivation of eight vetch species. *Annal. Ist. Sper. Zootec. Roma*. 1967; 11: 253-68.

Note: D.E.93/10/ getreprint/Perrino.

V. villosa (seed obtained from Algeria) gave the best results of introduced vetch species when grown without irrigation. Of the local vetches *V. narbonensis* gave the most seed. *V. villosa* was also productive (from *Biol. Abstr.* 50: 133797].

90. Davidson, J.; Fischer, R. A. Biological studies of *Aphis rumicus*(L.). Reproduction on varieties of *V. faba*. *Ann. Appl. Biol.* 1922; 9: 135-145.

Note: D.E.93/10/reprint.

Aphid resistance of *V. narbonensis*(ref. Birch).

91. Davies, R. L. (Department of Agriculture, South Australia, Pig Research Unit, Northfield). Notes on an experimental grain legume evaluation for pigs. ; 1987 Sep 16.

Note: D.E.93/10/ /DEPHD.

92. Davies, R. L. Preliminary evaluation of narbon beans (*Vicia narbonensis*) for pigs. In: Georg, D. Grain legumes for low rainfall areas. Final Report. Adelaide: South Australian Department of Agriculture; 1987.

Note: D.E.93/10/ /DEPHD.

93. De Candolle, A. P. in: Lamarck, J. B. A. P. M. de; De Candolle, A. P. *Flore française*, 5 (or 6). Paris: Desray; 1815; supplement: p.581.

Note: D.E.93/10/.

(De Candolle, 1815) *Flore française*, supplement 4026

vesce de narbonne

La *Vicia serratifolia* de Jacquin, que j'avais réunie è cette espèce, comme une simple variété, forme une espèce bien prononcée par ses folioles dentées en scie, et qui se conserve par la culture: elle croit è la vallée de Ptonera et è Cabureto près Turin (Balb.); mais je ne crois pas qu'elle ait été trouvée dans la France.

94. Delre, V.; Pace, de C.; Maggini, F.; Mancini, R. Evidence on the rRNA spacer length polymorphism in *Vicia faba* and related species(abstract). *Genetica Agraria*. 1988; 42(1): 71-72.

Note: D.E.93/10/ Istituto di Biol. Agraria, Univ. della Tuscia, Viterbo, Italy.

At least 17 different rRNA genes differing in the number of subrepeats within the non-transcribed spacer (NTS) were observed in *V. faba*; those of 9320 and 10 595 bp were most

common in var. major, while in var. minor cultivars Polycarpe and Bianca di Torre Lama the frequency distribution was normal around the 10 914 bp gene. There were at least 2 categories of rRNA genes differing in the internal transcribed (ITS) spacer or in the position of the EcoRI site in the 18S region. This was also true for var. paucijuga. However, in *V. narbonensis*, *V. galilaea*, *V. hyaeniscyamus* and *V. bithynica* there were at least 3, 2, 5 and 2 categories, respectively, and the NTS was shorter than in *V. faba*.

95. Desfontaines, R. *Catalogus Plantarum Hortis regii Parisiensis* 3rd edn. Paris: J. S. Chaudé; 1829.

Note: D.E.93/10/.

(Desfontaines, 1829) *Catalogus Plantarum Hortis regii Parisiensis* 3rd edn. p. 324

V. narbonensis L. Rvin. Irreg. Tetrap. t. 58. gall. m.(.)
-serratifolia Jacq. Austr. App. t.8 . Austr. (.)

96. Desfontaines, R. *Tableau de l'école de botanique du muséum d'histoire naturelle*. Paris: J. A. Brosson; 1804.

Note: D.E.93/10/.

(Desfontaines, 1804) *Tableau de l'école de botanique du muséum d'histoire naturelle*
p. 196 *V. narbonensis* listed.

97. Desfontaines, Renato. *Flora Atlantica sive Historia plantarum, quae in atlante, Agro Tunetano et Algeriensi crescunt*. Paris: C. Panchoucke; 1800.

Note: D.E.93/10/.

(Desfontaines, 1800) *Flora Atlantica sive Historia plantarum, quae in atlante, Agro Tunetano et Algeriensi crescunt*

V. narbonensis
legumen 5 cm longum, compressum, villosum, acutum, polyspermum
hab. Algeriâ inter segetes.

98. Deslongchamps, A. L. (Loiseleur). *Flora Gallica Lutetiae* (Paris): M. Mignoret; 1807.

Note: D.E.93/10/.

(Deslongchamps, 1807) *Flora Gallica*

Vicia narbonensis

Habitat in agris et dumetis Pedemontii, Liguriae, Provinciae, Occitaniae, Averniae, circa Drocum.

99. Dmitrieva, A. A. Phenology of the wild flora of the Batum botanical garden. *Bot. Z.* 1948; 33: 63-79.

Note: D.E.93/10/ getreprint/kew.

origin: mediterranean:*V. narbonensis*: vegetation starts: 28.3; flowering starts 15.4., ends 27.6; fruiting starts 12.5[herbage abs aug-oct 1949, No. 1158 pp 248-249.

100. Dodoens, R. A new herball or historie of plants. transl. by Henrie Lyte. London, 1595: Edm. Bollifort (held at Rothamstedt library); 1583.

Note: D.E.93/10/ available at Rothamstedt /DEPHD.

(Dodoens,1595)'The fruit is all round and blacke and no bigger than a good Pease, of a strong unpleasent favour, and when it is chewed it filleth the mouth full of stinking matter'

'The wilde to be found amongst the herboristes; and groweth of this own kinde in Languedoc' The wilde beane serveth to no use, neither for meat nor medicine, that I know.

101. Donn, G. Cell division and callus regeneration from leaf protoplasts of *Vicia narbonensis* [Narbonne vetch]. *Z Pflanzenphysiol*, 1978, 86 (1): 65-75. Ref. 1978;

Note: DNAL 450-Z32 Article /agricola78_70.

102. Dragendorff, G. *Die Heilpflanzen der verschiedenen Völker und Zeiten. (Ihre Anwendung, wesentlichen Bestandtheile und Geschichte. Ein Handbuch für Ärzte, Apotheker, Botaniker und Droguisten)*. Stuttgart: Ferdinand Enke; 1898.

Note: D.E.93/10/ /DEPHD.

Dragendorff (1898) p. 330 *V. narbonensis* -Southern europe
Pisum maurisci of Charlemagne

V. faba

Stems and flowers are diuretic

For mythological importance see *Gubernatis, Mythol. des Plantes*.

V. sativa

Seed used internally for smallpox and measles, exteriorly as a cataplasm, also used as food(the flour of the var. alba was used for a while for dietetic purposes as *Revalenta Arabica*.

103. Droushiotis, D. pers. comm./Ann. Report, Dep. Ag. Nicosia. 1991.

Note: D.E.93/10/ mod.

Vicia narbonensis dry matter and grain yields of the best accession was 4.5t/ha and 2.8t/ha respectively, while *V. sativa* yielded 3.7. and 1.7 t/ha, respectively. Crude protein content of narbon vetch grain : 26.5%, and digestibility : 79.8%, while the values for *V. sativa* were 30.7% (CP) and 76.4% digestibility

Droushiotis,D.N (1990) Annual Report 1989. Agricultural Research Institute, Ministry of Agriculture and Natural Resources, Nicosia, p13

21 lines of ICARDA s *V.narbonensis* lines were tested under Cyprus conditions . Dry matter yield ranged from 6.1-7.9t/ ha(local *V.sativa* 5.4t/ha). Narbon vetch appears very promising under Cyprus conditions and evaluation will continue.

104. Duby, J. E. *Botanicum Gallicum*. Paris: L' Impremierie de Crapelet; 1828.

Note: D.E.93/10/.

(Duby, 1828) *Botanicum Gallicum*

V. narbonensis

seminus subglobosis

(I) in Cebennis, agro Ruscinonensis, Narbonensi, Monspeliensi, Niceensi, circa Dax ex Thore, In Avernia ex Delarbre.

105. Durutan, N.; Meyveci, K.; Kraca, M.; Avci, M. Annual cropping under dryland conditions in Turkey: A case study. In: Osman, A. E.; Ibrahim, M. H.; Jones, M. A., Eds. The role of legumes in farming systems of the Mediterranean areas. : ICARDA; 1990: 239-255.

Note: D.E.93/10/ /DEPHD.

Durutan et al;(1990) reviewed Kalayci's work(1). Winter-planted *V.narbonensis* (Giant vetch), cut as green forage in spring was the most promising crop among the legumes tested in rotation with wheat. Fallow-wheat-*V.narbonensis*-wheat was found to be the best 4 -year rotation.

Above 400mm/annual rainfall the positive effect of the legume on the following cereal crop becaomes less pronounced and differences between various roation systems are almost eliminated above 500mm/annum.

st promising crop among legumes in roation with wheat).

-yield differences insignificant in wet years and vice versa

-yield of wheat after legumes reaped for seed lower than afterlegumes cut for green forage

106. Eason, P. J.; Johnson, R. J.; Castleman, G. H. The effects of dietary inclusion of narbon beans (*Vicia narbonensis*) on the growth of broiler chickens. Aust. J. Agric. Res.. 1990; 41: 565- 71.

Note: D.E.93/10/ /DEPHD.

Day old male broiler were given starter diets containing soyabean meal 100 g/kg or meat and bone meal 65 g/kg or narbon beans (*Vicia narbonensis*) 50 and 100 g/kg or lupin (*Lupinus angustifolius*) 100 g/kg or field peas (*Pisum sativum*) 100 g/kg for 21 days. Feed intake, liveweight, liveweight gain or feed conversion ratio of fowls given narbon beans were similar to those of fowls given the other protein supplements.

107. Eason, P. J.; Johnson, R. J.; Castleman, G. Narbon beans a potential new grain legume for poultry. Proc. Nutr. Soc. Aust.. 1987; 12: 119.

Note: DEPHD.

Inclusion of 10% narbon in broiler diets (d.o.-21.d).

108. Ehrman, T.; Maxted, N. Ecogeographic survey and collection of Syrian *Viciaeae* and *Cicereae* (*Leguminosae*). FAO/IBPGR Plant Genetic Resources Newsletter. 1989; 77: 1-8.

Note: D.E.93/10/ /DEPHD.

109. El, Tekriti RAA; Al, Hasan AM; Ahmed, Altaif. Effect of sowing methods on the chemical composition of forage from a barley vetch mixture. Iraqi Journal of

Agricultural Sciences, 'ZANCO'. 1987, 5: 3, 169-180; 6 ref. 1987;

Note: Dep. Field Crops, Mosul Univ., Mosul, Iraq. Numbered-Part /CAB89_87.

Mixtures of local two- or six-rowed barley cv., *Vicia villosa* and *V. narbonensis* were sown by 3 methods, including sowing in alternate rows. Sowing methods and species mixture significantly effected CP, CF and ash yields; sowing in alternate rows outyielded the other sowing methods, and barley/*V. narbonensis* outyielded the other mixtures. Interactions between the factors studied are discussed.

110. El Tekriti, R. A. A.; Al Hasan, A. M.; Ahmed Altaif. Effect of sowing methods on the chemical composition of forage from a barley-vetch mixture. Iraqi Journal of Agricultural Sciences, 'ZANCO'. . 1987; 5(3): 169-180.

Note: D.E.93/10/ Dep. Field Crops, Mosul Univ., Mosul, Iraq/LA: Arabic/LS: English.

Mixtures of local two- or six-rowed barley cv., *Vicia villosa* and *V. narbonensis* were sown by 3 methods, including sowing in alternate rows. Sowing methods and species mixture significantly effected CP, CF and ash yields; sowing in alternate rows outyielded the other sowing methods, and barley/*V. narbonensis* outyielded the other mixtures. Interactions between the factors studied are discussed.

111. Elçi, S. Gıda Tarım ve Hayvancılık Bakanlıđı Ziraat İsleri Genel Murdurhıgu Yayınları. D-167(*Vicia*, vetches). : 20-37.

Note: D.E.93/10/ getreprint/ref. Birch/Munzur.

112. Enneking, D. The 'In moderato' theme(comments). ; 1992.

Note: D.E.93/10/.

D.E. The In moderato theme

While in Italy I had the opportunity to talk to an italian nutritionist at the University of Bari. By reference to standard italian textbooks he advised the use of vetch seed in moderate quantity.(in moderato)[Interestingly, some of the italian feed formulations include fenugreek(*Trigonella foenum-graecum*) and others carob(*Ceratonia siliqua*) at 1-2% w/w , probably to improve palatability(or medicinal?). Similarly, in Tunceli, Eastern Turkey the sample of *V.narbonensis*/*V.faba* obtained from farmers in Göktepe village contained some aromatic, coumarin releasing seeds. Upon later written inquiry I was told that the coumarin ciontaining seeds had not intentionally been added, however, the effect on palatability, or storage life, quality may be worth paying attention to].

113. Enneking, D. notes.

Note: D.E.93/10/ new.

D.E. notes /*V. narbonensis* The present distribution of the domesticated varieties(see map/Schäfer & Maxte & Enneking data) may reflect the extent of use in earlier times. Considering that seed agriculture is more than 10.000 years old, a high-yielding grain legume would not have gone un-noticed, and its virtues, especially as a famine crop(see table famine crops)would have been recognized when food from other crops became scarce, due to drought conditions

under which *V. narbonensis* is able to sustain yields. The need to cultivate may not have been so pressing when the plant grows wild, as an anthropogenic herb in other crops, such as peas and faba beans, for example, or as a contaminant of cereal crops.

The spread of the smaller-seeded varieties with the mediterranean cereal trade like other vetches (Hegi, 1924, mediterranean vetches spread with as *Trieur-* or *Ausputzwicken*; secondary domestication from weed associated with other crops to crop in its own right)

A third, and arguably most plausible explanation is that the species has been a weed of broad bean crops where it was tolerated as a herb, because of its high yield of pea-sized seeds, the largest of which in *var.aegyptiaca* overlap in size with the smaller *V.faba* *var.minor* types. Selection of large seeds may be due to the plants co-evolution with *V.faba*. Earliest evidence for cultivars of *V.faba* major dates back the 10th century (Schulze-Motel, 1972). With an increase in seed size of *V.faba*, the separation of its seeds from *V.narbonensis* became more convenient. However, Schweinfurth (1896) noted that *V. narbonensis* could be found in the Egyptian delta only in broad bean crops, and although he considered the species to be a typical mediterranean weed, he also referred to it as a herb.

V.narbonensis could therefore be regarded as a secondary domesticate, this is in agreement with Vavilov (1926).

114. Enneking, D. notes. *Silphium*.

Note: D.E.93/10/.

Silphium was a very hot item of trade during Roman times, grown and exported from Cyrenaica, whose wealth was created from the great demand for *Silphium*, which was used as a spice. *Asafoetida* translates into devils dung because of its foetid sulphurous smell.

Used in very small quantities it is highly appreciated for adding flavour to sauces, esp. those for fish meals cf. Tannahill, *Food in history*. It is, of course, curious that the identity of *Silphium* has remained a mystery to this day, and it is commonly thought that it must have been a *Ferula* species, because the coinage of Cyrenaica bore its picture, and this picture, although stylised, depicts a composite plant with umbels, like e.g. carrots, dill or fennel. In this context it is also interesting that in antique times, the source areas for many spices and high value commodities were kept obscure for commercial reasons. *V. narbonensis* is a very conspicuous plant in its area of distribution and would not have gone unnoticed by humans. Its sulphurous taste has been commented upon by medieval herbalists, but from antique times, no evidence has so far not been discovered, except for some archaeological finds. Therefore it may have been known under a completely different name, and could have served as a flavoursome ingredient in food preparations, as the poor man's *Silphium*? I would be

too outrageous to suggest that *V. narbonensis* is identical with *Silphium*, because the argument is dodgy.

The fact that a strongly sulphurous component was used extensively in Roman cooking, as the cookbook of Apicius testifies, lends support to the idea that .

115. Enneking, D. The toxicity of *Vicia* species and their utilisation as grain legumes. Doctoral Dissertation. University of Adelaide, South Australia. 1994.

116. Enneking, D.; Maxted, N. Narbon bean (*Vicia narbonensis* L.). Smartt, J.; Simmonds, N. W. Evolution of Crop Plants. 2nd ed. London: Longman; 1994.

Note: DEPHD.

117. Enneking, note. Cultivation of *Vicia narbonensis*. Discussion with Drs. Bisby and Maxted, Southampton, April 1991.

Note: D.E.93/10/.

(D.E. pers. comm., 1991) Nigel Maxted observed and collected a crop of *Vicia narbonensis* in the Djebel Druze, Syria. The var. was not *var. salmonea* cf. Mouterde and Schäfer's notes

Puy de Dôme may be worth checking for the presence of *V. narbonensis*. F. Bisby tried finding *V. narbonensis* near Narbonne & other places in southern France (4 sites visited as given in the Flora) and found no *V.n.* He checked the Narbonne river, Montpellier, Toulouse & ?

D.E.: *V. n.* cultivated in Southern Syria for grain around Daraa and Sweida for cattle and sheep.

118. Erroux, J. *Agronomie Méditerranéenne* (Vol. II) Les cultures industrielles et Fourragères. Montpellier: ENSAM Do No. 764 ; 1900.

Note: D.E.93/10/ incomplete.

(Erroux, 19??) p. 679 La vesce de Narbonne (*V. narbonensis*), plante fréquente à l'état spontané en Afrique du Nord (elle est également connue d'Ouest, du centre et du midi de la France), elle évoque par sa vigueur et son port la féverole. Elle a été préconisée à diverses reprises comme plante fourragère et a fait à plusieurs reprises l'objet de sélections

p. 681

since 1937 experimental work with *V. sativa* at the station de Maison-Carrée. At the same time experimental work commenced with *V. fulgens*, *V. atropurpurea* and *V. narbonensis*.

119. Exchange of seeds. Estação Agronómica Nacional, Sacavém, Portugal. *Herbage Abstracts*. 1949: p. 70 & 208.

Note: D.E.93/10/.

Vicia/V. narbonensis/V. atropurpurea/V. ervilia/V. faba/V. hirsuta/V. lutea ssp. genuina/V. monanthos/V. muricata/V. sativa/V. sativa ssp. nigra/Lathyrus/L. ochrus/L. cicer/L. sativus for exchange amongst others.

D.E.: this could one source of duplicates. We have to check Portuguese material, especially if it comes via other research institutions and breeders.

120. Felicis Avlellar Broteri. Flora Lusitanica, Vol. 2. : Olisipone, ex typographia regia; 1804.

Note: D.E.93/10/.

(Felicis Avlellar Broteri, 1804) Flora Lusitanica, Vol. 2
Vicia narbonensis

Hab. in Transmontana, coliturque interdum in Beira boreali

Fl. Maj. Jun. Ann.

Facies vere *V. faba*

Legumen unicum.

121. Fiori, A. Flora italiana illustrata 2nd. edn. . ; 1921.

Note: D.E.93/10/.

(Fiori, 1921) Flora italiana illustrata p. 262

illustration of *Vicia narbonensis* (No.n 2137)

note the attached funiculus(var. *aegyptiaca*)

It. rara al nord-2-4.

122. Fischer, A. Die geographischen Grundlagen der Züchtungsforschung bei der Gattung *Vicia* [The geographical basis for breeding research with the genus *Vicia*]. Züchter. 1938; 10(2): 51-56.

Note: D.E.93/10/ /DEPHD.

(Fischer, 1938) Important task for breeding vetches: stable yield

p.51. Breeding work with vetches should aim at improving:

1. bulk growth
2. cold tolerance
3. pest & disease resistance
4. decrease of the content of bitter substances
5. removal of uneven ripening of the plants
6. removal of hard-seededness
7. elimination of pod-shattering

'From the ecological conditions of the areas where wild types can be found, important conclusions can be drawn for the species in question, with respect to the cultivation conditions in the individual countries and climates'

V. narbonensis (Narbonner wicke, Mohrenerbse)

In some countries and states, like in Germany, Austria, Bulgaria, Lithuania and Spain, fodder vetches (*Vicia* spp.) are cultivated as grain- as well as green forage(Grünfutter) crops.

In other countries such as Great Britain, Hungary, Yugoslavia., the Netherlands and Sweden, vetches are only cultivated as green forage. In Chechoslovakia they (*Vicia* spp.) are mainly cultivated as grain crops.[D. E.: this may be related to the export of certified seed from Chechoslovakia]

Production in Germany(1937) 132 321 ha vetches compared to 54 093 ha of *V. faba*

(Refs. to the origin of *Vicia* spp.: De Candolle(1884) 'Origin of cultivated plants; Muratova, Bull. Appl. Bot. & Pl. Brdg. 1926 No. 1)

-Distribution of *V. narbonensis* as far as Afghanistan and North- west India.

-*V. narbonensis* is distributed in areas with mediterranean climate and is not suited for cultivation in colder climates.

- Vetches require for their growth heavy, binding(bindige) soils. The best soils for vetch are lime containing well drained (e.g. without waterlogging) clay and loam soils. Sandy soils are, with some exceptions e.g *V. villosa*, unsuitable.

Winter vetch breeding was initiated by Kiessling in 1906 at Weihestephan (near Munich).

In Germany, Hairy vetch (*V. villosa*) was first cultivated in 1857 by Jordan in the district Schemen, near Magdeburg and was later recommended by Schirmer Neuhaus and J. Kühn as timely (zeitige) fodder plant.(ref. Wittmack, L. : Landw. Samenkunde, 2nd edn. Berlin, 1922)

In the countries of western Europe, the narbon vetch is esteemed as a grain and green fodder crop. This species demands warmth and gives high yields, especially in areas with a wine climate and is better suited to dry loam and marl(Mergel?) soils than to clay soils(ref. Becker-Dillingen, J. Handbuch des Hülsenfruchterbaues und des Futterbaues, Berlin, 1929).

123. Fischer, A. Züchtung und Anbau der Ervilie, *V. ervilia* und der Erve, *V. monantha* als Futterpflanzen. Züchter. 1937; 9(11): 286-288.

Note: D.E.93/10/ incomplete /DEPHD.

(Fischer, 1937, *V. ervilia* paper) Of the *Vicia* spp., *V. faba* and to a lesser extent, or more rarely *V. ervilia*, *V. monanthos* and *V. narbonensis* have been cultivated for a long time as a grain legumes.

-The german Hindukush expedition 1935-> *Vicia* material was investigated

-In Spain *V. ervilia* is cultivated predominantly in Salamanca, Toledo, Cadiz, Sevilla, Valladolid and Burgos. To a lesser extent in Cordoba, Jaem, Granada, Teruel, Lerida and the basque province. Cultivation, however, is also known on a small scale in malaga, madrid, Guadalajara, Cuenca, Albacete and Ciudad-Real.

V. monanthos is cultivated in Spain in Salamanca, avila, toledo, Valladolid, segovia, Madrid and to assumes a subordinate role in Burgos, Guadalajara, Ciudad-Real, Caceres and is cultivated on a small scale in Alicante, Castellon and Gerona

Map available.

124. Fischetti, B. C. Encyclopedia Agraria Italiana Vol. XII. : Ramo Editoriale Degli Agricolturi; 1985.

Note: D.E.93/10/ /DEPHD.

p. 914-915

V. narbonensis cultivated for autumn-winter forage in place of *V. sativa* or *V. faba*. Italian cultivar: San Vincenzo.

Weedy vetches: *V. villosa* Roth, *V. sativa* L., *V. sepium* L., *V. peregrina* L., *V. hirsuta* S. F. Gray, *V. cracca* L., *V. tetrasperma* Schreber, etc.

125. Foury, A. Les légumineuses fourragères au Maroc (deuxième partie). Cah. Rech. Agron., INRA, Rabat, Maroc. 1954; 5: 287-658.

Note: D.E.93/10/DEPHD.

Foury(1954) part 2

V. ervilia

V. ervilia overfeeding-> toxicity. Seed should not be fed at more than 10-15%, should not be fed constantly cf. Löw, Flora der Juden *V. ervilia* best fodder for calves etc

p 446

V.narbonensis

var.serratifolia Koch

var.heterophylla Rouy

This plant is cultivated in autumn and winter in the South of France on siliceous (siliceuse) poor(maigre) and dry soils. As a draw back, its sensitivity to the cold limits its use to spring sowing in the North, East and Centre of France.

In Morocco she is sown in autumn, alone or in mixture with Seigle, Oats, l'Apiste, etc., sowing rate is 150-200kg /ha

hektolitre weight : approx. 80 kg

100 grain weight 200-220 kg? probably g

The Narbon vetch is particularly recommendable for silage and for green manure. It is also an ornamental and medicinal plant.

Lathyrus sativus L., *L. quadrimarginatus* Chaub et Bory, *L. tingitanus* L., *L. pratensis* L., *L. latifolius* L., *L. macrorhizus* (L.)Wimm., *L. tuberosus* L.

Mixtures, plants used(p 506)

V. benghalensis L., *V. fulgens* L., *V. onobrychioides* L., *V.ervilia* L., *V. faba* (Féverole), *V. sativa* L., *V. villosa* Roth, *V.narbonensis* L. etc., *Lathyrus sativus* L., *L. tingitanus* L. etc, *Pisum* (forage).

126. Franke, J. Hortus Lusatae. Bautzen; 1594.

Note: D.E.93/10/DEPHD.

Full citation see Zaunick et al. (1930) '*Vicia narbonensis* belonged to the more popular plants of the 16th century. It can be traced in East Prussia(Wigand, 1583), Nürnberg (Camerarius, 1588), Silesia (Schwenckfelt, 1601), Erzgebirge(Annaberg: Jenisius, 1605). About later cultivation in this area no information could be found so far.

The greater part of foreign plants in the Hortus Lusatae originated from the Mediterranean region, probably from Italy p.268.

Franke also visited Montpellier.

127. FREDIANI, M.; SASSOLI, O.; CREMONINI, R. (Dip. Sci. Bot., Università, Via L. Ghini 5, 56100 Pisa,

Italy). Nuclear DNA characterization of two species of *Vicia*: *Vicia bithynica* L. and *Vicia narbonensis* L. BIOLOGIA PLANTARUM (PRAGUE) 34(3-4): 335- 344. 1992; . CODEN: BPABAJ.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /*Vicia narbonensis* BA 1993 Vol. 1 notduplicate.

The species *Vicia bithynica* and *Vicia narbonensis*, from the same subgeneric section of *Vicia faba*, show variations in nuclear DNA content. Nuclear DNAs, extracted from root tips of the two *Vicia* species, were characterized by thermal denaturation, analytical ultracentrifugation and reassociation kinetics. The thermal denaturations of DNA, the number of DNA components reassociating with second order kinetics, the proportion of repeated DNA sequences, the frequency of the repeated DNA classes are reported and compared to previous data on *Vicia faba* DNA. Feulgen absorptions at different thresholds of optical density+ of interphase nuclei in cytological preparations of the root meristems of *V. bithynica* and *V. narbonensis* are determined and compared with *V. faba* analogous determinations. The results, confirming that plant genome is highly flexible, are discussed in relation to other data on the interspecific variations of the nuclear DNA content.

128. Freyn, J. Die Flora von Süd-Istrien. ; 1877.

Note: D.E.93/10/ getreprint/incomplete/Hanelt.

(Freyn, 1877) Die Flora von Süd-Istrien p. 318

V. narbonensis

Check the original as available copy is incomplete.

129. Fuss, M. Flora Transilvaniae excursoria. Cibinii, Germany: H. G. de Closius; 1866.

Note: D.E.93/10/.

(Fuss, 1866) Flora Transilvaniae excursoria

Faba serratifolia

In pratis: Dobra, Déva, Reussmarkt (Sg. F.). Juni. a.

130. Gastel, R. Resistenzprüfung von Ackerbohnen (*Vicia faba* L.) gegen das Stengelälchen *Ditylenchus dipsaci* (Kühn) Filipjev. Doctoral Dissertation (rer. nat.). Hohenheim: University of Hohenheim; 1990.

Note: DE4_94/DEPHD.

131. Georg, D. Final report: Grain legumes for low rainfall areas. Adelaide: South Australian Department of Agriculture; 1987A.

Note: D.E.93/10/ DHK/DEPHD.

132. Georg, D. Grain legumes for low rainfall areas. In: Agronomy 1987-responding to change. : Australian Society of Agronomy; 1987B: 220. (Proceedings of the 4th Australian Agronomy Conference La Trobe University Melbourne, Victoria August 1987).

Note: D.E.12/93 DHK.

While *V. faba* was considered too risky for dry areas with less 375mm annual rainfall, narbon beans (*Vicia* section *narbonensis*) with their shorter growing season appeared to have good potential and were considered worthy of further

development. *V. sativa*, *V. ervilia* and *L. cicera*, *L. angustifolius* and *L. albus* each yielded highest in at least one trial. Characters assessed included grain yield and protein, days to flowering, days to maturity, lodging, crop height, grain loss prior to harvest. D.E.: this data was entered into a database and should be available at Northfield. Musharaf Ali has been contacted and repeatedly reminded about transferring the data to CLIMA. .

133. Georg, D. Narbon bean-a grain legume with potential. In: Agronomy 1987-responding to change. : Australian Society of Agronomy; 1987C: 221. (Proceedings of the 4th Australian Agronomy Conference La Trobe University Melbourne, Victoria August 1987).

Note: D.E.12/93 DHK /DEPHD /DEPHD.

V. narbonensis cultivated in Iraq and Turkey used for forage and the grain eaten as a pulse or fed to livestock.

Its habit is similar to *V. faba* but the stems are weaker with tendrils on the upper leaves. flowers are purple, seed similar in size and shape to the pea.

Taxonomy-narbon bean=*V. narbonensis* complex*

V. narbonensis has been assessed in multi-species growth trials in Western Australia, Victoria and South Australia. Grain yields have been promising, especially in the lower-rainfall areas.

Most introduced lines have upright growth habits. In good seasons many lines are lodged at maturity.

Pods tend to be carried high on the plant.

Range of maturities in the available lines. some are very early.

V. narbonensis has been shown to be more resistant to the black bean aphid (*Aphis fabae*), and chocolate spot disease (*Botrytis fabae* and *B. cinerea*).

A local experimental crop in South Australia was severely infected with chocolate spot for the first time in 1986.

Tolerance to severe frosts has been reported from U.K., Turkey and Iraq.

Feeding studies show that the grain can be used for feeding sheep and poultry, but not good for pigs.

In a local trial other vetches and grain legumes were grazed in preference to *V. narbonensis*.

Interspecific hybridization with *V. faba* has been unsuccessful

ICARDA is studying *V. narbonensis* as a forage crop

A forage breeding program for *V. narbonensis* exists in Turkey

V. narbonensis may find a niche in temperate Australian agriculture, possibly in marginal lower-rainfall areas. Successful commercialisation will depend on proving that it is superior to other grain legumes in this and/or other niches, and on developing markets for the grain.

*David Georg uses narbon bean for the *V. narbonensis* complex which comprises all members of section *Faba* (excl. *V. faba*), it could also be considered

as comprising the generalist species *V. serratifolia*, *V. johannis* and *V. narbonensis*.

134. Gerarde, J. The herball or general historie of plantes, gathered by John Gerarde...very much enlarged and amended by Thomas Johnson. London; 1636; Lib. 2(Chap. 507): 1210 (held at Rothamsted and Adelaide Botanical Gardens libraries).

Note: D.E.93/10/ /DEPHD.

(Gerarde, 1636)p. 1209

Darke red coloured flowers' blacke seed as big as a pease of an unpleasant taste and favour' ...This blacke beane is sowne in a few mens gardens who bee delighted in variety and study of herbes, whereof I have great plenty in my own garden. The blacke beane is not used with us at all seeing, as we have said that it is rare.

p. 1226

A. Galen in his first booke of the faculties of nourishment says, that men altogether abstain from the bitter vetch, for it hath a very unpleasant taste, and naughty juice, but kine [D.E. kine=cattle] in Asia and in most other countries doe eat thereof, being made sweet by steeping in water; not withstanding men being compelled through necessity of great famine, as Hippocrates also hath written, doe often times feed thereof; and we also dressing them after the manner of lupines, use the bitter vetches with hony, as a medicine that purgeth thicke and grosse humours out of the chest and lungs.

B. Moreover, among the bitter vetches the white are not so medicinable, but those which neere to yellow, or to the colour of Okar; and those that have been twice boyled, or sundry times soaked in water, lose their bitter and unpleasant taste, and with all their cleansing and cutting quality so that there is only left in them an earthy substance, which serves for nourishment, that dryeth without manifest bitterness.

C. And in his booke of the faculties of simple medicines he saith, that bitter vetch is dry in the later end of the second degree, and hot in the first: Moreover, by how much it is bitter, by so much it cleaneth, cutteth, and removeth stoppings: but if it be overmuch used it bringeth forth blood by urine.

D. Dioscorides writeth, that bitter vetch causeth headache and heavy dulnesse, that it troubles the belly, and draineth forth blood by the urine; notwithstanding being boyled it serves to fatten kine.

E. There is made of the seed a meale fit to be used in medicine, after this manner: The full and white graines are chosen out, and being mixed together they are steeped in water, and suffered to lie til they be plumped, and afterwards are parched till the skinne is broken; then they are ground, and seared (or fearfed?) or shaken through a meale sieve and the meale reserved.

F. This looseth the belly, provoketh the urine, maketh one well coloured: being overmuch eaten or drunke it draweth the blood by the stoole, with gripings, and also by urine.

G. With honey it cleanseth ulcers, taketh away freckles, sun- burnes, blacke spots in the skinne, and maketh the whole body faire and cleane.

H. It staieth running ulcers or hard swellings, and gangrenes or mortified sores; it softenth the hardnesse of womens breasts, it taketh away and breaketh eating ulcers, carbuncles, and sores of the head: being tempered with wine and applied it healeth the bitings of dogs, and also venomous beasts.

I. With vinegar it is good against strangury, and mitigateth paine that cometh thereof.

K. It is good for them that are not nourished by their meat, being parched and taken with honey in the quantitie of a nut.

L. The decoction of the same helpeth the itch in the whole body, and taketh away kibes, if they be washed or bathed therewith.

M. Cicer boyled in fountaine water with some Orobis doth asswage the swelling of the yard and privie partes of man and woman, if they be washed and bathed in the decoction thereof, and the substance hereof may also be applied plasterwise

N. It is also used for bathing and washing of ulcers and running sores and is applied unto the scurfe or the head with great profit.

135. Germer, R. Flora des pharaonischen Çgypten. Mainz: Verlag P. v. Zabern; 1985. (Deutsches Archaeologisches Institut Sonderschrift 14).

Note: D.E.93/10/.

(Germer, 1985)Flora des pharaonischen Çgypten p. 78 Earliest finds of *V. narbonensis* from the 3.Dynasty from subterranean galleries of the Djoser complex(Täckholm in:BIE 32, 1951, 140). furthermore, seeds of this species weree found underneath the ' Bauopfer' of the pyramid of Sahure(% . Dyn.)

(Botanic Museum, Berlin-Dahlem, Collection Schweinfurth, Catalogue No. 386)

Schiemann studied some legume seeds from the plant remains of Abu Ghâlib, a settlement of the Middle Kingdom in the western delta, which could not be identified with certainty as *V. narbonensis*.

V. narbonensis belonged since ancient times to the weeds of egyptian fields.

136. Germershausen, C. F. Wicke. Oekonomisches Reallexicon [worinn alles was nach den Theorien und erprobten Erfahrungen der bewährtesten Oekonomen unsrer Zeit zu wissen nötig ist, in alphabetischer Ordnung zusammengetragen, berichtet und mit eigenen Zusätzen begleitet wird von Chritian Friedrich Germershausen, Pastor zu Scharlach und Mitglied verschiedener gelehrter Gesellschaften]. Leipzig: Johann Gottlob Feind; 1799; Vol. 4: pp. 579-582 (Agricultural library, Bonn).

Note: D.E.93/10/ /DEPHD.

Oekonomisches Reallexicon, worinn alles was nach den Theorien und erprobten Erfahrungen der bewährtesten Oekonomen unsrer Zeit zu wissen nötig ist, in alphabetischer Ordnung zusammengetragen, berichtet und mit eigenen Zusätzen begleite wird von

Chritian Friedrich Germershausen, Pastor zu Scharlach und Mitglied verschiedener gelehrter Gesellschaften.

137. Gomez, A. Los granos de leguminosas como componentes proteicos para la alimentación animal [Legume seeds as protein components for animal feeding]. In: Cubero, J. I.; Moreno, M. T. Leguminosas de grano. Madrid: Mundi-Prensa; 1983: 249-262.

Note: D.E.93/10/ Escuela Tecnica Superior de Ingenieros Agronomos, Cordoba, Spain/translation available ex. D. Georg / DEPHD.

(Gomez, 1983) Nutritive characteristics including amino acid composition, vitamin content, anti-nutritive factors derived from proteins, amino acids, glucosides and other substances in seeds of *Vicia narbonensis*, *V. faba*, *V. monanthos*, *V. sativa*, *V. ervilia*, *Trigonella foenum-graecum*, *Lathyrus sativus* and *Lupinus* spp. are described and utilization of the legumes is discussed.

V. sativa (Mateo Box, 1961)

Grain used for birds(mostly pigeons), or even pigs and cattle, after is has been ground into a flour-it may cause constipation and dermatitis in pigs and lathyrism in horses. In cattle and sheep it causes somnolence, muscular paralysis and death by asphyxiation.

Vicine,convicine, choline, bine, substances with irritant effects on pigs intestines, whose taste passes into the milk, unsuitable for both direct consumption and cheese production (Piccioni, 1970, Dictionario de Alimentacion Animal 819pp. ed. Acribia. Zaragoza)

Milk is bitter if dairy cows eat 2kgs of vetch grain/day. Piccioni advises that a level of 400 g/day(20% of the ration) should not be exceeded for fattening pigs, and 10% for piglets.

CN acid content is reduced by 50% if the vetch is cooked under pressure for 10 mins.

V. monanthos(Mateo-Box, 1961)

Sheep tolerate its grain best, sometimes rejecting it because the plant has a bitter taste. Birds, in general, do not consume it, except for pigeons which like it a great deal.

V. ervilia(Mateo Box, 1961)

Toxin can be eliminated by cooking causes serious intoxication in pigs and poultry cattle and sheep affected only if they consume large quantities of bitter vetch flour, rations should not exceed 25% bitter vetch for ruminants.

138. Gondran, J. Resistance de la vesce de Narbonne et de la féverole à *Botrytis fabae*. 5es Journées de Phytatrie et de Phytopharmacie circum-méditerranéenes, Rabat(maroc), 5-20. 1977. 1977.

Note: D.E.93/10/ getreprint/Lahlou/ENSA.

139. Gourdon, J.; Naudin, P. Nouvelle Iconographie Fourragère (comprenant un atlas, avec texte explicatif, des plantes fourragères et des plantes nuisable qui se

rencontrent dans les prairies et les pâturages accompagné d'un Traité de l'alimentation du cheval et des animaux domestiques. Pais: P. Asselin, successeur de Béchet jeune et Labé, Libraire de la Faculté de Médecine Vétérinaire, et de la Société Impériale et Centrale de Médecine Vétérinaire, Place de l'École-de-Médecine; 1865.

Note: D.E.93/10/ mod.

Gourdon, J., Dr. med., Chef des Service à l'École Impériale Vétérinaire de Toulouse//Naudin, P., Veterinaire au train d'artillerie de la garde impériale, chevalier de la Legion d'Honneur(1865)

Extensive treatment of *Vicia faba* [Fève commune] pp. 151-159

V. cracca L. syn *V. multiflora* Poll.[Vesce craque, *V. multiflora*, *V. à épi*, vesce, jardeau, Jarseau, Luzeau, Luisset des près, Pois -à-crapaud] p. 160-161

V. tenuifolia Roth. [Craque a feuilles ténues] p. 161

V. varia Host. [Craque variée]

V. villosa Roth. [Craque velue]

V. pseudocracca Bert.[Craque de bertolini]

V. atropurpurea Df. syn *V. perennis* DC. p. 162[Craque pourprée]

V. monanthos Df. p. 162-163 [Craque a une fleur, Ers ou vesce à fleurs solitaires, *V. à une fleur*, Lentille d'Auvergne, Jaroude, Jarassi]

V. biennis L. [Craque bisannuelle, Vesce de Sibirie]

V. hisuta Koch. p. 163[Craque a fruit velu]

V. sativa 163-171

[vesce d'hiver ou d'automne]

[vesce de printemps ou d'été]

[Vesce blanche ou Vesce du Canada (*V. leucosperma*)]

se distingue à ses fleurs blanches, à ses grains, de couleur blanche et plus gros que ceux des variétés principales. Moins répandue que celles-ci, plus délicate, plus précoce, moins rustique que la vesce de printemps, mais donnant un produit plus recherché des bestiaux, elle est cultivé avec succès dans quelques départements de l'Est, en Suisse et en Italie

V. cordata Wulf. [vesce a feuilles cordées]

V. angustifolia Roth. [vesce a feuilles étroites]

V. lathyroides L. [vesce fausse gesse]

V. pyrenaica Pourr. [vesce des pyrénées]

V. amphicarpa Dorth.p. 172 [vesce a double fruit]

V. lutea L. [vesce a fleurs jaunes]

V. hybrida L. [vesce hybride]

V. peregrina L. [vesce voyageuse]

V. sepium L. [vesce des haies]

V. argentea Lp. [vesce argentée]

V. dumetorum L. [vesce des buissons]

V. onobrychioides L. [vesce fausse espargette]

V. altissima Df. [vesce élevée]

V. pannonica Jq. [vesce de hongrie]

V. pisiformis L. p. 174 [vesce pisiforme]

V. orobus DC. [vesce orobe]

V. sylvatica L. [vesce de bois]

V. cassubica L. [vesce d'Allemagne]

V. narbonensis L. syn. *V. serratifolia* Koch. [vesce de narbonne, vesce à feuilles dentées]

Commune dans les provinces du Midi et du center, cette espèce vient dans les moissons, sur les bords des chemins et des fossés. Elle préfère, en général, les sols fertiles et humides, où elle se développe rapidement, et forme de larges touffes, qui donnent une fane abondante, mais assez difficile à dessécher; on peut la faire aussi consommer en fourrage vert. Rien ne s'opposerait à ce qu'on en tienne la production régulière

V. bithynica L. p. 175 [vesce de bithynie]

D.E. trans. V.n./V.serr.

Common in the provinces of the South and Centre, this species vient dans les moissons, sur les bords des chemins, et des fossés. It prefers in general fertile and humid(moist) soils where it develops very rapidly and forms large tufts(touffes), which give a (fane) abundantly, but it is difficult to dry, it is also possible to use it as green forage. Nothing opposes him who wants to grow it regularly(rien ne s'opposerait à ce qu'on en tienne la production régulière)

140. Grenier, M.; Godron, M. Flore de France Vol. 1. ; 1848.

Note: D.E.93/10/ incomplete.

(Grenier & Godron, 1848).p. 463 var. genuina

V. n.

hab. Moissons des provinces meridionales

Corse (1) Mai-Jun.

141. Griffiths, D. W.; Ramsay, G. (Scottish Crop Res. Inst., Invergowrie, Dundee DD2 5DA, UK). The concentration of vicine and convicine in *Vicia faba* and some related species and their distribution within mature seeds. Journal of the Science of Food and Agriculture. 1992; 59(4): 463-468. CODEN: JSFAAE.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /*Vicia narbonensis* BA 1993 Vol. 1 DHK /DEPHD /DEPHD.

Mature seeds from a range of species from the Viciaeae tribe were analysed for vicine and convicine content. Quantifiable amounts of vicine were found in all the *Vicia* species analysed but neither glucopyranoside was detected in *Pisum* or *Lathyrus*. The concentrations of both vicine and convicine were similar for both *Vicia faba* and *V. bithynica* but in all the other *Vicia* species glucopyranoside concentrations were significantly lower. Seeds from three *faba* bean lines and one each from *V. narbonensis* and *V. bithynica* were dissected into their constituent seed parts and these parts analyzed. Only trace quantities were found in the seed coat but concentrations of vicine ranging from 39 g kg⁻¹ to 81 g kg⁻¹ were detected in the radicle samples. The implications of these results in relation to the role of these compounds in the plant are discussed.

142. Guinea, E. Estudio Botanico de las vezas y arvejas Españolas. Madrid: INIA; 1953.

Note: D.E.93/10/ 227pp /DEPHD.

(Guinea, 1953) Estudio Botanico de las vezas y arvejas Españolas pp. 67-70

Vicia narbonensis

Nombres populares

Español : Alberjón, Fabera borda, Haba loca

Francés : Fève des chevaux, fève sauvage, vescede narbonne

Alemán : Maus-wicke, Schwarze Ackerbohne

La planta florece de mayo a junio y se cultiva de antiguo en la cuenca del Mediterráneo, pudiendo hallarse asilvestrada en los campos de cultivo, bordes de caminos, proximidades de los poblados humanos, estaciones, ruderales etc.

Su área comprende desde la Península Ibérica hasta el Asia citerior y África del Norte. También se cultiva en Europa Central y Abisinia, hallándose asilvestrada.

En el Herbario del Real Jardín Botánico de Madrid se conservan los siguientes pliegos: -Madrid, -Canal de Manzanares, -detrás del Retiro,- Llers, Cataluña,- Cataluña, -V. serratifolia, Martorell de la selva, gerona, -El Escorial, -Avila, -Logroño

Descriptio ex Willkomm y Lange(Prodromus Florae Hispanicae III, p 299, 1877)

In solo humido pingui, ad ripas, fossas, in locis irriguis et uligoni=osis regionis inferioris Hispaniae central, orient. et austral. et rara; in Cast. nova (Ad. fl. Manzanares pr. Marit., LGE!, canal de Manzanares- in agro Madrit., Catal. (in agris; in agris Tarraconensi), rego Granat. (pr. Ronda, en el Tajo)

Hab. in Lusit., Gall. austr., Cors., Ital, Dalm., Turc., Graec., Oriente, Afr. boreali.

143. Gunn, C. R. (1971). Seeds of native and naturalized vetches of North America. Agriculture Handbook, Agric. Res. Service. USDA. 1971; 392.

Note: D.E.93/10/.

p.32

V.n.

144. Gussone, J. Florae siculae synopsis exhibens plantas vasculares in sicilia insulisque adjacentibus huc usque detectas Vol. II. Neapoli: Ex typis Tramater; 1843.

Note: D.E.93/10/ Latin/translate /DEPHD.

(Gussone, 1843) Florae siculae synopsis exhibens plantas vasculares in sicilia insulisque adjacentibus huc usque detectas Vol. II

V. narbonensis

V. purpurea, maxima, annualis, foliis ac siliquis margine pilosis. Cup. panph. ed. Bibl. Cass. 3.C(or L) 422 n(<-flip paragraph symbol over).

Locis natalibus adde Avola, siracusa, ubi obtinet nomen vernaculum Favaccia: folia ima 1-2 juga, reliqua 2-3-4 juga; foliolis ascendendo majoribus, oblique ovatis, in pagina superiore et ad margines strigosiusculis obtusulas uncinatas basi latasi in inferiore praesertim ad nervos sparse villosis: flores vexillo saturate violaceo inoperto, lais contra vexillum albedo-cinereis: legumina ad suturas scaberrima. Matrio, Aprili (Bianca)

p. 890 Addenda et Emendana

854 V.n.

Icon citata. Cup. panph. ed. Bibl. Cass. ab ill jam in Synopsi p. 281 relata non differt.

145. Hammer, K.; Knüpfner, H.; Laghetti, G.; Perrino, P. Seeds from the past. A catalogue of crop germplasm in South Italy and Sicily. Bari: Istituto del Germoplasm del Consiglio Nazionale delle Ricerche; 1992.

Note: reprint/CLIMA/Perry /DEPHD.

p. 97. Vicia narbonensis probably introduced together with V. faba from South-West Asia. An old fodder crop in the area (Pignatti, 1982). Only one time found still in cultivation in Sicily. Mostly a weed in Vicia faba L. and other crops.

146. Hanelt. pers. comm.

Note: D.E.93/10/.

Georgian name for V. johannis: cercvela (V. faba: cercvi)(Hanelt, pers. comm.).

147. Hanelt, P.; Schäfer, H.; Schultze-Motel, J. Die Stellung von *Vicia faba* L. in der Gattung *Vicia* L. und Betrachtungen zur Entstehung dieser Kulturart. Kulturpflanze. 1972; 20: 263-275.

Note: D.E.93/10/DEPHD.

(Hanelt et al., 1972) Die Stellung von *Vicia faba* L. in der Gattung *Vicia* L. und Betrachtungen zur Entstehung dieser Kulturart.

148. Hawthorne, W. Beans, peas, vetches and other new crops. Occasional Publication, Australian Institute of Agricultural Science. 1987; 28: 16-22.

Note: D.E.93/10/ Dep. Agric., Struan Res. Cent., SA 5271, Australia.

Vicia faba production in South Australia has increased to approx. 30 000 ha (1986) following release of the small seeded cv. Fiord. Recommended agronomic practices such as sowing rate and date, use of Zn and P fertilizers and of lime to improve nodulation on acid soils are reviewed with particular emphasis on reducing incidence of diseases such as *Botrytis fabae*, *Uromyces viciae-fabae* and *Ascochyta fabae*. The effects of the release in 1986 of the new pea cv. Alma, Wirrega and Maitland on pea production in South Australia, where peas have been demonstrated to be the highest yielding grain legume crop, are discussed together with control of diseases such as black spot and *Erysiphe pisi* and the pest pea weevil [*Sitona lineatus*]. The role of *Vicia villosa* subsp. *dasycarpa* [subsp. *varia*], *V. benghalensis* and *V. sativa* cv. Languedoc in South Australian agriculture and difficulties in developing appropriate cv., fungicides against *Botrytis cinerea* and *Ascochyta lentis* and post-em. herbicides for chickpeas and lentils and eradication measures for cucumber mosaic virus and alfalfa mosaic virus in lentils are examined. *V. narbonensis* which was believed to have a high potential in low rainfall areas proved unacceptable to pigs and it is suggested that it may be replaced by *V. sativa* cv. Languedoc. Research on lupins to improve nodulation, counter Mn deficiency, establish sowing dates and evaluate cv. are discussed but calcareous soils, lupinosis and low

prices have restricted development of this crop in South Australia.

149. Hayek, A. *Prodromus florae peninsulae Balcanicae Repertorium specierum novarum regni vegetabilis*, 30-1(5-6) p. 797. ; 1925.

Note: D.E.93/10/ incomplete.

(Hayek, 1925) *Prodromus florae peninsulae Balcanicae Repertorium specierum novarum regni vegetabilis*, 30-1(5-6) p. 797

V. narbonensis

I. eu-narbonensis

Semina nigro hilo albo. In dumetosis, cultis

Q. Cro, Da., BH., Mt., Sb., Db., Thra., Ma., A., The., Gr.

II. serratifolia

semina miore obscurefusca

In dumetosis, cultis

Q., Mt., Sb., Bu., Db., Thra., Ma., A., The.

Croatia, Dalmatia, BH?, Montenegro, Serbia, Db., Thracia, Macedonia, A.: Attica?, The.: Thebes?, Gr.?

150. Heß, H. E.; Landolt, E.; Hirzel, R. *Flora der Schweiz und angrenzender Gebiete Vol. 2*. Basel & Stuttgart: Birkhäuser Verlag; 1970.

Note: D.E.93/10/.

(Heß et al., 1970) *Flora der Schweiz und angrenzender Gebiete Vol. 2*

V. narbonensis

Standort: Kollin. kalkhaltige, nährstoffreiche, lehmige Böden in warmen Lagen. Çcker, Getreidefelder, Weinberge, Gebüsche

Verbreitung: Med. Pflanze: Nordwärts bis Loiregebiet, Südwestalpen, Poebene, Donaubecken, Südrufland; Kaukasus, Zentralasien, Nordwestafrika

Im Gebiet [der Flora] nicht einheimisch; im Veltlin (Villa San Giacomo) und in der Oberrheinischen Tiefebene (Istein, Klingental, Colmar) eingebürgert; sonst selten als Futterpflanze angebaut oder adventiv.

V. serratifolia

Verbreitung wie V. narbonensis

Im gebiet selten eingeschleppt z.B. Winztenheim im Elsaß, sonst selten gebaut.

151. Hedberg, I.; Edwards, S. *Flora of Ethiopia Vol. 3*. Addis Ababa, Ethiopia: National Herbarium; 1989.

Note: D.E.93/10/Gillett, pers. comm. /DEPHD.

p. 248

Cuf. Enum.:307 (1955) record of cultivated V. narbonensis not confirmed

(Cofodontis, G. *Enumeratio Plantarum Ethiopiae*-> Hegi (1924) ref. to Gams

also cf. Uphof re: V. n. cultivation in Abyssinia.

152. Hegi, G.; Gams, H. Hegi, G., Author/Editor. *Illustrierte Flora von Mitteleuropa*. München: Lehmann; 1924; 4(3): 1506-1562.

Note: D.E.93/10/ do /DEPHD.

Hegi, G./Gams. H.(1924) p.1551

The cracked seeds (V. sativa) serve as horse and poultry feed, more seldom also as human food. As such are prepared, for example along the river Rhine, in Dalmatia, Southern France and Canada, the yellowish-white seeds of forma. leucosperma (Moench) Ser. (incl. varieta ochrosperma Rchb.) to which the 'grosse neue Erbslinse', the ' weisse amerikanische Perllinse' and the ' weisse Linsenwicke' belong. They are much inferior to peas and lentils for this purpose. To remove the bitterness, the seeds are soaked for at least a day in cold water.

In the year 1916 sour lentils (forma bipunctata Alef.?) were after a short time sold in Berlin but later confiscated from the market by police. As soup or prepared as vegetable they were apparently quite tasty and digestible. A bitter taste, which is probably related to the prussic acid content common to all common vetches (V. sativa) can be removed through boiling in saltwater. (see also file Vicia selections Hegi & Gams (1924).

153. Helbaek, H. Early Hassunan vegetable foods at Tell Es-Sawwan near Samara. *Sumer*. 1966A; 20: 45.

Note: D.E.93/10/ getreprint/is this the vol. seen in Bonn/?

(Helbaek, 1966A) V. narbonensis identified from pre-pottery neolithic B, Beidha, palestine (helbaek, 1966A, p. 63) ref. ex Renfrew (1973).

154. Hennig, M.; Schlesier, B.; Pfeffer, S.; Hohne, WE. Narbonin, a 2 S globulin from Vicia narbonensis L. Crystallization and preliminary crystallographic data. *Journal of Molecular Biology*. 1990, 215: 3, 339-340; 3 ref. 1990;

Note: Institute of Biochemistry, Humboldt University, 1040 Berlin. Numbered-Part /CAB91_90 not duplicate.

Narbonin was crystallized from V. narbonensis seeds by vapour diffusion induced pH-shift. Crystals were suitable for high resolution X-ray structural analysis and diffracted to better than 1.5 Å. Narbonin crystallized in the monoclinic space group P2₁, with a = 46.9 Å, b = 75.5 Å, c = 50.9 Å, alpha-gamma=90° and beta=120.5°. The protein consisted of 1 polypeptide chain that did not coincide with the subunits of legumin or vicilin after SDS-PAGE and had a MW of about 33 000.

155. Hennig, M.; Schlesier, B.; Dauter, Z.; Pfeffer, S.; Betzel, C.; Hohne, WE; Wilson, KS. A TIM barrel protein without enzymatic activity? Crystal structure of narbonin at 1.8 Å resolution. *FEBS Lett*. 1992 Jul 13; 306(1): 80-4. 1992; ; ISSN: 0014-5793.

Note: European Molecular Biology Laboratory (EMBL), Hamburg, Germany. JOURNAL-ARTICLE Triosephosphate-Isomerase; narbonin; Amino-Acids; Vegetable-Proteins /MEDLINE not duplicate.

The major protein component in seeds is storage protein. These have no known enzymatic activity and act to provide amino acids as a source of metabolites in the developing

seedling. We report here the first three dimensional crystal structure of a seed storage globulin at high resolution. The molecule of the 2S globulin, narbonin, from *Vicia narbonensis* L., consists of an eight-stranded parallel alpha/beta barrel structure similar to that observed in triose phosphate isomerase (TIM). Narbonin is the first protein with this topology possessing no known enzymatic activity. Because of the lack of sequence information most of the primary structure was determined directly from the electron density.

156. Herrera, Gabriel Alfonso de. Agricultura General(Corregida segun el testo original de la Primera Edicion publicada en 1513 por el mismo autor) y Adicionada. Madrid: IMPRENTA REAL; 1818; Vol. I: p. 155.

Note: D.E.93/10/ translation/Julian.

(Herrera, Gabriel Alfonso de, 1818) Agricultura General(Corregida segun el testo original de la Primera Edicion publicada en 1513 por el mismo autor) y Adicionada p.155 Adicion to : De las habas Chap XVII

Son muchas los especies de haba, *Vicia faba* Lin., que se conocen, y se distinguen mas principalmente por su color, por su tamaño, y por su mas ó menos dureza. En algunas provincias de España, y con mas partè culoridad en Andalucía, se cultiva una variedad de haba pequiña y de color oscuro, que llaman por cuna ó cochinerá, porque solor la emplean para el cebo del ganado de cerda, y por ser de calidad muy dura(o?)penas puede servir para otro uso.

Prevalence esta planta en los terrenos fuertes y frescos, con tal que tengan de seis a ocho dedos de fondo, para que sus raizes se puedan introducir lo bastante en la tierra, y extraer el alimento que necesitan para su mas frondosa vejatacion.

Las haba se siembran en sequida de los granos, al zando antes los rastros, y labrando la tierra con oportunidad, es una plant escelente, y la mas propia para alternar con los granos, dejando la tierra muy bien preparada despues de recogida su cosecha, y en disposicion de que prevalezcan muy bien las cereales, y con mas particularidad el trigo, sin necesitar de nuevos abonos, ni dejar la tierra de barbecho par un año, segun se acostumbara en el cultivo de año y vez, antes bien sique prodi=uciendo todos los años con ventaja t utilida del labrador.

157. Heuser, W. Anbauversuche mit einigen bisher in Deutschland nicht gebauten Hülsenfrüchten. [Trial of grain legumes not yet grown in Germany]. Dtsch. Landw. Pr.. 1934; 61(4 & 5): pp10-

Note: D.E.93/10/ address: Inst. Pflanzenzüchtung, Preuss. landw. Versuchs.- u. Forschungsanst., Landsberg (Warthe)/incomplete/Vol. 4 p. 39 only/Hanelt/getreprint.

Lupinus albus, *Vicia narbonensis*, *Lathyrus tingitanus*, *Glycine max* and *Ornithopus compressus* tested for their suitability for East Germany.

Lupinus albus etc....

V. narbonensis (less susceptible to drought, heat, and attack by aphids than *V. faba*) gave satisfactory yields when grown with oats and rye.

L. tingitanus resembles *L. odoratus* in appearance and has grain of high protein content which is not bitter. Its characters would make it appear a good grain legume for light land, and although in trials it gave poorer results than the other legumes with which it was compared, further trial is considered desirable

Glycine max is not recommended on the basis of low yields and late ripening. *O. compressus* results have been reported in a previous publication(Heuser & Pfrang, Herb. Abst. 4. 68-9. 1934).

158. Heuser, W. Dreijährige untersuchungen über Kornerträge der weissen Lupine(*Lupinus albus*) und ihre Flächenleistungen and Eiweiss und fette im Vergleich zu anderen Lupinenarten und Leguminosen[A three year study of grain yield in *Lupinus albus* and of its protein and fat yield per unit area in comparison with other lupin species and other legumes]. Pflanzenbau. 1935; 11: 433-46.

Note: D.E.93/10/ address: Landsberg(Warthe).

Lupinus albus compared in protein and fat yield per unit area to *V. faba*, *V. narbonensis*, *P. sativum*, *L. angustifolius*, *L. luteus* and *Glycine max*(Herbage Abs Dec. 1935, 633.367:581.192, p.332)

D. E. *V. narbonensis* only used as a control, in comparison to detailed work on *Lupinus*.

159. Holm, L.; Pancho, J. V.; Herberger, J. P.; Plucknett, D. L. A geographical atlas of world weeds. N. Y.: John Wiley & Sons; 1979.

Note: D.E.93/10/ /DEPHD.

V. n a weed in Tunisia (principal weed), Iran, Lebanon (Common weed), Turkey (present as a weed and behaves like a weed but rank of importance unknown)and Israel (part of the flora, confirming evidence for its perception as a weed needed).

160. Holmboe, J. Studies on the vegetation of Cyprus. Bergens Museums Skrifter, new series I. 1914; 2: 1-195.

Note: D.E.93/10/.

(Holmboe, 1914) Studies on the vegetation of Cyprus p. 113

V. narbonensis

-as a weed in the fields at Phaneromene near Larnaka *narbonensis* & *serratifolia* together.

161. Hopf, M. Archaeological evidence of the spread and use of some members of the *Leguminosae* family. Barigozzi, C., Ed. The origin and domestication of cultivated plants. Symposium, 25-27 November 1985, Rome, Italy. Amsterdam: Elsevier; 1986: 35-60.

Note: D.E.93/10/ Forschungsinstitut für Vor- und Frühgeschichte, Römisch-Germanisches Zentral Museum, Ernst Ludwig Platz 2, 6500 Mainz, German Federal Republic /DEPHD.

(Hopf, 1986) Archaeological evidence of the spread and use of some members of the Leguminosae family.

Details are given of finds at Neolithic, Bronze Age and Iron Age sites in Europe, the Middle East and the Nile valley of cultivated forms of *Lens culinaris*, *Pisum sativum*, *Vicia faba*, *V. narbonensis*, *Cicer arietinum*, *Lathyrus sativus*, *L. cicera* and *V. ervilia*. The location of these sites is used to document the spread of these species from their centre of domestication, the fertile crescent of the Middle East. Although the archaeological remains tend to be confined to seeds, these are identified as being from cultivated rather than wild forms due to their relatively larger size. The anatomical features of the seed coat proved a reliable means of distinguishing between species.

162. Hoppe, d. H. Die Wicken Deutschlands in Abbildungen nach der Natur von Jacob Sturm. Nürnberg: Jacob Sturm; 1811.

Note: D.E.93/10/.

(Hoppe, 1811) Die Wicken Deutschlands in Abbildungen nach der Natur von Jacob Sturm

V. serratifolia

gesägte Wicke, wächst an feuchten Orten in Ungarn, und blüht im Junius.

Diese Art ist zuerst vom Herrn pr.f jacquin in Ungarn entdeckt worden;-..äbrigens dürfte sie, vorzüglich an feuchten Plätzen mit Vortheil anzubauen sein.

163. Host, N. T. Flora Austriaca Vol II. Vienna: F. Beck; 1831.

Note: D.E.93/10/DEPHD.

(Host, 1831) Flora Austriaca p. 336

V. narbonensis

In cultis Dalmatiae. Visiani.

Fl. Junio

V. serratifolia

In Hungaria ad fluvium Leitha in dem Heiligenkreuzerwalde, et alibi.

Fl. ab Aprili ad Julium.

164. Houérou, H. N. Le. Recherches Ecologiques et Floristiques sur la végétation de la Tunisie Méridionale, seconde partie. La Flore. : Univer. d'Alger, Inst. de Recherches Sahariennes, Memoire No.6. Ouvrage publié avec le concours du Centre National de la Recherche Scientifique; date?

Note: D.E.93/10/.

(Houérou, date?) Recherches Ecologiques et Floristiques sur la végétation de la Tunisie Méridionale, seconde partie. La Flore, p.81

No.666

V.n.L.

ssp. eu-narbonensis Hayek

Enfidaville! Sousse (Burolet), Sfax (Espina).

165. ICARDA. Annual Report PFLP. Aleppo: ICARDA; 1984.

Note: D.E.93/10/ new.

The green forage palatability of *V. narbonensis* is higher than that for *V. villosa*, but lower than that of *V. sativa* (ICARDA, 1985)

low palatability compared to *V. sativa*

ICARDA 1985, Annual report 1984 pp 261-262, Aleppo, Syria.

166. ICARDA. ICARDA Annual Report. International Centre for Agricultural Research in Dry Areas, Aleppo, Syria. . 1987B.

Note: D.E.93/10/.

V. villosa ssp. *dasycarpa* and *V. narbonensis* rarely shatter their pods, while *V. sativa* does.

167. Ignazio Ronconi Fiorentino. Dizionario D'Agricoltura o sia La Coltivazione Italian. 4th edn. ed. Venezia: Francesco Sansoni; 1796; Vol. I.

Note: D.E.93/10/.

(Ignazio Ronconi Fiorentino, 1796(MDCCXCVI)) Dizionario D'Agricoltura o sia La Coltivazione Italian

p. 220

Fave

legume di diverse spezie, che viene sopra una pianta di gambo alto due, tre, e quattro piedi, di dove fortono di grosse foglie, e de' fiori o bianchi, o rossici, o nericci, in fondo d'quali sono de'grossi bacelli che contengono le fave.

Favule

Campo dove sieno state seminate le fave, e poscia svelte.

168. Italy. Bari, Stazione Agraria Sperimentale. Relazione sull' attivita del triennio 1948-1950. . 1951: 31-33.

Note: D.E.93/10/ getreprint/Perrino.

The mixture *Vicia narbonensis*, *V. faba* var. *minor* and oats gave the highest yield of fresh fodder, 431 q/ha (pp 31-2).

Yields for 3 vetches, *latiro* 14 (*Lathyrus* spp.) etc. [Herb. Abs. Aug. 1952 No 1043, p. 189].

169. Italy. Lodi. Stazione Sperimentale di Praticoltura. Relazione sull'attivita l'anno 1952. . 1953.

Note: D.E.93/10/ getreprint/perrino.

Comparative trials with 4 species of vetch indicated that *Vicia narbonensis* is leafy and drought resistant, and does not require a supporting crop, but it that is susceptible to aphid attacks. Good results were obtained from the seed mixture *V. varia*/oats/ vetch (*V. varia*) sown at the rate 120, 20, 30kg/ha, respectively.

170. Jacques, S. Report submitted in fulfilment of requirements for the project in agricultural science (200-424): Nutritional value of narbon beans (*Vicia narbonensis*) as a supplement for sheep. University of Melbourne: Faculty of Agriculture and Forestry, unpublished; 1990 Nov.

Note: D.E.93/10/ /DEPHD.

171. Jacques, S.; Dixon, R. M.; Holmes, J. H. G. Narbon beans and field pea supplements for sheep fed pasture hay. Proc. Aust. Soc. Anim. Prod.. 1991; 19: 249.

Note: D.E.93/10/ /DEPHD.

172. Jacquin, N. J. von. Flora Austriae 5 30-31, t.8. ; 1778.

Note: D.E.93/10/.

173. Jahandiez, E.; Maire, R. Catalogues des Plantes du maroc Vol. 12. Alger: Umprimerie Minerva, En vente è Pais, chez P. Le Chevalier, Libraire; 1932.

Note: D.E.93/10/.

(Jahandiez & Maire, 1932) Catalogues des Plantes du maroc Vol. 12 p. 428

V. narbonensis

ForÉts claires, broussailles, pâturages de la plaine-Mars-Mai

OL. ES. R. T. CN. Wn. WS. SW.

Aire géogr.- Europe mérid. Autriche, Hongrie, asie occident. Egypte, Tunisie, Algérie. Madère.

174. Johnson, R. J.; Eason, P. J. Effects of dietary inclusion of field peas, lupins, narbon beans and chickpeas on the growth performance of broiler chickens. Proc. Aust. Poult. Sci. Symp., University of Sydney. 1990: 96-99.

Note: D.E.93/10/ /DEPHD.

Negative effect of narbon beans on feed intake. Previous expt, small scale. This experiment 136 mixed sex chicken fed to 42 days of age. All narbon tms (8%, 14%, 20%) had negative effect on feed intake.

175. Kalayci, M. Vill Eskishehir Zirai Arastirma Enstitusu tarafindan bugune kadar yapilan nadas alanlarini azaltmaya yonelik calismalar. Kuru Tarim Bolgelerinde Nadas Alanlarindan Yararlanma Simpozyumu, 28-30 Eylul, 1981, Ankara, Tubitak Yayinlari No. 593. ; 1981.

Note: D.E.93/10/ getreprint/Munzur.

176. Kansu, S. Koca fig (*Vicia narbonensis*) danesinin yem degeri üzerinde arastirmalar [composition and digestibility of *Vicia narbonensis* seeds]. Ankara Üniversitesi Ziraat Fakültesi Yayinlari . 1961; 171(Çalismalar 105).

Note: D.E.93/10/ Prof. Dr. Sedat Kansu/University of Anhara, College of Agriculture, Dep. of Feed Plants and Pasture Crops/ translation available/A\$300 for translation, 1993/Incomplete/ initials & page No's missing /DEPHD.

Tunceli variety, seeds green colour, local name eulbant(Kansu, 1961)

Native variety with black seeds is grown up wild in some parts of Turkey.

V.n as feed will play important part in the near future

digestion trial with Akkaraman sheep

digestible material

26.83% C.P.

1.23% ether extract

8.13% crude fiber

53.37 N-free

87.56% starch value

Suggested that feed can be used in concentrated rations of sheep as it contains high amount of digestible nutrients.

177. Karabulut, A.; Munzur, M.; Ozturk, H. Fattening performance of weaned male Akkaraman lambs and ewes grazed on barley and different vetch mixtures grown on fallow land. Genel Yayin Tarla Bitkileri Merkez Arastirma Enstitusu. 1989, No. 6, 27 pp.; 24 ref. 1989;

Note: Nadas alanlarina ekilen farkli karisimler üzerinde otlatilan toklu ve sütün kesilmis kuzularin besi gucleri üzerinde arastirmalar. Tarla Bitkileri Merkez Arastirma Enstitusu, Ankara, Turkey. Numbered-Whole /CAB91_90/getreprint.

Lambs and ewes were grazed separately on *Vicia villosa* subsp. *varia* + *Hordeum vulgare* or *V. narbonensis* + *H. vulgare* with or without 500 g concentrates or fed on concentrates alone. The stocking rate was 14 lambs or 14 ewes/1.2 ha. The mixtures were sown in late 1984 and grazing began in early May 1985. Av. liveweight gains after 6 weeks in lambs were 5.83, 8.41, 6.39, 9.90 and 10.54 kg and daily liveweight gains were 144, 200, 156, 234 and 251 g for *V. villosa* subsp. *varia* + *H. vulgare* without concentrates and with concentrates, *V. narbonensis* + *H. vulgare* without concentrates and with concentrates and concentrates alone, resp. Corresponding figures for ewes were 3.89, 7.26, 7.77, 8.49 and 9.46 kg and 92, 173, 185, 202 and 220 g. The contribution of the *Vicia* spp. to the mixtures changed with maturity; they were generally grazed out after 6 weeks. At the later stages of grazing, herbage CP was low and CF high.

178. Karabulut, A.; Munzur, M.; Ozturk, H. Nadas alanlarina ekilen farkli karisimler üzerinde otlatilan toklu ve sütün kesilmis kuzularin besi gucleri üzerinde arastirmalar [Fattening performance of weaned male Akkaraman lambs and ewes grazed on barley and different vetch mixtures grown on fallow land]. Genel Yayin Tarla Bitkileri Merkez Arastirma Enstitusu.. 1989; 6: 27pp.

Note: D.E.93/10/ Tarla Bitkileri Merkez Arastirma Enstitusu, Ankara, Turkey/LA: Turkish/LS: English.

Lambs and ewes were grazed separately on *Vicia villosa* subsp. *varia* + *Hordeum vulgare* or *V. narbonensis* + *H. vulgare* with or without 500 g concentrates or fed on concentrates alone. The stocking rate was 14 lambs or 14 ewes/1.2 ha. The mixtures were sown in late 1984 and grazing began in early May 1985. Av. liveweight gains after 6 weeks in lambs were 5.83, 8.41, 6.39, 9.90 and 10.54 kg and daily liveweight gains were 144, 200, 156, 234 and 251 g for *V. villosa* subsp. *varia* + *H. vulgare* without concentrates and with concentrates, *V. narbonensis* + *H. vulgare* without concentrates and with concentrates and concentrates alone, resp. Corresponding figures for ewes were 3.89, 7.26, 7.77, 8.49 and 9.46 kg and 92, 173, 185, 202 and 220 g. The contribution of the *Vicia* spp. to the mixtures changed with maturity; they were generally grazed out after 6 weeks. At the later stages of grazing, herbage CP was low and CF high.

179. Karl Heinz Rechinger, K. H., Ed. Flora Iranica: Flora des Iranischen Hochlandes und der umrahmenden Gebirge : Persien, Afghanistan, Teile von West-Pakistan, Nord-Iraq, Azerbaidjan, Turkmenistan. Graz, Austria: Akademische Druck-u. Verlagsanstalt; 1963.

Note: D.E.93/10/ in latin.

Includes bibliographical references.

180. Keatinge, J. D. H.; Asghar Ali; Roidar Khan, B.; Abd El Moneim, A. M.; Ahmad, S. Germplasm evaluation of annual sown forage legumes under environmental conditions marginal for crop growth in the highlands of West Asia. J. Agron. Crop Sci.. 1991; 166: 48-57.

Note: D.E.93/10/DEPHD.

In the very large areas of arid highlands in West Asia, of which land over 1000 in Balochistan (Pakistan) is typical, as a result of rapidly increasing numbers of small ruminants and subsequent overgrazing of natural rangelands, severe shortages in animal feed are being experienced. To address this problem the Arid Zone Research Institute (AZRI) have been evaluating annual forage legume germplasm for adaptability to the harsh climatic conditions of highland Balochistan. Due to the marginally of the environment for sustained crop production an unconventional germplasm evaluation strategy has been adopted which emphasizes the introduction of landraces, particularly of the genus *Vicia*. The substantial risk of crop failure from either cold or drought, in any year, makes continuity of seed supply of selected lines a major problem. Support from ICARDA in Syria for re-supply of seed is a major advantage to the AZRI program. In the last three years some tangible progress has been made in selection. *V. villosa* ssp. *dasycarpa* Acc. 683 has with autumn sowing shown sufficient cold tolerance and is highly productive in wet years. *V. ervilia* Acc. 2542 has shown some potential for drought tolerance which could be exploited for spring sowing.

181. Kernick, M. D. Indigenous arid and semi-arid forage plants of North Africa, the Near and the Middle East. Rome: FAO; 1978. (EMASAR Phase IIEcological Management of Arid and semi-arid rangelands in Africa, the Near and Middle East; v. IV).

Note: D.E.93/10/ review/DEPHD.

Kernick,1978; quoting Van der Veen(1959) *V. ervilia* and *V.narbonensis* adapted to cold, produce early vegetative growth when seeded in autumn. *V.n* strong resistance to bird damage in the early stages of growth, appears to be one of the most bird resistant *Vicia* spp.

V. n. is a vigorous growing annual with angular straight stems growing to a height of 30-60 cm and strongly pigmented at the base of the axillary buds and having violet flowers and linear oblong pods; aspect of growth is similar to *V.faba* but the pods and grains are smaller(Kernick,1978)

Kernick(1978); reports that a number of varieties have been selected from various vetches including *V.n.* in the Mediterranean region, particularly in Portugal, Spain, Greece, Turkey, Algeria, Morocco and Cyprus

Dsn of *V.n.*(incl.*V.j.*) Spain to Crimea, Iraq, Iran, N.W.india, C.Asia (Turkemenia to Tian Shan)(Kernick, 1978)

Kernick,1978-*V.n* has proved well adapted to poor, dry, siliceous soils in France, does well on light calcareous soils in Syria, as long as not too dry or humid.

Tackholm(1974); in Egypt *V. n.* and *V. monantha* (*V.articulata*) weed in cultivated fields in Nile Libyan Oasis, Med coastal region and the Isthmic desert.

Mouterde(1966); in Lebanon, *V.n.* grassy places and forest areas/ *V.villosa*, *V. ervilia* in abandoned and cultivated fields

Kasapligil(1956) ; Jordan valley , *V.n.* weed in fields at about 200m elevation

Kernick(1976); foliage of *V.n* dries up quickly in spring, turns brown and is shed unlike *V. villosa* and *V. sativa* which remain green until formation of seeds

Libya: .c.Keith(1965)

Egypt:c.Tackholm(1974)

Recueil iconographique des espèces comestibles de légumineuses africaines, 1960-61, p48, fig 47 *V.sativa*

Hertsch(1971); large collection of native ecotypes from Turkey incl. 43 acc. *V. ervilia*, 35 *V. n.*, 57 *V. pannonica*, 71 *V.peregrina*, 234 *V. sativa*, 20 *V. villosa*, 57 *V.villosa* ssp *dasycarpa*, assembled at Izmir, to be evaluated under dry-land conditions

Kjellqvist, pers. comm.(1977);->ssp *amphicarpa* at Grassland research Institute near Ankara

Barbut(1955) ;Algeria, *V.n.* variety 229 developed

Soteriadou(1960); *V. sativa*, Cyprus

Van der Veen(1967); reports that two developed local cultivars 'Harastani'(*V. sativa*) and 'Aleppo'(*V. narbonensis*) are in agricultural use in Syria

Le Houérou(1965); and .c.Le Houérou and Froment(1969); record difference of 20m days in time of heading between early and late maturing varieties of *Vicia* spp.

Kernick(1976); In N.Iraq, Canadian var. of *Avena sativa* superior fodder producer alone and in mixture with *Vicia* (incl.*V.n.*)

Al Maiuf, 1966 V.n. Northern Iraq

Kernick (1978); Late maturing vars of *A. sativa* and *A. byzantina* most suitable for grazing in mixture with *Vicia* spp.

Ionesco (1959); Morocco

V. ervilia

Foury (1954); *V. ervilia* overfeeding → toxicity. Seed should not be fed at more than 10-15%, should not be fed constantly cf. Löw, *Flora der Juden* *V. ervilia* best fodder for calves etc

182. Khattab, A. M. A. Taxonomic studies on the close wild relatives of the faba bean (*Vicia faba* L.) in section *Faba*. Doctoral Dissertation, University of Southampton, UK. Dissertation Abstracts International B (The Sciences and Engineering). 1988; 49(3): 617B.

Note: D.E.93/10/ Univ. Southampton, Southampton SO9 5NH, UK (back in Egypt now (1993)) DHK /DEPHD /DEPHD.

(Khattab, 1988) Taxonomic studies on the close wild relatives of the faba bean (*Vicia faba* L.) in section *Faba*.

Using the phenetic method of analysis (single linkage clustering), it was shown that all species known as the *V. narbonensis* complex were more similar to each other than to either *V. faba* or *V. bithynica*. *V. johannis* and *V. serratifolia* were distinguishable from each other and distinct from *V. narbonensis*. *V. hyaeniscyamus* differed from the rest of the *V. narbonensis* complex and was also distinct. *V. faba* was isolated from the rest of the species. *V. bithynica* differed from *V. faba* and the *V. narbonensis* complex. A proposed classification, descriptions and a key to taxa in section *Faba* are given.

183. Khattab, A. M. A.; Maxted, N.; Bisby, F. A. Close relatives of the fababean from Syria: a new species of *Vicia* and notes on *V. hyaeniscyamus* (Leguminosae). *Kew Bull.* 1988; 43(3): 535-540.

Note: D.E.93/10/ Dep. Bot., Cairo Univ., Cairo, Egypt not duplicate.

(Khattab et al., 1988) Close relatives of the fababean from Syria: a new species of *Vicia* and notes on *V. hyaeniscyamus* (Leguminosae).

Vicia kalakhensis sp. nov. from the Tell-Kalakh area near the Lebanese border is described and illustrated. The valves of the pods are torulose (as in *V. bithynica*), the adaxial standard surface is violet/purple (as in *V. hyaeniscyamus*), tubercular hairs are short and sparse (absent in *V. faba*), upper leaves are narrower than in other related species (except *V. bithynica* and *V. faba* subsp. *paucijuga*), upper leaflets have a prominently undulating margin, and the apex of the plant is suffused with purple, especially the stipules (but not to the extent found in *V. hyaeniscyamus*). A description is also given of *V. hyaeniscyamus*, and its differences

from other members of the *V. narbonensis* complex are outlined.

184. Kirn, H. S. *Vicia narbonensis* Linn. - an addition to the Indian flora from Poonch. *Journal Economic and Taxonomic Botany*. 1983; 4(3): 979-980.

Note: D.E.93/10/ not duplicate.

(Kirn, 1983) *Vicia narbonensis* Linn. - an addition to the Indian flora from Poonch. In *Hooker's Flora of British India* → *V. narbonensis* → near Peshawar, now Pakistan

The plant grows as a common weed in the district Poonch of Jammu and Kashmir state.

Collected from Mankote and near Chote Shah shrine in Tehsil Mendhar where it grows as a common weed in wheat fields and wastelands.

Voucher specimen →

Herbarium dep, Biosciences, University of Jammu No. (H. S. Kirn) 1381, 2317, 2322

2 pairs of leaflets.

185. Kislev, M. Early Neolithic horsebean *Vicia faba* form Yiftahel Israel. *Science*. 1985; 228: 319-320.

Note: D.E.93/10/ DEPHD.

(Kislev, 1985) Early Neolithic horsebean *Vicia faba* form Yiftahel Israel.

186. Kitaibeli, P. *Addimenta ad Floram Hungaricam* (Kanitz, A. edidit). *Linnaea*. 1863; 16.

Note: D.E.93/10/.

(Kitaibeli, 1863) *Addimenta ad Floram Hungaricam* (Kanitz, A. edidit)

V. serratifolia

ad Essekinum, Neoplantam, Vukovarinum, pece Sz. Merton, Sopronium, in praedio Bositova ad Hatzfeld.

187. Kitamura, S. *Flora of Afghanistan*. In 'Results of the Kyoto University scientific expedition to the Karakoram and Hindukush, 1955', Vol 2. Kyoto University, 1960. . 1960.

Note: D.E.93/10/ Perry/(Seen at Kew).

Afghanistan

Vicia narbonensis not listed.

Lists *L. apaca*, *L. humilis*, *L. inconspicuus*, *L. pratensis*, *L. sativus* and *L. sphaericus*

Distribution of *L. sativus*: (Charikar, June 23, 1955 S.K.). Distribution given as Europe, North Africa, Caucasus, Iran, Pakistan, Afghanistan, Dahuria, Central Asia (common), Dz-Kashg., India, Himalaya: Kumaeon.

188. Kittel, M. B. *Taschenbuch der Flora Deutschlands*. Nürnberg: J. L. Schrag; 1844.

Note: D.E.93/10/DEPHD.

(Kittel, 1844) *Taschenbuch der Flora Deutschlands* pp1168-1169

V. narbonensis

Stengel 1-2, hoch, aufrecht oder liegend, Hülsen abstehend, schmutzig braun, Samen 4 "dick, schwarzbraun

Auf Aeckern in Südkrain, im südlichen Deutschland als Futterpflanze hier und da angebaut. Juni-July.

189. Kling, M. Die Handelsfuttermittel. Stuttgart: Eugen Ulmer; 1928.

Note: D.E.93/10/DEPHD.

Vetch and cracked vetch

The seeds of the following vetches are used as feedstuffs for farm animals*

1) common vetch (*V. sativa* L.)

2) narbon vetch (*V. narbonensis* L.)

3) sand vetch (*V. villosa* Roth)

The vetches are to be used in a similar way to peas, but should be fed only in a slightly lesser amount.

Vetches are due to their bitter taste not taken up in large quantities by animals. They are also less suited as dairy feed, because they influence the milk secretion negatively. It is possible to de-bitter vetches by boiling in NaCl (M.Schmöger, Jahresberichte über die Tätigkeiten der landwirtschaftlichen Versuchstation Danzig, 1916/17).

190. Kling, M. Verwertung des Getreideausputzes und der Unkrautsamen als Kreigsfuttermittel 4. Samen von wilden Wicken. Landwirtschaftliches Jahrbuch für Bayern. 1917; 7: 729-732.

Note: D.E.93/10/DEPHD.

(Kling, 1917) The paper deals with the utilisation of screenings and judging from the index, it describes the individual weed species to be found and the possible utilisation of such mixtures as feed. pp. 729-732 deal with the following *Vicia* species which can be found in screenings: *V. hirsuta* Koch, *V. sepium* L., *V. angustifolia*, *V. cracca* and Kling reviews the HCN story quoting Mallèvre (1906, Mitteilungen der Deutschen Landwirtschaftsgesellschaft, p. 231) who found 0.0675% HCN in the seeds of wild vetches from the Medoc. Bruyning and van Haarst (Chemiker Zeitung 1900, II. Sem. No. 4, p. 32) found HCN development from the seeds of *V. sativa* var. *dura*, flor. alb. Bernayer, Brittanica, *V. canadensis*, *V. hirsuta*, *V. angustifolia*. No HCN was found in *V. narbonensis*, *V. cracca*, *V. agrigentina*, *V. biennis*, *V. disperma*, *V. pannonica*, *V. cassubica*. The amounts of HCN found in *V. sativa* were 0.00016-0.0008% and with *V. angustifolia* 0.0054%, which are minor amounts compared to those of Mallèvre (1906). Guignard (Mitteilungen der Deutschen Landwirtschaftsgesellschaft, 1906, p.232) found that HCN was absent in *V. cracca*, *V. narbonensis*, *V. fulgens*, *V. dumetorum*, *V. villosa*, but he found 0.03% in *V. macrocarpa*.

Kling analysed vetches for HCN (a.a.O., an anderem Orte, e.g. published elsewhere, but no ref. given) and found no HCN in the seeds of *V. hirsuta* (Rauhhaarige

Wicke) (which is contrary to Bruyning & van Haarst (1900) [2 samples analysed: 11.44%, 9.72% moisture, Crude protein (actual protein) 27, 25% (22.25%), 25.25% (18.63%)], and he found it developing strongly from seeds of *V. sepium* (Zaunwicke) [10.44% moisture, Crude protein (actual protein) 29.88% (25%)] and *V. angustifolia* (schmalblättrige Wicke, Trieurwicke) [9.45% moisture, Crude protein (actual protein) 30.75% (25.63%)]. Seeds containing the HCN are therefore poisonous and should not be fed. In the province Brandenburg poisoning of several horses with Cracked vetch has been reported. Several of them died. (Filter, P. 1915, Der Landbote, Zeitschrift der Landwirtschaftskammer für die Provinz Brandenburg). The narrow leaved vetch which is obtained from the screenings of imported foreign grain, and the black, as well as a speckled variety were present in large quantities. There is no doubt, that this feed, for which the development of HCN was clearly demonstrated, is capable of causing severe damage to the health of the animals.

Seeds of *V. cracca* [13.3% moisture, Crude protein 18.3%].

191. Knalman, M.; Burger, EC. Chromosomal localization of 5S rRNA genes in *Vicia narbonensis*. *Caryologia*. 1986, 39: 3-4, 217-226; 17 ref. 1986;

Note: Inst. für Biophysik der Universität Hannover, Herrenhauser Strasse 2, 3000 Hannover, German Federal Republic. Numbered-Part /CAB89_87.

Sites of 5S rRNA genes in metaphase chromosomes of a *V. narbonensis* karyotype were located by in situ hybridization. One chromosome pair, the second longest, exclusively bore the 5S rRNA gene sites. The genes were clustered at one site on the short arm, distal from the centromere. The *V. narbonensis* karyotype investigated carried about the same amount of 5S rRNA genes as the normal *V. faba* karyotype.

192. Knälmann, M.; Burger, E. C. Chromosomal localization of 5S rRNA genes in *Vicia narbonensis*. *Caryologia*. 1986; 39(3-4): 217-226.

Note: D.E.93/10/ getreprint/Inst. für Biophysik der Universität Hannover, Herrenhauser Strasse 2, 3000 Hannover, German Federal Republic.

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193. Koch, D. J. Synopsis Florae Germanicae et Helveticae. Frankfurt: F. Wilmans; 1835.

Note: D.E.93/10/DEPHD.

(Koch, 1835) Synopsis Florae Germanicae et Helveticae *V. narbonensis*

In cultis, im östr. Littorale, bei Triest, Biasoletto! Fiume, Noé!

Mai, Jun. Dod. pempt. p. 516.

194. Koch, Wilhelm Daniel Josef. Synopsis Florae Germanicae et Helveticae, exhibens stirpes phanerogamae rite?

cognitas quae in Germania, Helvetia, Borussia et Istria. Rankfurt: Friedrich Wilmans; 1836.

Note: D.E.93/10/.

(Koch, 1836) Synopsis Florae Germanicae et Helvetiae, exhibens stirpes phanerogamae rite? cognitas quae in Germania, Helvetia, Borussia et Istria, p. 195

V. narbonensis (L. sp. 1038)

racemis axillaribus 2-4 floris brevissimis, foliis superioribus bijugis, foliolis ovalibus obtusis subdentalis integerisque, vexillo glabro, dentibus calycis ovato-planceolatis in aequalibus superioribus dimidio-brevioribus, leguminibus compressis, p-ilosius pilis basi bulbosis, margine muricato-ciliatis.

In cultis, im östr. Littorale bei Triest, Biasoletto! Fiume, Noe! Mai-Jun. Dod. pempt. p.516-

V. serr.

Intra fines fl. nostrae nondum lecta, differt: foliolis a medio ad apicem dentatis et leguminibus margine excepto, glabris.

195. Koie, M. and Rechinger, J. H. 1954-65 Symbolae Afghanicae, 6. parts Kongel Danske Vidensk Selsk., Biol Skr., 8. (1) etc Copenhagen.

Note: D.E.93/10/ Perry/(Seen at Kew).

Not a flora, but covers various early collection totalling about 15,000 specimens, Leguminosae covered in Vol 3.

Does not list *V. narbonensis*.

Lists *L. aphaca*, *L. humilis*, *L. inconspicuus*, *L. pratensis*, *L. sativus*

Distribution (*L. sativus*): C: Bamian, 2500m (K2921), E: Darulfanum bei Kabul, auf Getreidefeldern (V.1665), NE: Ghorband, 2400m (E. 2360). West-Nuristan: Oberes Ramgel-Tal zwischen Puschol und Nalu, bei Patscho, zwischen *Vicia faba* und Weizen, 2160m (Sch. 122).

196. Körber-Grohne, U. Nutzpflanzen in Deutschland. Kulturgeschichte und Biologie. Stuttgart: Theiss; 1987.

Note: D.E.93/10/.

p.128

Camerarius (1586) [Camerarius, Joachim (printed 1626): Kreutterbuch deß Hochgelehrten und weltberühmten Herrn D. Petri Andrae Mattioli...gemehret und verfertigt 1586, Nürnberg] and Tabernaemontanus (1588) [Tabernaemontanus, Jacob Theodor, 1588: Kräuter-Buch, zweimal neu bearbeitet und ergänzt durch Kaspar Bauhin 1664. Joh. Ludw. Königs, Offenbach, 1731] Main

both depict beans (*bonen*, *Faba*) and wild beans (*wilde bonen*, *Faba sylvestris*). The plates shown on p. 128 are from J. Camerarius (1586), (Nürnberg, Germany) who translated and reworked the herbal of the botanist Mattioli (Siena, Italy)

The German text by Camerarius (1586):

1)'Bonen... haben einen viereckten Stengel...die Blumen hangen an einem Stiel, aber auff einer seiten des Stiels stehen sie nacheinander geschichtet, sind rauch(grau) und von mancherley farben... große, dicke Hülsen...Man sät sie allenthalben, auch auß der ursachen, daß sie die Ecker feyst und fruchtbar machen, denn so sie blühen und voll Saffts sind, ackert man denselbigen ort, da werden die Bonen unterscharret.. also kompt der Saft dem Acker zu theil, der davon geyl wirt.

2)'Wilde Bonen...man findets auff den Feldern, es fladert auff der Erden mit viereckten Stengeln, die sind in einander verschrenckt und verwirret. Tregt Bletter wie die Gemeinen Bonen, Purpurweiße Blumen, daraus entspringen flache Schoten, viel kleiner denn der Bonen, darin steckt der Samen, am Geschmack wie die Bonen, hat auch ebensolche Tugendt. Wird sonderlich viel gefunden in den weiten Feldern des landes Apuliae.'

1) beans, also sown as green manure, ploughed in at flowering when the plant is full of juice etc.

2) wild beans...to be found in the fields, lying on the ground with its square stems, which are crossed over and entangled. The leaves are like those of beans, purple-white flowers, from which flat pods emerge, therein is the seed, much smaller than those of beans, its taste like that of beans, has the same virtue. Is found unusually frequent in the wide fields of Apulia.

The Latin text of Camerarius (Kew) mentions beside Apuliae also Messino, a promontory near Naples.

Camerarius; J.I.F. (1583) MDLXXVII

Hortus medicus et philosophicus [Pre Linn. Colln. A bd with Camerarius J. the younger (1588) Icones accuratae nunc primae etc., Frankfurt a.m.]

p. 20 *Aracus fuchsii*, ut gesnerus picturae inscripsit, vulgo *viciam Romanam* vocant. *Fabae sylvestri* Matthioli et *Piso nigro seu Phaseolo Dodonaei* cognata planta

p. 59. *Faba rubra*, *alba*, *maior* & *minor*, ite *sylvestris* alijs *Aracus*- *Ferula* quam quatuor cubitorum vidi Monaci, unde habui, in horto illustrissimi principis. Crescit etiam ad promontoriae Misenu et in tota Apulia uberrime, in qua propter defectum lignorem eam potiss ad instruendos focos usurpant. *Martialis* vocat *ferulas tristes* scepta *paedagogoru*. *Namea* manus *discipulorum* alim caedebant *magistri*.

The illustration depicted by Camerarius (1583) depicts *V. narbonensis* with its seeds. The seeds have clearly the funiculus attached. Together with the description of the flowers as purple-white, this suggests that the plants growing in Southern Italy were of var. *aegyptiaca*.

However, the illustration in Fuchs' Kreutterbuch depicts the same woodcuts, in the edition seen, the titles were mixed up. Could it be Gesner's woodcut? Fuchs is known for his drawings and woodcuts, and these were reused many times in later herbals.

197. Kuhnholz-Cordat, G.; Blanchet, G. Les végétaux vasculaires et leurs parasites cryptogames. Flore des environs immédiats de Montpellier. Paris: Paul Le Chevalier; 1948; Tome II.

Note: D.E.93/10/.

p. 392 *Vicia*

attacked by (sont atteintes de rouille, 2 de mildiou, 1 d'oidium)

Vicia narbonensis espèce cultivée

Uromyces fabae(Pers. de Bry senso lato)

sur *narbonensis*, G. Boyer coll. 20.1.1895.

198. Kunkel, G. Plants for human consumption. An annotated checklist of the edible phanerogams and fruits. Koenigstein: Koeltz Scientific books; 1984.

Note: D.E.93/10/ /DEPHD.

Kunkel(1984) pp. 379-380. This is very much a compilation from two sources: Hanaka, T. (1976): Tanaka's cyclopeadia of edible plants of the world. Keigaku Publ. Co., Tokyo, 924pp.; Hedrick, U. P.(ed.), repr. ed. 1972: Sturtevant's Edible plants of the world. Dover Publications, New York 686pp.)

Vicia

V. americana Muhl. ex Willd.-N. America; young stems boiled or baked.

V. amoena Fisch. ex Ser.- E. Asia; young leaves a pot-herb

V. amurensis Oett.- Manchuria; as above (Tanaka). *V. articulata* Hornem.-Medit. region; seeds used like lentils. *V. cracca* L.- Eurasia; young shoots used as a pot-herb; leaves also used as tea; seeds used ? as food (Hedrick).

V. ervilia (L.) Willd.- Medit. region; seeds eaten in soups.

V. gignatea Hook. (?)- Western N. America; seeds edible (???).

V. heptajuga? Nakai- Korea; young leaves a pot-herb.

V. hirsuta (L.) S. F. Gray- Eurasia, N. Africa, weedy; young leaves & shoots eaten (boiled?); seeds cooked or roasted (Tanaka).

V. hirticalycina Nakai- Korea, young leaves a pot-herb.

V. monantha Retz- Medit. region, weedy, seeds used in soups

V. narbonensis L.- S. Europe; 'A vegetable' (Tanaka), hedrick: seeds eaten.

V. noena Boiss. & Reut. ex Boiss.- Asia Minor; seeds edible

V. pallida Turcz.- Himalayan region, Cult.; as above? (Hedrick).

V. pisiformis L.- Europe, cult.; seeds used like lentils.

V. pseudo-orobus Fisch. & Mey.- N. E. Asia; young stems & leaves a vegetable.

V. quinquerivaria Miq.- E. Asia, widespr.- young shoots & pods boiled.

V. sativa L.- Eurasia, cult.; seeds ground into flour used in soups and bread; young shoots a pot-herb; leaves also a substitute for tea. [D.E. This type of

information serves to show that although these plants are used for food etc., they are no necessarily harmless. The young *V. sativa* plant, seedling can contain high levels of β -CN-ala and 4-glu- β -CN-ala, the seeds of *V. sativa* contain Vicine, and the two mentioned NPAA's, and may also have vicianine, depending on the cultivar, wild type, geographic origin(halet & Tschiersch, 1967)

V. sepium L.- Eurasia; seeds used as a food (Hedrick).

V. subcuspidata Nakai- Korea; young stems and leaves a pot-herb.

V. tenuifolia Roth.- Eurasia; apparently used as a pot-herb.

V. tridentata Bunge- Manchuria; used as a pot-herb.

V. unijuga A. Br.- E. Asia, widespr.; as above

V. venosa Maxim.- E. Asia to Siberia; used as a pot-herb.

V. villosa Roth- Eurasia, weedy; 'A vegetable' (Tanaka).

V. spp.- a genus recommended for further research

[D.E. isn't that lovely?].

199. Kupce, A. K. Biochemistry of vetch [contained in]. Biohim. kuljtur. Rast. 1938; 2: 341-57.

Note: D.E.93/10/ getreprint/hanelt/kew.

(Kupce, 1938) Only *Vicia sativa* L. and *V. villosa* Roth are widely used, although *V. pannonica* Jacq., *V. narbonensis*, *V. ciliatula* and some other species may be of importance to agriculture. Data on chemical composition concerns *V. sativa* and *V. villosa* chiefly, but even this information is mostly not reliable.

The seeds, used for fodder, are rich in albumen and carbohydrates. Analyses of chemical constitution of hay and forage indicate that there is a high nutritive value in all phenological phases. The seeds of *V. sativa* contain vicianin and vicin; in hydrolysis the latter liberates D-glucose and divicin; further splitting of these forms of glucose yields HCN [sic, is it the translator or the author who got the chemistry mixed up? HCN can only come from Vicianine]. Similar poisonous principles are found in *V. villosa*, *V. cracca*, *V. angustifolia* and some other species. Geographical factors show very little effect on the chemical composition. While conspicuous differences in the chemical constitution of grains were established between varieties, the chemical composition of the forage varied very little.

Generally, chemical analyses are incomplete and scanty and hence no attempts to select forms in respect of this character have been undertaken, although there seem to be vast possibilities in this respect. see also Abs. 1088 [Herb. Abs. No. 690 June, 1940, p. 134].

200. Kuporitskaya, T. A. *Vicia narbonensis* and its biological characters [Ru]. In : Intruduktsiya kul'turnykh rastenii.[Introduction of cultivated plants] Kishinev: Akad. Nauk. Moldav. SSR. 1970: pp 31-5 [From ref. Zh. 55. rastenievod. 1971, No. 5 abs. 485] [Herb. Abs. 41(4), Dec.1971, No. 2503, p. 377].

Note: D.E.93/10/ getreprint/Hanelt/DEPHD.

Vicia narbonensis was superior to *V. faba* in earliness and fresh herbage yields, and superior to *V. sativa* in nutritive value. *V. narbonensis* contained 20.8% crude rotein and 22.3 % cellulose in the fresh herbage, compared with 20.2 and

25% in *V. sativa*, respectively. [From ref. Zh. 55. rastenievod. 1971, No. 5 abs. 485] [H. A. 41(4), Dec.1971, No. 2503, p. 377].

201. . A la decouverte de la Flore du Haut-Languedoc Montagnard(Preface de A. Baudiere) Parc Naturel Regiona du Haut- Lanquedoc. : published?

Note: D.E.93/10/ incomplete.

[A la decouverte de la Flore du Haut-Languedoc Montagnard(Preface de A. Baudiere) Parc Naturel Regiona du Haut- Lanquedoc, ref. incomplete]

Chap XIV

Milieux Composites les environs de Burlats. Station de Type Mediteraneen p. 289

V. narbonensis, en grandes folioles 2-4 fl.

202. Ladizinsky, G. On the origin of the broad bean, *Vicia faba* L. Isr. J. Bot.. 1975; 24: 80-88.

Note: D.E.93/10/.

203. Ladizinsky, G. Origin and domestication of the Southwest Asian grain legumes. In: Harris, D. H.; Hillman, G. C., Eds. Foraging & Farming. London: Unwin Hyman; 1989: 376-389.

Note: D.E.93/10/ /DEPHD.

Cultivated peas can be hybridized with *P. fulvum* only when the latter is the male parent(Ben Ze'ev & Zohary, 1973, Isr. J.Bot 22, 73-91)

Wild chickpeas near Mardin together with other wild legumes, near Adiyaman forms stands with *C. pinnatifidum*

Considers Zohary & Hopf's suggestion of section *Faba* being the wild stock for *V. faba* as unfounded because interspecific hybridization was unsuccessful. He equally considers Zohary's supposition (1977) re : potential karyotypical variability because chromosome numbers do not vary($2n=14$)

Considers the breeding system of broad beans to be a clue to the ancestor, Allogamous, some lines being self-incompatible, would expect it to have grown in large populations like other cross- pollinated species.[D.E. (based on idea menitoned by Hanelt)Consider *V. faba* speciation as part of domestication, breeding system in wild section *Faba*, check out variability in outcrossing in *V. narbonensis*, *V. johannis*, *V. serratifolia*]

Could also grow solitary as a self-pollinator and has been overlooked
could be extinct

V. sativa and *V. ervilia* are the main forage crops today in the Mediterranean basin

V. sativa $2n=10$ -types prefer man-made habitats

$2n=12$ -types grow mainl in primary habitat

$2n=14$ -types confined to stony and dry habitats, usually in steppe vegetation

Ladizinsky, 1968

Hollings & Stace, 1974

Ladizinsky & Tamkin, 1978

Ladizinsky, 1981

Bitter vetch, highly uniform, in contrast to *V. sativa*, wild *V. ervilia*, South-eastern Turkey, Israel Mt. Hermon
Ladizinsky and van Oss 1984

Based on the argument that collecting wild legumes for seed would have been an unrewarding task, due to the low seed set in crops like lentils and due to the open nature of natural stands, so the plants were more likely gathered whole by uprooting and used to provide fodder for captive animals[check whether animal culture predates plant culture]

Bohrer(1972) : plant gathering in South-West Asia in pre-agricultural times for providing captive animals with fodder.

10% germination, 10 seeds/plant 1:1 return on sown seed, therefore no incentive to for further sowing(pulse domestication before cultivation)

gathering of lentils

-> selection for loss of dormancy, because under heavy gathering, some pods could have shattered and the available space would have made it unnecessary to prevent overcrowding, which would occur in ungathered, quickly germinating populations.

lack of seed dormancy is a requisite for domestication,

Pod indehiscence less critical in vetches than in food legumes. Generally, legumes are uprooted(legere-to pick up)and transported. selection for indehiscence during transport would be an advantage

genetic diversity of lentils -isozyme electrophoresis

Pinkas 1985

pinkas et al 1985 plant Systematics and Evolution 151 131-140

L. nigricans found near Tende

Small populations of brown-small seeded lentils used to be grown in Tende in the French alps until WW 2, together with barley on narrow terraces, has been abandoned, these lentils no longer exist.

defns:check Zeven & de Wit

Cultivation: cultivated is not necessarily domesticated

Domestication: notion of dependance on man, indehiscent pods, lack of dormancy, lack of survival mechanisms.

204. Ladizinsky, G. Seed Protein Electrophoresis of the wild and cultivated species of selection[sic] *Faba* of *Vicia*. *Euphytica*. 1975; 24: 785-788.

Note: D.E.93/10/.

205. Lamarck, J. B. A. P. M. de. *Flora française* Vol. 2. Paris: L' Imprimerie Royale; Date?

Note: D.E.93/10/.

(Lamarck, date?)*Flora française* Vol. 2

V. narbonensis

Cette plante croît en Languedoc.

206. Lamotte, M. Prodrôme de la Flore du plateau central de la France (Compenant L'Auvergne, le Velay, la Lozère, les Cévennes, une partie du Bourbonnais et du Vivarais). Paris: G. Masson, Libraire de L'Académie de Médecine de Paris; date?

Note: D.E.93/10/.

(Lamotte, date?) Prodrôme de la Flore du plateau central de la France (Compenant L'Auvergne, le Velay, la Lozère, les Cévennes, une partie du Bourbonnais et du Vivarais) pp. 216 (check p. 215 for *V. narbonensis*)

locations

R.- Puy-de-Dôme. Broussailles des bords des fossés de la Limagne; base du pay de Crouel, Aubière, marais de Coer, de Marmillat, d'Ennezat, Bonnefille entre Riom et St.- Bonnet!

AC.-Allier. Montard près St. Pourçain! (Causse, Rodde) Chavenon, St. Sornin, Montet-aux-Moines(Boreau.)

Plaine ê l'Est de Gannat!

AR.- Lot. Bois au-dessus du hameau de Sourdille près Capenac! (Malvezin)R.

(I) Mai, Juillet

-> young plants hav entire leaves! He argues for separate species and lists characters that are different between *V. narbonensis* & *V. serratifolia*.

207. Lange, J. *Pugillus plantarum imprimis hispanicarum* (quas in itinere 1851-52 legit) I-IV. Haunia: Bianco Luno; 1860.

Note: D.E.93/10/.

(Lange, 1860-65)*Pugillus plantarum imprimis hispanicarum* (quas in itinere 1851-52 legit) I-IV

V. narbonensis

Ad ripas fluvium Manzanares pr. madrid; in agris ad Jaen!

208. Lapeyrouse, P. de. Histoire abrégée des plantes de pyrenées, et itinéraire des botanistes dans ces montagnes, Vol. I. Toulouse: Bellegarrique(ed.), Imprimeur de S. A. R. Monsieur Frère du Roi; 1818.

Note: D.E.93/10/.

(Lapeyrouse, 1818) Histoire abrégée des plantes de pyrenées, et itinéraire des botanistes dans ces montagnes, Vol. I p. 420 *V. narbonensis*

hab.

Lisières des bois (waldrand)

perpignan au champ de Mars, Toulouse ê Larramet.

209. Lauer, J. P.; Laurent-Täckholm, V.; überg, E. Les plantes découvertes dans les souterrains de l'enceinte du Roi Zoser ê Saqqarah(IIIe Dynastie). Bulletin de l'Institut d'Égypte . 1951; 32(Session 1949-1950): 121-137, Pl. I-IX.

Note:

D.E.93/10/

getreprint/Hanelt/schultze-Motel/DEPHD.

210. Laumont, P. (Delegation Generale du Gouvernement en Algerie. Direction de L'Agriculture et des Forets. Service des etudes et programmes documents et renseignements agricoles.) La culture de la Vesce-Fourrage en Algérie. Bulletin No. 3 (Nile Serie). 1954;

Note: D.E.93/10/ /DEPHD.

(Laumont, 1954) La culture de la Vesce-Fourrage en Algérie ' *Vicia narbonensis* ç tige forte, droite, courante en Afrique du Nord comme plante spontanée; cette plante vigoureuse (ç port rappelant celui de la Féve) a été préconisée ç diverses reprises comme culture fourragère des pays méditerranéens, sans toutefois s'y etre développé, en dehors de quelques coins de Cerdagne ou du Roussillon(Naudin). En Algérie, où elle est sensible au <blanc>, elle pourrait etre recommandé comme engrais vert au meme titre que la Féverole.'

Laumont(1926) La vesce fourrage en Algerie. pointed out that according to the work by Guignard, continued by Guérin, a cyanogenic glucoside, vicianine, absent from the vegetative parts of the plant, appears in the young grain, when the cotyledons begin to differentiate. Care should be taken with fodder plants harvested too late, and with the grain. The grain should be cracked, soaked and given to farm animals in moderate amounts. It is better given to the birds, principally to pigeons which seem to be less upset by it.

211. Laurence, R. C. N. A comparison of the grain and protein yield potential of some annual legume species in South Australia. Australian Journal of Experimental Agriculture and Animal Husbandry. 1979; 19: 495-503.

Note: D.E.93/10/ DHK /DEPHD /DEPHD.

R.Laurence used the following species (No.lines evaluated)

Lathyrus aphaca (1); *L. cicera* (20); *L. clymenum* (2); *L. ochrus* (7); *L. sativus* (40); *Vicia articulata*(1); *V. atropurpurea* (6); *V. benghalensis* (1); *V. dasycarpa* (1); *V. ervilia* (16); *V. faba* (80); *V. hybridia* (2); *V. narbonensis* (2); *V. sativa* (40)

Low grain yield and late maturity of *L. aphaca*, *L. clymenum*, *L. sativus*, *V. articulata*, *V. atropurpurea*, *V. dasycarpa*, *V. ervilia* and *v. hybridia* in 1974 resulted in their omission from 1975 work.

Yields of *Vicia* & *lathyrus* species with viney growth habits were low at both sites. these were late maturing and due totheir sequential ripening they were liable to lose seed from pod shattering before harvest. grain curde protein contents were high in some minor *Vicia* species.

EWhen mean yields of all lines of one crop are considered, *lathyrus ciera* outyielded other crop species at Roseworthy Agricultural College and Clinton.

Cicer arietinum and *V. narbonensis* had consistently low protein contents.(24.1-20.9%, mean 22.3%), (26.0-24.3%, mean 25.1%), respectively.

L. cicera- In the 1974 season, early flowering lines were highest yielding at the drier site but this was reversed at

MES. Portuguese line (CPI 13161) was highest yielding at MES and Clinton in 1975. CPI 16543, of similar origin, was shown to produce highest yields at RAC in both seasons. In general, Portuguese introductions flowered earlier than those from Greece, Crete and Peru.

L. cicera may be valuable under low rainfall.

L. ochrus- All lines were found to be early maturing when compared with other crops and timely harvesting was essential to avoid excessive grain loss due to pod shattering. An introduction from India (CPI 13732) appeared to show improvement over Mediterranean accessions in this regard, although objective measurements were not made. This line, although similar to most others in maturity, was later flowering and lower yielding ($P < 0.1$) than a consistently high yielding line (Waite Institute No. 5416)

V. sativa

Among the forty genotypes grown in 1974, those originating from eastern Mediterranean countries (Greece, Cyprus, Crete) gave yields significantly higher than those lines from northern Europe (Holland, France) and from Sicily ($P < 0.01$), although flowering dates were not consistent with this correlation. Golden Tares performed poorly in comparison to introduced lines. One line (Waite Institute No. 5133) [D.E. RL 110001, origin: Greece, CPI 14336, 100 seed weight 7.5 g] significantly outyielded other lines.

Other *Vicia* & *Lathyrus* spp., with the exception of *V. narbonensis*, contain toxic amino acids within their seeds and are subject to pod shattering at maturity. These problems require time for their solution and the crops have little immediate value. However, the relative yield improvement of *V. sativa* and *Lathyrus* species under dry conditions suggests that they may have advantages in such situations.

V. narbonensis yield 5.0-3.7 (mean: 4.3) t/ha Roseworthy (641 mm, 1974), 6.8-5.9 (6.3) t/ha Mortlock Experimental Station (815 mm, 1974).

212. Laurent, C. Catalogue raisonné des plantes vasculaires des Basses-Alpes dressé d'après les documents bibliographiques recueillis par feu L.A. Desalle. ; 1937.

Note: D.E.93/10/.

(Laurent, 1937) Catalogue raisonné des plantes vasculaires des Basses-Alpes dressé d'après les documents bibliographiques recueillis par feu L.A. Desalle

t. I Chez l'Auteur, 1937

No. 524 *V. narbonensis* L. (R. et F., V 221- Bonn, III, 59)

Annuel-Mai, Juin

Dans le champs de la vallée de la Durance où elle paraît peu abondante et où elle a été signalée à Mison (Herbier Burle=var. *serratifolia* Koch).

213. Lawson, P. & Son. The Agriculturalists Manual. Edinburgh: William Blackwood & Sons; 1836.

Note: D.E.93/10/ /DEPHD.

V. narbonensis

Pods without or with very short stalks.

Flowers reddish purple/stems much branching/native of France' Cultivated in Germany and some other parts of the continent, as a substitute for the common tare. It yields a large and close-growing crop of succulent fodder, of a strong beany taste, and is at first not well liked by cattle; however, if sown in autumn, it stands our winters well and grows very fast in early spring months, at which period cattle are fonder of it than they are when the clover season comes on. Samples in straw and seed by Mr. A. Gorrie, Annat Gardens, who has grown it for several successive seasons, and has all along found it to retain its greenness in winter in a remarkable degree, and to yield an abundant crop in the spring months; and in grain by David Falconer, Esq. of Corlourie'

V. serratifolia

native of Hungary

Variety of *V. narbonensis*, differs chiefly by having leaves and stipules deeply indented or serrated. It is cultivated in some parts of the continent as the preceding.

V. platycarpus

Large-podded vetch

Without footstalks-pods solitary, large, broad, and inflated, leaves resembling those of *V. narbonensis*. Stems strong and nearly upright, height one and a half feet. Seems much inferior to the two last in bulk of produce

D.E.: addendum to *V. narbonensis*

also (p.178) talks about *Lathyrus latifolius*, *L. sylvestris* (for bulk growth), *L. pratensis*, *L. hirsutus* and *L. cicera*.

214. Lazaridou, T. B.; Roupakias, D. G.; Tsafaris, A. S. Early embryo sac development and intraspecific variation in the mean endosperm cell cycle time in *Vicia narbonensis* (L.). Plant Breeding. 1989; 103(4): 336-345.

Note: Department of Genetics and Plant Breeding, Aristotelian University of Thessaloniki, Thessaloniki, Greece. Numbered-Part / CAB91_90.

Early endosperm development was studied in 7 populations under a 23/16°C day/night temperature regime. Double fertilization occurred <24 h after pollination and endosperm divisions were synchronous until the 8th division of the endosperm nuclei. Aberrant endosperm nuclei were then observed and increased in frequency after the 10th division. Endosperm nuclei finally disintegrated. A positive correlation ($r \geq 0.69$) was found between early pod length and number of endosperm nuclei in the ovules with each pod. The number of endosperm nuclei increased at a steady but different rate in the populations studied, which also differed in rate of embryo development. It appeared that intraspecific variation exists in mean endosperm cell cycle time and that the *V. narbonensis* populations A174 and A202 would be more compatible in this respect with *V. faba* cv. Polycarpe than the other *V. narbonensis* populations in interspecific hybridization for the improvement of *V. faba*, since A174 and A202 were at least one division later than the rest.

215. Lazaridou, T. B.; Roupakias, D. G. Early embryo sac development in faba beans (*Vicia faba* L.). *Plant Breeding*. 1991; 107(4): 338-341.

Note: Department of Genetics & Plant Breeding, Aristotelian University of Thessaloniki, POB 261, Thessaloniki, Greece. Numbered-Part /CAB92.

Early embryo-sac development was studied in the cultivars A108 and A151 under a 23/16°C day/night temperature regime. Endosperm nuclei divided synchronously during the first 8 divisions and produced normal nuclei. Aberrant endosperm nuclei were first observed after the 7th division and their number increased rapidly after the 10th division. Endosperm nuclei continued to divide until the 18th day after pollination. During the following days the endosperm nuclei decreased in number and finally disintegrated. Neither cellularization nor starch deposition was observed in the endosperm. It was concluded that early embryo-sac development in *V. faba* differed from that of *V. narbonensis* only in that the mean endosperm cell cycle time in *V. faba* was longer than in *V. narbonensis*.

216. Lazaridou, T. B.; Roupakias, D. G. (Dep. Genetics Plant Breeding, Aristotelian Univ. Thessaloniki, P.O. Box 261, Thessaloniki 54006, Greece). Intraspecific variation in mean endosperm cell cycle time in *Vicia faba* (L.) and interspecific hybridization with *Vicia narbonensis* (L.). *Plant Breeding*. 1993; 110(1): 9-15. CODEN: PLABED.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /*Vicia narbonensis* BA 1993 Vol. 1 DHK /DEPHD /DEPHD.

The rate of early embryo-sac development was studied in seven faba bean (*Vicia faba* L.) cultivars grown in a controlled environment. The embryo-sac stage was determined from the number of endosperm nuclei per embryo-sac and the number of embryo cells during the first 12 days after pollination. Differences in early embryo-sac development were observed between the genotypes studied. In addition, five different *V. faba* times *V. narbonensis* crosses and reciprocals were made using genotypes with small differences in mean endosperm cell cycle time and genotypes with large differences. The percentage of success (pod set) in *V. faba* times *V. narbonensis* crosses ranged between 9% and 59% while in the reciprocals it ranged from 12% up to 30%. However, cytological studies showed that the high percentage of success (pod set) observed in the cross A-107 times A-202 was not associated with a higher percentage of interspecific hybrid embryos. The results indicate that genotypes of the two species with smaller differences in mean endosperm cell cycle time result neither in a higher percentage pod set nor in bigger hybrid embryos.

217. Ledebour, C. F. von. *Flora Rossica*, Vol. I. Stuttgart: E. Schweizerbart; 1842.

Note: D.E.93/10/.

(Ledebour, 1842) *Flora Rossica*, Vol. I p. 665

V. narbonensis

Hab. in Tauria! (M. a Bieb., Steven pl. exs.) et provinciis caucasicis (pr. Derbetn (Steven, M. a Bieb.), territorio Elisabethopol et provincia Talüsh, alt. 500 hexap. (C.A. Meyer), reg. occidental! (Nordmann))

var. *serratifolia*: in Tauria

refs.

- Dec. Prodr. II p. 364

- Georgi Besch. d. russ. R. III, 4 p. 1169

- M. a Bieb. Fl. t. c. II, p. 163. III p. 474

- Steven in Mém. de la Soc. des Nat. de Mosc. IV, p. 53

- C. A. Meyer Ind. cauc. p. 147

- Hohenack. Enum. Elisabethopol. p. 249

- C. Koch in *Linnaea* XV, p. 722.

218. Lehmann, C. O.; Hammer, K. Bericht ueber eine Reise nach Spanien 1978 zur Sammlung kultivierter und wildwachsender Leguminosen. *Kulturpflanze*. 1983; 31: 185-206.

Vicia narbonensis, *V. serratifolia*, *V. sativa*, *V. articulata*, *V. lutea*, *V. cordata*, *V. benghalensis*, *V. angustifolia*, *Lathyrus sativus*, *L. ochrus*, *L. cicera*, *L. angulatus*, *L. annuus*.

219. Lindberg, H. Iter Austro-Hungaricum. åfersigt of Finska Vetenskap-Societens Förhandlingar. 1906; XLVIII(XLVIII)(13): 1-131.

Note: D.E.93/10/.

(Lindberg, 1906) *Iter Austro-Hungaricum*

p. 61 *V. narbonensis*

Hercegovina, Mostar, in agro, cum f. *heterophylla* (Rchb.) Roy.

V. serratifolia - Hung. austr. or., Orsova ad flumen Donau, in campo arenoso sterili.

220. LINKE, K. H.; EL, MONEIM A. M. A.; SAXENA, M. C. (Int. Cent. Agric. Res. Dry Areas, P.O. Box 5466, Aleppo, Syria). Variation in resistance of some forage legumes species to *Orobanche crenata* Forsk. *FIELD CROPS RESEARCH* 32(3-4): 277-285. 1993; CODEN: FCREDZ.

Note: BC26260 Leguminosae; BC26495 *Orobanchaceae* Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA93 notduplicate.

Parasitic weeds of the family *Orobanchaceae* threaten many forage legumes in the Mediterranean region. Laboratory and field screening of five lines each of six forage legumes (*Vicia narbonensis* L., *V. sativa* L., *V. villosa* ssp. *dasycarpa* (Ten.) Cavill., *Lathyrus sativus* L., *L. ochrus* (L.) D.C., and *L. cicera* L.) for resistance to the parasitic weed *Orobanche crenata* Forsk. revealed high interspecific and intraspecific variation. *Lathyrus ochrus* lines were free of emerged *O. crenata* shoots while those of *L. sativus* and *L. cicera* were highly susceptible to the parasite. Intraspecific variation in reaction to *O. crenata* was high within *V. narbonensis* and *V. sativa*, with several lines being free of *Orobanche* parasitism whereas others were highly susceptible. Lines with high resistance to *Orobanche* can

reduce the build-up of a seed bank of the parasite in areas where mainly food legumes are grown and can be of value for developing integrated Orobanche control systems. The laboratory screening, which is faster and cheaper, reliably predicted the field performance and hence retesting in the field can be restricted to those lines found resistant in the laboratory.

221. Loudon, Mrs Ed). Loudon's Encyclopedia of plants. London: Longmann's, Green & Co.; 1880.

Note: D.E.93/10/ /DEPHD.

Loudon(1880)

'p. 620 Lathyrus

A name employed by Theophrastus to designate a leguminous plant. It is said by his commentator Bodaeus a Stapel, to have been derived from (la) an augmentative particle, and (thyros), any thing which is exciting; and to have been applied to this plant in consequence of certain aphrodisiacal qualities ascribed to it.

L. sativus, Gesse fr. is frequently sown in Switzerland for soiling horses. In several parts of the continent, a white light pleasant bread is made from the flour of this pulse, but it produced such dreaded effects in the last century that the use of it was forbidden by an edict of George, Duke of Würtemberg in 1671; and this not being observed was enforced by two other edicts under his successor Leopold, in 1706 and 1714.

Mixed with wheat flour in half the quantity, it makes a very good bread, that appears to be harmless. But bread made with this flour only has brought on a most surprising rigidity of the limbs in those who have used it for continuance; insomuch that the exterior muscles could not by any means be reduced, or have their natural action restored. These symptoms usually appeared on a sudden, without any previous pain; but sometimes they were preceded by a weakness and disagreeable sensation about the knees. Baths, both hot and cold, fomentations and ointments of various kinds have been tried without effect; insomuch that it is regarded as incurable, and neither very painful nor fatal, those who are seized with it usually submit to it with patience.

Swine fattened with this meal lost the use of their limbs, but grew fat lying on the ground. A horse fed some months on the dried herb, was said to have its legs perfectly rigid. Kine are reported to grow lean on it, but sheep are not affected. Pigeons, especially young ones, lose the power of walking by feeding on the seed. Poultry will not readily touch it, but geese eat it without apparent damage. In some parts of Switzerland, cattle feed on the herb without harm. It would be worth enquiring, therefore, whether the soil may not contribute something to the ill qualities of the plant: and it is remarked that the seed from a strong, fat, moist soil, is much more deleterious than from a light one. (Duvernoy).

Fabbrioni, from Florence, in 1786, says, that the government there has cautioned the peasants against

the use of *Lathyrus sativus*; swine having lost the use of their limbs, and become pitiable monsters by being fed on this pulse exclusively. The peasants, however, eat it boiled, or mixed with wheat flour, in the quantity of one-fourth, without any harm.

The poisonous *Lathyrus* from Barbary, is *L. semine punctato* of Casp. Bauhin, and seems to be only a variety, for in the crops of *L. sativus* in Italy, they find black seeds striped with white, as in the African seed. Fabbrioni suspects it to be a mule between *L. sativus* and *L. cicera*, for the flower and seed partake of the characters of both; having a black seed marked with white; and a white banner with a red keel to the corolla. (Fabbrioni's Letters in MSS. Banks)

L. odoratus is one of our most esteemed border annuals, and is extensively grown in pots for decorating chambers and windows. *L. tingitanus*, *articulatus*, and *annuus* are also sown as border annuals.

L. tuberosus produces tubers on the roots, like those of the earth nut (*Bunium bulbocastanum*); these are sold in the markets of Holland, like those of *Orobanchis tuberosus* and *Trapa natans*, and their flavor is highly esteemed.

L. latifolius is a very shewy plant for shrubberies, arbors and trellis work, and yields a great quantity both of green fodder and seeds, which some botanists have suggested might be applied to agricultural purposes.

Ochrus (*oxros*), yellow, in allusion to the colour of its flowers. A small plant with yellow flowers, native of hedges in the south of Europe.

Pisum...

.. In boiling split pease, some samples, without reference to variety, fall or moulder down freely into pulp, while others continue to maintain their form. The former are called boilers. This property of boiling depends on the soil; stiff land, or snady land that has been limed or marled, uniformly produces pease that will not melt in boiling, no matter what the variety may be.

P. maritimum has seeds of a bitterish disagreeable taste, but are reported nevertheless to have been eaten in times of scarcity. (Turner's herbal)

Vicia. from gwig, celtic; whence *vikios*, greek, *vicia*, latin, *vesce*, french, *vetch*, english etc.

V. sylvatica and *V. cracca*, where they occur in meadows, are considered valuable herbage plants. They yield a great bulk of fodder, which is allowed to be very nutritive. Some have proposed to cultivate them alone, but Curtis observes, they would probably in that case choke themselves for want of support.

V. sativa, the winter and summer vetch, or vetch, is a valuable agricultural plant. Some consider the winter variety as a distinct species; but Professor Martyn proved, by cultivating both, that they were not even very distinct varieties. The winter variety is sown in september and October, and the summer at different periods, from february to June, for successional cuttings. The soil requires to be in good heart, otherwise they will produce a poor crop of herbage: on a good soil they will yield ten or twelve tons, which is found excellent for milch cows and working stock. The crop is seldom left to ripen its seeds, but when seeds are

wanted; the only use made of them being for sowing or feeding pigeons.

V. narbonensis and *serratifolia* are cultivated in Germany in the same manner as our tare. *Vicia sepium* has been recommended to be sown among clover for mowing.

V. faba.....

beans are excellent food for hard working horses and for fattening hogs for bacon.

222. Lowe, R. T. A manual Flora of Madeira & adjacent islands of Porto Santo & the desertas Vol. I. London: J. van Voorst; 1868.

Note: D.E.93/10/.

(Lowe, 1868) A manual Flora of Madeira & adjacent islands of Porto Santo & the desertas Vol. I

p. 208

V. narbonensis

Herb. ann. Mad. reg. I, rer(rar?)

Occ. in vineyards about Funchal; in my own on the Levada du St. Luzia, June, July.

223. Löw, I. Die Flora der Juden. Hildesheim: Georg Olms; 1967.

Note: D.E.93/10/.

Löw(1967) II. Iridaceae-Papilionaceae

pp. 481-505

V. narbonensis(pp. 503-505) is cultivated in Palestine under the name ful iblôš(D. p. 101) and is also used elsewhere here and there as a fodder crop.

Only in Abessinia and Jemen can an indigenous name be found: çtar, çter(adder, beans ? Ritter 14, 305.447.631.15, 173.827.931, talks about peas, does he mean the moor's pea?) This text needs more a detailed assessment with especial attention to the hebraic and the cryptic references.

224. Lukina, NI. Genetic potential of the genus *Vicia* L. for breeding for quality. Nauchno Tekhnicheskii Byulleten' Vsesoyuznogo Ordena Lenina i Ordena Druzhby-Narodov-Nauchno-

Issledovatel'skogo-Instituta-Rastenievodstva-Imeni-N.I .-Vavilova. 1989, No. 190, 15-18; 3 ref. 1989;

Note: VIR, Leningrad, USSR. Numbered-Part /CAB91_90.

On the basis of an analysis of protein, lysine and methionine content of the green matter and seed in 80 forms of *V. sativa* and in 24 species during 1984-87, lists are given of material with a high content of these substances for use in breeding for quality. Among the *V. sativa* varieties, Karena from the German Federal Republic gave a high protein yield. The highest protein content of the seeds among the species was found in *V. amoena*, *V. neglecta* and *V. nigra* [*V. sativa* subsp. *nigra*] and the highest lysine content in *V. narbonensis*. Data are tabulated on the traits studied in forms of the species most promising for quality.

225. Macchiati, L. Sui pretesi granuli d'amido incapsulati dei tegumenti seminali della *Vicia narbonensis*. Atti S. Naturalisti Modena. 1897; ser. 3 XVI, fasc II.

Note: D.E.93/10/ ref. Ascherson & Gräbner (Synopsis d. Mitteleurop. flora, p.985).

Preceding article : L. Buscalioni ' I granuli d'amido incapsulati della *Vicia narbonensis*' D.E.: seems to be a dispute about the nature of granules isolated from *V. narbonensis* and is pretty silly.

226. Maire, R. 'Contributions a l'etude de la flore de l'Afrique du Nord.

Note: D.E.93/10/ Perry/ (checked at Kew).

Maire, R. () 'Contributions a l'etude de la flore de l'Afrique du Nord. (checked at Kew)

Lathyrus: *angulatus* (var *angustifolia*), *aphaca*, *articulatus*, *filiformis*, *inconspicuus*, *latifolius*, *nissolia*, *pseudocicera*, *quadrimarginatus*, *saxatilis*, *tetrapterus*

199 *L. filiformis*. (Lank) J. Gay. - C. Djebel Touggour pres Batna! chenaie claire sous le sommet vers 1800m, tres rare.

M. Moyen Atlas, Itzer cedraies de la vallee de l'Oued Bou Hafs! vers 1950 m; cedraies et chenaies au dessus d'Azrou! vers 1750 m - Plante nouvelle pour l'Afrique du Nord Toutes les stations ce-dessus sont en terrain calcaire.

493 *L. tetrapterus* Pomel in Batt. Maroc septentrional: champ argileux pres d'Ouezzan. Espece nouvelle le Maroc.

812 *L. tetrapterus* Pomel 1875. *L. Broteri* Mariz., 1883. - Maroc septentrional:environs de Tanger! (SALZMANN) champs argileux pres d'Ouezzan (Maire 1925) Chaouen (Font-Quer 1928). Cette plante peut etre considerée comme une sous espece du *L. quadrimarginatus* chaub et bory (*L. q* ssp. *tetrapterus* Maire comb nov.

1011 *L. articulatus* >. ssp *typicus* (Fiori) Maire. - Nous avons trouve dans les gorges de la Chiffa une forme a fleurs blanches de cette plante.

1012 *L. inconspicuus* L. var. *eriocarpus* G.G., Asch. et Gr. - Monts de Tlemcen a Terni, 1000-1100 m (A. Faure). Variete nouvelle pour l'Afrique du Nord.

2260 *L. quadrimarginatus* chaub et Bory ssp *tetrapterus* (Pomel) Maire, Contr 812. Cette plante est abondante entre les pierres du vallum du camp romain de Ben-Chicao (Algerie) ou elle presente deux formes l'une a corolle rose-violacee a violace (forme typique) l'autre a corolle rouge comme celle du *L. sphaericus* L.

2443 *L. angulatus*. *L. var. angustifolius* Rouy - Anti-Atlas: eboulis greseux chez les Ida-ou-Semlal, vers 1200m. Plante nouvelle pour l'Anti-Atlas - Le *L. angulatus* a parfois la vrille non rameuse.

2967 *L. Nissola* L. var *parviflorus* Batt. - Algerie orientale, Monts du Bellezma: cedraies du Mont Bordjem vers 1900 m.

Vicia narbonensis not listed.

227. MAKKOUK, K. M.; KUMARI, S. G.; SHEHADEH, A. (Genetic Resources Unit, ICARDA, P.O. Box 5466, Aleppo, Syria). Seed transmission of pea seed borne mosaic virus in *Lathyrus* and *Vicia* forage legume species. ZEITSCHRIFT

FUER PFLANZENKRANKHEITEN UND PFLANZENSCHUTZ 99(6): 561-563. 1992; . CODEN: ZPFPA.

Note: BC02829 Potyvirus; BC26260 Leguminosae Microorganisms; Viruses; Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA93.

Pea seed-borne mosaic virus (PSbMV) is known to be seed-transmitted in many legume species. In this study, seven *Lathyrus* and 16 *Vicia* species were evaluated for their ability to transmit PSbMV through seeds. When germinating embryo axes of seeds collected from PSbMV-infected plants of 23 forage legume species were tested in groups of five seedlings each by the enzyme-linked immunosorbent assay (ELISA), the virus was found to be seed-transmitted in *Lathyrus annuus*, *L. ochrus*, *L. sativus*, *Vicia ervilia*, *V. narbonensis*, *V. narbonensis*, *V. palaestina*, *V. pannonica* and *V. sativa*.

228. Mancini, R.; Pace, C. De; Scarascia, Mugnozza GT; Delre, V.; Vittori, D. The use of molecular markers to study the genetical and breeding aspects of *Vicia faba* L. *Genetica Agraria*. 1988, 42: 1, 81-82. 1988;

Note: [Abstract]. Istituto di Biol. Agraria, Univ. della Tuscia, Viterbo, Italy. Numbered-Part /CAB89_87.

Seven enzyme systems were studied by PAGE of leaf tissue extracts in 4 *V. faba* botanical varieties and 6 related species. The variation observed in *V. faba* for GOT-3, SOD-1, SOD-2, SOD-3, EST-2 and EST-3 isoenzymes was explained by the control of each isoenzyme group by 2 alleles at one locus. Three alleles at one locus explained the variation observed for GOT-2. The SOD-2 and GOT-2 loci were not linked. The mobility and number of isoenzymes did not differ among the 4 botanical varieties, but they did differ from the other species. *V. faba* vars. major and minor differed in the number of copies of 3 out of 17 ribosomal genes. *V. galilaea*, *V. johannis* and *V. hyaeniscyamus* had similar isoenzyme PAGE patterns, indicating a close taxonomic relationship.

229. Mansfeld, R. Vorläufiges Verzeichnis landwirtschaftlich oder gärtnerisch kultivierter Pflanzenarten. *Kulturpflanze*. 1959; 2: 1-659.

Note: D.E.93/10/.

p. 190

V. narbonensis

In Südeuropa und Nordafrika, selten in Mitteleuropa als Futterpflanze gebaut

var. *platycarpus* im Gebiet der Art. Nicht gebaute Wildform

var. *narbonensis* - angebaute Pflanze

var. *serratifolia* - selten gebaut.

230. Maplestone, P.; Allison, J.; Hussein, E. H. A.; Gamel El- Din, A.; Gatehouse, J. A.; Boulter, D. Variation of the legumin seed storage protein amongst *Vicia* species. *Phytochem.* 1985; 24: 1717-1723.

Note: D.E.93/10/ Dep. Bot., Durham Univ., South Road, Durham DH1 3LE, United Kingdom. notduplicate.

The following were investigated: the *V. faba* cultivars Triple White and Maris Bead, *V. faba* cv. 182 (a primitive cv. from Afghanistan), *V. galilea*, *V. narbonensis*, *V. villosa*, *V. pannonica* and *V. atropurpurea*. Qualitative variation in legumin subunit patterns on gel electrophoresis was less within *V. faba* than between the *Vicia* species. However, the large-seeded modern *V. faba* cultivars showed much increased levels of the main legumin subunit pairs. Analyses of amino acid composition and nitrogen and sulphur content did not show systematic variation between the samples tested, and suggested that breeding and selection has not decreased protein content or nutritional quality. It is concluded that the heterogeneities of legumin genes in the *Vicia* species examined are comparable, and that selection for a large-seeded phenotype in *V. faba* has had the effect of increasing the expression of a subset of legumin genes, those encoding the main subunit pairs.

231. Marchesetti, C. *Flora di Trieste e de' Suoi DINTORNI*. Trieste: L. Austriaco; 1896.

Note: D.E.93/10/.

(Marchesetti, 1896-97) *Flora di Trieste e de' Suoi DINTORNI* p. 147

Vicia narbonensis

nelle siepi e nei campi della zona dell'olivio, rarissima nostro territorio, comune all'incontro in Istria, tanto nell forma tipica che nell var. che è ,molto costante. Da noi non fu raccolta che alCamp Marzio, nelle camapgne di Chiarbla e di S. Saba ed a Villa Decani. Mg. Gg.

232. Mariano del Amo y Mora, D. *Flora Fanerogamica de la peninsula iberica é description de oas planta cotyledóneas que crecen en España y Portugal*, Vol. 5. Granada: D. Indalecio ventura; 1873.

Note: D.E.93/10/.

(Mariano del Amo y Mora, 1873) *Flora Fanerogamica de la peninsula iberica é description de oas planta cotyledóneas que crecen en España y Portugal*, Vol. 5

V. narbonensis

Pedunculis brevissimus 1-5-floris

(.) in herbosis praesertim collinis. Fl. April, Mayo

-> *V. serratifolia*.

233. Martrin-Donos, V. de. *Florule du Tarn au énumération des plantes qui croissent spontanemnet dans le département du Tarn*, Vol. 1. Toulouse/Paris: Armaing/J.-B. Baillères et fils; 1864.

Note: D.E.93/10/.

(Martrin-Donos, 1864) *Florule du Tarn au énumération des plantes qui croissent spontanemnet dans le département du Tarn*

p. 177 *V. serr.* AR Lieux cultivés, moissons, vignes du terrain tertiaire.

Castres , é Moulet, auprès de la fontaine de Belvèze, bois de Campaillerques; Bords des champs, au-dessous de Gaix(Valette); é Roussac, au moulin de Roques, bords de la

Durenque (Roux); rives du Tarn, près Brens (C. Personnat); Sarize, bois de l'Aiguille(Doumenjou)

Obs. Le *V. narbonensis* L. a les folioles et les stipules entières au très-légèrement denticulées, et les légumes couverts sur toute leur surface de poils bulbeux à la base.

234. Maruca, G.; Lattanzio, V.; Perrino, P. Reversed phase high performance liquid chromatography of flavonoids and taxonomical characterization of *Vicia* species belonging to section *Faba* (Abstract). *Genetica Agraria*. 1988; 42(1): 83-84.

Note: D.E.93/10/ Istituto del Germoplasma del CNR, Bari, Italy notduplicate.

(Maruca, G./Lattanzio, V./Perrino, P., 1988) On the basis of a chromatographic analysis, all the species of section *Faba* fell into 2 main groups: the first contained all 4 botanical varieties of *V. faba* and was characterized by different glycosides of 3 flavonoid aglycones, while the second contained all the other species of the section and was characterized by glycosides of 2 flavonoid aglycones. The latter group was further subdivided into 2 subgroups; in the first containing *V. narbonensis*, *V. johannis*, *V. serratifolia* and *V. hyaeniscyamus* the content of kaempferol was greater than that of quercetin, while the reverse was true for the second subgroup containing *V. galilaea* and *V. bithynica*.

235. Mateo-Box, J. M. *Leguminosas de grano*. Barcelona, pp. 145-151: Ed. Salvat.; 1961.

Note: D.E.93/10/DEPHD.

Mateo-Box, J. M.

V. narbonensis pp.145-151.

236. Mattikala, E. J.; Virtanen, A. I. A new τ -glutamylpeptide, τ -L-glutamyl-S-(propenyl)-L-cysteine, in the seeds of chives (*Allium schoenoprasum*). *Acta Chem. Scand.* 1962; 16: 2461-2462.

Note: DHK.

The compound described in this paper is the propenyl homologue of gamma-glutamyl-S-ethenyl-cysteine isolated from the seeds of *Vicia narbonensis*.

237. Maxted, N. (Dep. Biol., Medical and Biological Sci. Build., Bassett Crescent East, University, Southampton SO9 3TU). New combinations and names in the genus *Vicia* (*Leguminosae: Viciae*). *Kew Bulletin*. 1992; 47(1): 129-130. CODEN: KEWBAF.

Note: BC26260-New Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA92 /DEPHD.

A revision of *Vicia* L. subgenus *Vicia* (Maxted, 1991) has necessitated the modification of the group's nomenclature and the erection of three new infra-generic taxa. These names are recorded here to validate their use. (Microcarinae sect. nov., Sections

Wiggersa stat. nov., Bithynicae stat. nov., Narbonensis stat. nov., series Truncatulae state. nov., Rhombocarpae ser. nov., Narbonensis stat. nov., Pseudovicilla stat. nov.).

238. Maxted, N. A new *Vicia* from South-west Turkey. *Notes Roy. Bot. Gard. Edinburgh*. 1989; 45(3): 453-456.

Note: D.E.93/10/.

(Maxted, 1989) A new *Vicia* from South-west Turkey *V. eristalioides*, map of collection sites near Antalya, picture of the plants. Latin and English diagnoses are provided for *V. eristalioides*, a member of the *V. narbonensis* complex of section *Faba*.

Maps/*Vicia/V.*

eristalioides/Taxonomy/New-species/Turkey.

239. Maxted, N. A phenetic investigation of *Vicia* L. subgenus *Vicia* (*Leguminosae, Viciae*). *Bot. J. Linn. Soc.* 1993; 111: 155-182.

Note: D.E.3_94 /DEPHD.

240. Maxted, N. A revision of *Vicia* subgenus *Vicia* using Database techniques. Ph. D. thesis: University of Southampton; 1991.

Note: D.E.93/10/ /DEPHD.

241. Maxted, N.; Bisby, F. A. IBPGR Final report -wild forage legume collection in Turkey/Phase I South-West Turkey. IBPGR, Rome, Italy. 1986A.

Note: D.E.93/10/.

242. Maxted, N.; Bisby, F. A. IBPGR Final report -wild forage legume collection in Syria. IBPGR, Rome, Italy. 1986B.

Note: D.E.93/10/.

243. Maxted, N.; Callimassia, M. A.; Bennett, M. D. (Cytogenetics Dep., Jodrell Lab., Royal Botanic Gardens, Kew, Richmond TW9 3DS, UK). Cytotaxonomic studies of eastern Mediterranean *Vicia* L. (*Leguminosae*). *Plant Systematics and Evolution*. 1991B; 177(3-4): 221-234. CODEN: ESPFBP.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA92 /DEPHD.

Collected material of rare and new *Vicia* spp. was investigated from a cytotaxonomic point of view. Nineteen species were examined in total (*V. cappadocica*, *V. cassia*, *V. lunata*, *V. dionysiensis*, *V. assyriaca*, *V. tigridis*, *V. galeata*, *V. hyrcanica*, *V. noeana*, *V. mollis*, *V. cuspidata*, *V. sativa* L. subsp. *sativa*, *V. barbatae*, *V. qatmensis*, *V. eristalioides*, *V. kalakhensis*, *V. narbonensis*, *V. hyaeniscyamus*, *V. faba* subsp. *faba* var. *faba*). The study includes 14 novel chromosome counts and measurements of DNA amount, as well as a comparison of chromosome morphology between species. The results of the cytological study support to an extent a recent taxonomical revision of subgenus *Vicia*.

244. Maxted, N.; Khattab, A. M. A.; Bisby, F. A. The newly discovered relatives of *Vicia faba* L. do little to resolve the enigma of its origin. *Bot. Chron.* 1991; 10: 435-465.

Note: D.E.93/10/ review /DEPHD.

245. Meikle, R. D. Flora of Cyprus. Kew: Bentham Moxan Trust, Royal Botanic Gardens, Kew; 1977; 1: 547-548.

Note: D.E.93/10/.

(Meikle, 1977) Flora of Cyprus

V. narbonensis var. *narbonensis*

habitat: in cultivated fields or on waste ground, sometimes in garigue or in Pine forest; near sea-level to 3000 ft. alt.; flowering: Febr.-May

dsn:

Map of Cyprus Div. 2, 4-7. Widely distributed in southern Europe and the Mediterranean region eastwards to Iran.

detailed locations given

var. *serratifolia*

habitat: cultivated fields and waste ground; sea-level to 500 ft. alt.; flowering: March-May.

dsn: div. 3-7 (note: not in 2!)

again locations are given

intermediate types between var. *narbonensis* and var. *serratifolia* are quite common. Both types can be found growing together.

246. Mirosnicenko, L. P. Biology of wild fodder vetches under cultivation conditions [Ukrainian]. Ukr. bot. Z., Kiev. 1960; 17(2): 43-9.

Note: D.E.93/10/ getreprint/kew.

A study of the biology of more than 20 species of *Vicia* during 10 years in the (northern) steppe zone of the Ukraine has resulted in several species (*atropurpurea*, *Calcarata*, *Hyrnicana*, *ervilia*, *monanthos*, *dasycarpa*, *ludoviciana*, *annonica* and *narbonensis*) being chosen as promising annuals for fodder production from spring sowings. Yields of green feed, hay and seed are recorded. green matter yeilds (average for 1953, 1955- 57) ranged from 11,060 kg/ha for *v. atropurpurea* to 9020 for *V. calcarata*, and seed yields from 1580 kg/ha for *V. ervilia* to 290 for *V. villosa*.

247. Mohamed, A. A. H.; Mohamed, A. S. A. Effect of sowing methods on some forage mixtures under rainfed conditions. Iraqi Journal of Agricultural Sciences 'Zanco'. 1987; 5(2): 181-196.

Note: D.E.93/10/ getreprint/College Agric., Salahaddin Univ., Arbil, Iraq/LA: Arabic/LS: English.

The effects of (a) broadcasting or (b) mixed sowing in the same row on fodder yields of barley, *Vicia narbonensis* and *V. sativa* were studied at Arbil, Iraq. FW, DM and CP yields were greatest with (b), especially in the 2nd season. *V. narbonensis* FW yields outyielded all other species and their mixtures. DM yields were greatest with the barley + *V. narbonensis* + *V. sativa* mixture. The percentage legume content was lowest in the mixture of barley + *V. sativa*. FW and DM yields and legume percentage were higher in the 2nd than the 1st season.

248. Mohamed, AAH; Mohamed, ASA. Effect of sowing methods on some forage mixtures under rainfed conditions. Iraqi Journal of Agricultural Sciences "Zanco". 1987, 5: 2, 181-196; 15 ref. 1987; Note: College Agric., Salahaddin Univ., Arbil, Iraq. Numbered- Part /CAB89_87.

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249. Moris, G. G. ?. *Stirpium sardoarum* elenchus, 3. Carali: Typi regiis; 1829.

Note: D.E.93/10/.

(Moris, 1829)*Stirpium sardoarum* elenchus, 3

V. narbonensis, in colibus ad Sepesi: aprili.

250. Moris, J. H. Flora Sardoia seu Historia Plantarum in Sardinia et adjacentibus insulis Vol. I. Taurini: ex regio typographeo; 1837.

Note: D.E.93/10/.

(Moris, 1837) Flora Sardoia seu Historia Plantarum in Sardinia et adjacentibus insulis Vol. I

Vicia narbonensis

hab. a herbosis, praesertim collinis. fl. Apr. Mia

Vern. m. Fava burda- Vern. s. Pisi pisis de coloras.

251. Mouterde, P. Contribution à l'étude de la flore syrienne et libanaise (suite) (*) (1). Bull. Soc. Bot. France. 1961; 108: 310-316.

Note: D.E.93/10/.

(Mouterde, 1961)Contribution à l'étude de la flore syrienne et libanaise (suite) (*) (1)

V. narbonensis

Très répandue au Liban comme en Syrie. Il n'est pas rare de recontrer, sur le même pied, des feuilles inférieures à marge ondulée ou crénelée comm chez *serratifolia* Jacqu., et des feuilles supérieures parfaitement entières.

Parfois aussi, en certaines stations (je l'ai observé au Liban, près du village de Yahchouche), la corolle est plus pâle, presque blanche. Un peuplement remarquable de cette variation a été remaqué par M. Pabot dans la forêt de Froulouk au nord de Lattaquié. Aus surplus, les plants de cette recolté, de forte venue, s'écartent aussi quelque peu du type par des feuilles ovales, légèrement ondulées sur les bords. des recherches ultérieures permettraient peut-être de décrire cette forme à titre de variété, voire d'espèce distincte.

V. hyaeniscyamus sp. nova

Annua, a collo saepe pluricaulis, caulibus decumbentibus vel ascendentibus, crassis, interdum 50-60 cm. Longis, secus nervos adpresse et copiose praesertim versus basim, hirsutis. Folia infima mutica, unijuga, foliolis fere orbiculatis. Folia superiora uni vel bijuga, numquam trijuga, cirrhifera. Foliola

ut plurimum late ovata, 2-7 cm longa, 1 1/2-5 cm lata. Petioli infra cirrhos 3-7 cm longi. Cirrhi simplices vel ramosi.

Stipulae obovato-oblongae, argute serratae 2-3 cm longae in vivo intense violaceae. Pedunculi 3-5 flori, 2-3 cm longi. Calyx hispidus, irregularis, in vivo intense violaceus, laciniis inferioribus tubo subaequilongis, ceteris brevioribus. Corolla ad basim tenuis, alba, versus apicem, ad carinam praesertim, dense brunneo-purpurascens. Ovarium hirsutissimum. Leguminae etiam maturesecntia pilis basi e tuberculo ortis dense obsita. Stylus stigmata ut in *Vicia narbonensis* diu persistentia

Voisine de *Vicia narbonensis* L. cette forme s'en sépare par son port généralement couché, ses feuilles à folioles moins nombreuses, et surtout par ses énormes stipules violacées et ses fleurs d'une coloration insolite, groupées par cinq. La pilosité est constamment celle des spécimens exceptionnellement hirsutes de sa voisine (*v. pilosa* Post)

J'ai rencontré pour la première fois cette curieuse végétation en territoire syrien, croissant dans des maquis près de la route de Tell Kalah à Tripoli, le 16 avril 1939. dans la suite, en 1948, 1958, 1959, j'ai pu la récolter à nouveau et l'observer à l'aise, dans l'Akkar libanais, vers Andkett et Menges. les habitants de ces villages la connaissant bien et la désignent, de façon assez heureuse, d'un nom de 'Ful-ed-daba', c'est à dire 'Fève de hyène'. Il serait dommage de ne pas tenir compte de cette appellation. La transcription latine '*Faba hyaenae*' est inacceptable. La présence, dans la nomenclature botanique du mot *Hyoscyamus* (fève de porc), remontant à l'antiquité, fera admettre, je l'espère, le grec *Hyaeniscyamus*.

toutes les localités où je l'ai vue sont situées dans les terrains volcaniques de l'Akkar, dont elle paraît être endémique. Je ne lui connais aucun autre habitat, et bien qu'elle n'y soit pas rare, et soit assez voyante, aucun autre botaniste ne l'a récoltée, à ma connaissance.

Type: vers Tell Kalah, 16, IV, 1939, Mouterde, no. 6596

Translation by Mrs. K. Birch (Southampton)

Closely related to *V. narbonensis* this species distinguishes itself by its generally low stance, its less numerous leaflets and above all by its enormous violet/purple stipules and its unusually coloured flowers grouped in fives. The hairiness is similar to that of its exceptionally hairy relative *var. pilosa*. D.E.: *V. johannis*?

I first came across this interesting vegetation in Syrian territory growing in the scrubland close to the road from Tell Kalah to Tripoli on 16. 4. 1939. Later, in 1948, 1958, 1959 I was able to collect and observe it again with ease, in the Lebanese 'Akkar towards Andkett and Menges. The inhabitants of these villages know it well and pointed it out happily enough under

the name -ful-ed-daba, that is to say : hyena bean. It was a pity it did not live up to this name. The latin transcription '*faba hyaena*' is unacceptable. .

252. Mouterde, P. Nouvelle flore du Liban et de la Syrie Vol. 2. ; 1970.

Note: D.E.93/10/.

(Mouterde, 1970) Nouvelle flore du Liban et de la Syrie Vol. 2

V. narbonensis var. *pilosa* Post
reconnue en Transjordanie, et susceptible d'être retrouvé ailleurs

var. *laodicensis* nov. var.

Varietas floribus pallidis albescentibus, foliis maximis ovatis ca. 4 cm interdum longis, irregulariter margine crenulatis et subserratis varieté à fleurs pâles; blanchâtres à l'état frais et folioles très grandes, 4 cm., crénelés et plus ou moins grossièrement dentées de façon peu profonde sur les marges.

Forêt de Froulok, dans le Bassit, 1.5.1956, legit Pabot, Typus: herbarium Mouterde, P 744. Floraison : février-avril. lieux herbes. Boisements. pas rare

L. Ct. Beyrouth (Vt, Mt), Nahr Beyrouth (Mt), Tripoli (Bl), 'Akkar, Plaine du' Akkar (Bl).

253. Mueller, F. Select Extra-Tropical Plants ready eligible for industrial culture or naturalisation (with indications of their native countries and some of their uses). Sydney: Thomas Richards, Govt. Printer; 1881.

Note: D.E.93/10/ NSW edn (enlarged) /DEPHD.

Baron Ferdinand v. Mueller (1881); considered *V. narbonensis* from South Europe and South-West Asia to be preferable to *V. faba* for the table because the somewhat smaller seeds are less bitter. (p. 351)

Vicia cracca L.

Europe, North Africa, North and Middle Asia, North America. Perennial. Recommendable for naturalisation as a fodder plant in sylvan and alpine lands. It yields in shade a three times larger return than in open places (Langenthal). The cognate *V. cassubica* and *V. biennis* (Linné) serve also for field culture.

Vicia ervilia Willd. (*Ervum ervilia* L.)

South Europe, North Africa, South-western Asia. An annual herb, praised as a valuable fodder plant on dry calcareous soil.

V. faba L.

The straight bean. Orient, particularly in the Caspian sea. This productive annual herb affords not only its seeds for table use, but provides also a particularly fattening stable food. The seeds contain about 33 % starch. *V. narbonensis* L., from South Europe and South-West Asia, is preferable for the table, because its seeds contain less bitter principle, though they are smaller.

Vicia peregrina L.

South Europe. Annual. In Italy preferred to the ordinary tare for shady soil; it recommends itself also for its close growth.

V. sativa L.

The ordinary vetch or tare. Europe, North Africa, North and Middle Asia. One of the best fodder plants, but only of one or two year's duration. Important also for green manure, and as a companion of clovers. The allied *V. cordata* (Wulfen) and *V. globosa* (Retzius) are similarly cultivated in Italy (Langenthal). Many of the other European and Asiatic species of *Vicia* are deserving of our attention.

V. sepium L.

Europe, West, and North Asia. Deserves attention as a perennial vetch, enduring an alpine climate. It might with advantage be naturalised in forests and on mountains, but it can also readily be subjected to field culture, the yield being large and nutritious in regions with humid air, though the soil might be poor. This vetch can be kept for about fifteen years continually on the same field (Langenthal). *V. pannonica* (Jacquin) is an allied but annual species

V. sitchensis Bongard

From California to Sitka. Asa Gray remarks that the young seeds of this tall vetch are eatable like green peas.

V. sylvatica L.

Europe, North Asia. The wood vetch. Perennial, recommendable to culturalists in new forest land; available also for alpine copses. Pasture animals have a predilection for this vetch; its yield is large. In limestone soil of forests *V. pisiformis* and *V. dumetorum* (Linne) can best be selected for introduction.

Vicia terasperma Koch (*Ervum tetraspermum* L.)

The lentil tare. Europe, West Asia, North Africa. Annual. According to Langenthal this species is preferable to the ordinary tare for sandy soil (D.E. cf. Ricemann & Powrie, 1952, *V. articulata*). It is also less hard as fodder and very palatable. Lime in the sand enlarges the yield. *V. monantha* and *V. hirsuta* (Koch) serve nearly as well.

Check for *Lathyrus*.

254. Muratova, V. Common Beans (*Vicia faba*). Bulletin of Applied Botany, Genetics & Plant Breeding, Leningrad (Supplement). 1931; 50: pp.285.

Note: D.E.93/10/DEPHD.

255. Muschler, R. A manual flora of Egypt Vol. I. ; 1912.

Note: D.E.93/10/DEPHD.

(Muschler, 1912) A manual flora of Egypt Vol. I

V. narbonensis

Aschers. Flor. Rhinocol., p. 796 no. 11.-
ref. Asch.-Schweinf. III Flor. d'Eg. p. 68 no 391
Asch.-Schweinf. III Flor. d. Eg. p. suppl. p. 755
Sickenberg. Contrib. Flor. d'Eg., p 221.-

M.ma. Alexandria-West and East

M.p. El-Grâdy:

N. d. N.f. Abundant on alluvial ground

O. Little Oasis; Farâfara

local name: bakher

var. *aegyptiaca*

Koernicke in Asch.-Schweinf. III Flor. d. Eg. p. suppl.(1884)
p. 756

seeds large, 1-1.3 cm broad, pale yellow or brown; pods glabrous, leaflets entire, fl. March

N. d. Zaqaqiz

Only known from this locality

var. *affinis*-Koernicke in Aschers.-Schweinf. III. Flor. d'Eg.,
Supplem. (1889) *Aracus fabaceus*, *Faba kayrina* Joh. Bauhin
Hist. plant., p. 286(??)

seeds only 6mm, ingescent; pods glabrous; leaflets entire or paucidentate as the tip; corolla purple-violet

N. d. Zaqaqiz (Schweinfurth) only known from this locality.

256. Nakipoglu, M. Preliminary experiments on the classification of five *Vicia* species according to their phenolic compounds. Doga, Turk Tarim ve Ormancilik Dergisi. 1987; 11(1): 94-101.

Note: D.E.93/10/ Dokuz Eylul U. Egitim Fakultesi, Biyoloji Anabilim Dalı Buca, Izmir, Turkey/LA: Turkish, LS: English not duplicate.

(Nakipoglu, M., 1987) The use of thin-layer chromatography of leaf phenolics in *V. hybrida*, *V. narbonensis*, *V. sativa*, *V. lutea* and *V. villosa* growing in western Anatolia revealed a total of 28 spots, each spot being present in 1-4 species and each species having 10-12 spots. Each species had characteristic spots.

257. Nilov, G. I.; Utkin, V. V.; Osapenko, A. I. Crude-protein contents and quality in seeds of the Crimean indigenous species of *Vicia*. Byull. Glavn. Bot. Sada, Mosk. 1968; 71: 37-41.

Note: D.E.93/10/ getreprint/kew.

N and CP contents of the seeds of 20 Crimean spp. of *Vicia*. 3.69% -3.64% (DM basis) and 23.07 - 38.37%, respectively. *V. narbonensis* seed had the lowest content found. [Herb. Abs 39(4) dec. 1969 No. 2011, p.306].

258. Noll, W. Footrots and wilts in legumes. Z. Pflanzenkrankh.. 1939; 49: 385-431.

Note: D.E.93/10/ getreprint.

A description is given of the symptoms of footrots and wilts and various combinations of the two types of disease as they occur in different parts of Germany on *Pisum sativum*, *P. arvense*, *Vicia faba*, *V. sativa*, *V. villosa*, *V. narbonensis*, *lupinus angustifolius*, *L. luteus*, *L. albus* and

Glycine hispida. The fungi causing these diseases are discussed, on the basis of inoculation experiments.-from bas by P. Hart. Biol. Abstr. D.15.Ent.3015.1941[Herb. Abstr. feb. 1942 No. 223 p.23].

259. Osman, A. E.; Nersoyan, N. Annual legumes for integrating rainfed crop and livestock production. Proceedings of the XV International Grassland Congress, August 24-31, 1985, Kyoto, Japan. Nishi-nasuno, Tochigi, Japan;.: Science Council of Japan and Japanese Society of Grassland Science; 1985: 123-125.

Note: D.E.93/10/ ICARDA, Aleppo, Syria.

A programme aimed at integrating rainfed crop and livestock production in W. Asia and N. Africa in order to introduce pasture and herbage legumes in place of existing fallows is described. Research has identified that suitable species of *Medicago*, *Pisum* and *Vicia* are well adapted to the climatic conditions of N. Syria. Mixtures of *Vicia sativa* and fodder peas with barley, triticale and oats were evaluated for hay production. Mixtures including the 2 legumes were also evaluated for early grazing by sheep followed by haymaking in spring. In a third study the above legumes, *V. narbonensis* and *V. dasycarpa* were compared for palatability. The mixtures increased herbage yield and improved the process of haymaking. *V. sativa* was the most palatable of all legumes in the green stage and seemed most suitable for haymaking, while fodder peas, a less palatable legume when grazed, was more suitable for inclusion in legume/cereal mixtures for early grazing and haymaking afterwards.

260. Osman, AE; Nersoyan, N. Annual legumes for integrating rainfed crop and livestock production. Proceedings of the XV International Grassland Congress, August 24-31, 1985, Kyoto, Japan. 1985, 123-125; 5 ref. Nishi-nasuno, Tochigi, Japan; Science Council of Japan and Japanese Society of Grassland Science. 1985;

Note: ICARDA, Aleppo, Syria. Unnumbered-Part /CAB89_87.

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for inclusion in legume/cereal mixtures for early grazing and haymaking afterwards.

261. Pantanelli, E. Problemi agronomici della bonificia nell'Italia meridionale. [Agronomical problems in improvement work in the south of Italy]. Bibl. Bonificia Integrale. 1936; 10(2): pp. 267. Map.

Note: D.E.93/10/ getreprint/Perrino.

Forage production in Southern Italy is dealt with in chapter 5 and cultural methods for single fodder plants, pasture improvement and silage production are discussed. The highest returns from winter and spring hay plants are ensured by vetch (several varieties of *V. sativa*), little horse bean (*Vicia faba* var. *minor*) and *Trifolium incarnatum*. Berseem(*Trifolium alexandrinum*) furnishes an excellent fodder in coastal plains under irrigation. Poor growth results from *V. narbonensis*, *V. villosa*, *V. pannonica*, *V. cracca*, *V. hybridia*, *V. dasycarpa*, *Trigonella foenum-graecum*, *T. corniculata* and *Galega officinalis*. Varieties of maize, sorghum ad cowpeas are recommended for summer-autumn green fodder plants.

Perennials: Lucerne (*Medicago sativa*) > *sulla* (*Hedysarum coronarium*) > *Esparsette* (*Onobrychis sativa*); red clover can only be grown in higher and cooler localities. Northern strains of lucerne give very unsatisfactory yields; the most adaptable lucerne strains originate from Mediterranean countries.

For pasture improvement fertilization with superphosphate, stone and shrub removal, reseeding with lucerne and *esparsette* and rotational grazing are recommended.

Silage: *V. faba* + oats/*M. sativa* & straw/maize and sorghum (crops should be slightly wilted(40-50% moisture)[Herb. Abs. Dec. 1937, p. 345].

262. Penzig, O. Flora Popolare Italiana. Bologna: Edagricole; 1972.

Note: DEPHD.

263. Perrino, P.; Maruca, G.; Linsalata, V.; Bianco, V. V.; Lester, R. N.; Lattanzio, V. Flavonoid taxonomic analysis of *Vicia* species of section *Faba*. Canadian Journal of Botany. 1989; 67(12): 3529-3533.

Note: D.E.93/10/ Istituto del Germoplasma, CNR, 70126 Bari, Italy.

(Perrino, P.//Maruca, G.//Linsalata, V.//Bianco, V. V.//Lester, R. N.//Lattanzio, V. , 1989)The flavonoids rutin, quercitrin, hyperoside, quercetin-3-arabioside, kaempferol-3-rutinoside and robinin were identified in leaves of *V. faba*, *V. narbonensis*, *V. galilaea*, *V. johannis*, *V. hyaeniscyamus* and *V. bithynica*. Flavonoid glycosidic pattern was utilized to define taxonomic relationships among the 6 species. The 4 botanical varieties

of *V. faba* were distinct from the *narbonensis* group and *V. bithynica*. Flavonoid fingerprints using HPLC showed that the 4 botanical varieties of *V. faba* are closely related, whereas the wild species separate into 3 subgroups.

264. Perrino, P.; Maruca, G.; Lester, R. N.; Linsalata, V.; Lattanzio, V.; Hanelt, P. Chemotaxonomic relationship among

species of *Vicia* section *Faba*. Feddes Repertorium. 1991; 102(5- 6): 319-334.

Note: D.E.93/10/ notduplicate.

Chemotaxonomic investigations of leaf flavonoids by paper chromatography showed that the cultigen *Vicia faba* was distinct from the wild species *V. hyaeniscyamus*, *V. johannis*, *V. serratifolia*, *V. narbonensis*, *V. galilaea* and *V. bithynica*. The progenitor for *V. faba* remains unknown. No significant differences in chromatographic profiles were found between 10 accessions of *V. faba*, which ranged from primitive landraces to advanced cultivars, but there were highly significant differences between growth chamber and field grown plants.

265. Perrino, P.; Maruca, G.; Linsalata, V.; Bianco, VV; Lester, RN; Lattanzio, V. Flavonoid taxonomic analysis of *Vicia* species of section *Faba*. Canadian Journal of Botany. 1989, 67: 12, 3529- 3533; 21 ref. 1989;

Note: Istituto del Germoplasma, CNR, 70126 Bari, Italy. Numbered-Part /CAB91_90.

The flavonoids rutin, quercitrin, hyperoside, quercetin-3- arabinoside, kaempferol-3-rutinoside and robinin were identified in leaves of *V. faba*, *V. narbonensis*, *V. galilaea*, *V. johannis*, *V. hyaeniscyamus* and *V. bithynica*. Flavonoid glycosidic pattern was utilized to define taxonomic relationships among the 6 species. The 4 botanical varieties of *V. faba* were distinct from the *narbonensis* group and *V. bithynica*. Flavonoid fingerprints using HPLC showed that the 4 botanical varieties of *V. faba* are closely related, whereas the wild species separate into 3 subgroups.

266. Perrino, P.; Maruca, G.; Lester, R. Taxonomic relationship among species of *Vicia* section *Faba* (Abstract). Genetica Agraria. 1987; 41(3): 309.

Note: D.E.93/10/ Istituto del Germoplasma del CNR, Bari, Italy notduplicate.

Paper chromatography of leaf extracts suggested the existence of 3 groups, namely (1) *V. faba* with its 4 botanical varieties major, equina, minor and paucijuga, (2) a group including *V. narbonensis*, *V. galilaea*, *V. johannis* and *V. serratifolia*, and (3) *V. bithynica*.

267. Perrino, P.; Pignone, D. Contribution to the taxonmomy of *Vicia* spp. belonging to section *Faba*. Kulturpflanze. 1981; 29: 311-319.

Note: D.E.93/10/.

Difference in banding patterns of chromosomes from *V.faba* and *V. narbonensis*.

268. Perry, M. Notes made during visit to Kew.

Note: D.E.93/10/.

Checked floras for North Africa and the middle east for reference to *Lathyrus* species and *Vicia narbonensis*. Flora treatments are listed in: Frodin, D. G. (1984). Guide to Standard Floras of the World. Cambridge University Press.

D.E. individual refs. are entered as separate entries, marked note: Perry(in progress).

269. Pickardt, T.; Huancaruna-Perales, E.; Schieder, O. Plant regeneration via somatic embryogenesis in *Vicia narbonensis*. Protoplasma. 1989; 1: 5-10.

Note: D.E.93/10/ getreprint?/AD: Inst. für Angewandte Genet., Freie Univ. Berlin, Berlin.

In the presence of 2,4-D (0.1-10.0 mg/litre) shoot tips from young seedlings of *V. narbonensis* gave rise to callus cultures which formed somatic embryos if 2,4-D was removed and replaced by NAA (1 mg/litre) in a subsequent culture step. Ten mg 2,4-D/litre induced the highest frequency of explants showing embryogenesis and the highest mean embryo number per callus. Different types of somatic embryos, based on cotyledon and hypocotyl morphology, were found. The frequency of embryos with normal shoots and roots was relatively low, suggesting that genetic changes might have occurred during the callus stage and caused a loss of morphogenetic capacity. Plantlets derived from somatic embryos were grown to maturity.

270. Pickardt, T.; Meixner, M.; Schade, V.; Schieder, O. Transformation of *Vicia narbonensis* via *Agrobacterium* mediated gene transfer. Plant Cell Reports. 1991; 9(10): 535-538.

Note: Institut für Angewandte Genetik, Freie Universität Berlin, Albrecht-Thaer-Weg 6, W-1000 Berlin 33, Germany. Numbered-Part / CAB91_90.

Shoot tips and epicotyl segments of *V. narbonensis* were co- cultivated with *A. tumefaciens* strain C58C1 pGV3850HPT, carrying a plasmid coding for hygromycin phosphotransferase. On callus- induction medium containing 60 mg hygromycin/litre, approximately 18% of the explants produced hygromycin-resistant callus. After transfer to regeneration medium the calluses produced hygromycin-resistant and nopaline-positive somatic embryos from which plantlets were regenerated. The integration of the T-DNA into the plant genome was confirmed by Southern analysis.

271. Pignatti, S. Salviamo le conoscenze sulle piante utili della flora italiana. Inform. Bot. Ital.. 1971; 3(1): 40-41.

Note: getreprint /DEPHD.

Vicia narbonensis is an old fodder crop in Italy, cited by Hammer et al., 1992.

272. Pitz, W. J.; Sosulski, F. W.; Hogge, L. R. Occurrence of Vicine and Convicine in Seeds of some *Vicia* species and other pulses. Can. Inst. Food Sci. Technol. J.. 1980; 13(1): 35-39.

Note: D.E.93/10/ DHK /DEPHD /DEPHD.

(Pitz, W. J.//Sosulski, F. W.//Hogge, L. R., 1980) Occurrence of Vicine and Convicine in Seeds of some *Vicia* species and other pulses

Pitz, W.J., Sosulski, F.W., Hogge, L.R.(1980) Occurrence of Vicine and Convicine in Seeds of some *Vicia* species and other pulses. Can.Inst.Food Sci.Technol.J. 13(1) 35-39

seedVicine(%DW)Convicine(%DW)

V.faba minor0.720.27
V.faba maior0.710.19
V.satava0.750.08
V.narbonensis0.060.01

-Vicine and convicine, first isolated from seeds of *V. sativa* (Ritthausen & Kreuzler, 1870; Ritthausen, 1881)

Bendich & Clements isolated 2.75g high purity vicine from 2kgs *V. sativa* seeds

- vicine and convicine are β -glycosides of pyrimidines, divicine and isouramil, respectively (Bendich & Clements, 1953); Bien et al. 1968, are hydrolyzed by β glucosidases (Hérissey & Cheymol, 1931; Mager et al., 1965)

Pitz & Sosulski, 1979 prepared TMS derivatives for GC/MS analysis.

Isolation of vicine from *V. faba minor* by original Ritthausen procedure as described by Bendich and Clements (1953) Pure samples from Dr. A. Bendich, Memorial Sloan-Kettering Cancer Center, N.Y

Dr. R. Gmelin Institute of Pharmacognosy and Phytochemistry, Berlin

McKay obtained purified vicine and convicine from Prof. R. R. Marquardt.

Convicine isolated from *V. faba minor* and major by procedure of Bien et al. (1968)

pure samples ex Dr. S. Bien, Technion-Israel Institute of Technology, Israel.

β -glucosidase (almond extract) ex Sigma (Pitz et al. 1980).

273. Plitmann, U.; Zohary, D. *V. galilaea/Vicia*. Israel J. Bot. 1965; 14(91): 291.

Note: D.E.93/10/ getreprint.

274. Poirson, A.; Larher, F. Accumulation de L-3,4-dihydroxyphenylalanine (DOPA) libre dans de jeunes plantes appartenant a differentes especes du genre *Vicia* [Accumulation of free L-3,4-dihydroxyphenylalanine (DOPA) in seedlings of different species of the genus *Vicia*]. Comptes Rendus de l'Academie des Sciences, III Sciences de la Vie. 1986; 303(10): 419-424.

Note: D.E.93/10/ Lab. Biol. et Physiol. Vegetale, Univ. Rennes - I, 35042 Rennes, France not duplicate.

(Poirson, A.//Larher, F., 1986) Accumulation de L-3,4-dihydroxyphenylalanine (DOPA) libre dans de jeunes plantes appartenant a differentes especes du genre *Vicia* [Accumulation of free L-3,4-dihydroxyphenylalanine (DOPA) in seedlings of different species of the genus *Vicia*].

The content of free DOPA was studied in seedlings of various cv. of (a) *V. faba major*, (b) *V. faba equina*, (c) *V. faba minor*, (d) *V. faba paucijuga* and (e) *V. narbonensis* grown under controlled conditions. DOPA contents in the DM ranged from 0.46 to 0.81 in (a), 0.41 to 0.84 in (b), 0.49 to 0.81 in (c) and 0.58 to 1.17% in (d), with only small quantities in (e). The high DOPA

content of *V. faba paucijuga* cv. Polycarpi was derived primarily from the leaves. Leaves of *V. faba* contained about a third of the total soluble N.

275. Poluin, O. 1980). Flowers of Greece and the Balkans, a field guide Oxford University Press.

Note: D.E.93/10/ Perry/Kew.

Good coverage of climate, landforms etc including many maps. Has a comprehensive bibliography of the floras and other floristic treatments of the region.

Notes *V. narbonensis* as widespread on the mainland and the Aegean islands.

L. Ochrus: noted as widespread, except Bulgaria. Cornfields and dry places.

L. sativus noted as widespread

L. cicera: not listed.

276. Post, G. E. Flora of Syria, Palestine and Sinai. London: Humphrey Milford, Oxford University Press; 1932.

Note: D.E.93/10/DEPHD.

(Post, 1932) Flora of Syria, Palestine and Sinai

V. narbonensis N.v. Broad-leaved *V.*; nu'mêni-barri(Bo), f_l-iblôs, Bakhar (P)(.)(ii.577; H.ii 382; M. 541); Löw, ii. 503-5, 523).-.3t.5, Feb.-April. Fields

No. near Alexandretta (Bn.), Aleppo, Babista, Aintab, Hums; Coelesyr. Zahlah (PH); Pal. Darâ to Taysybah, H_lah (PH), Mâdaba, Yad_n in Gilead, Tiberias, 'Aff_lah, Jericho, Jaffa, Tabor, Jerusalem, Beersheba to Gaza, (D), Wâdi-Zuwayrah (Lowne), Dhâhiriyyah (Barb.); vt-Töh: Katiya (Barb.).

b. pilosa Post (1896)- leaves all of one pair. Pods 0.5 long, 0.012 broad, beset with hairs tubercled at base- Woods near us- Salt (Moab PH)

c. serratifolia

No 'Akkâr; Haur. Kurayyak (PH);m Pal. Bayt-Jamâl (N. 2801), Jerusalem, Jaffa, S_f (D).

277. Pott, R. Handbuch der tierischen Ernährung und der landwirtschaftlichen Futtermittel. Berlin: Paul Parey; 1907.

Note: D.E.93/10/ DEPHD.

pp. 87-101, 499-511.

278. Pott, R. Untersuchungen über die Wachstumsverhältnisse der Leguminosen. Landwirtschaftliche Versuchsstationen. 1880; 25: 57- 106.

Note: D.E.93/10/DEPHD.

Studied the growth of *V. faba* and *V. narbonensis* (Narbonner Futterwicke=Narbon feedvetch) during 3 stages of growth and at different parts of the plants (tops/roots). The greatest increase in weight (rate of growth) follows immediately before ripening/ maturation of the pods. The least weight is gained in the time before the beginning of ripening.

The increase in mass ceases first in the leaves.

279. Pottier-Alapetite, G. Flore de la Tunisie, tome 1 (Publications Scientifiques Tunisiennes No. 644). : Imp. Officielle de la Republique Tunisie; 1979.

Note: D.E.93/10/ /DEPHD.

(Pottier-Alapetite, 1979) Flore de la Tunisie, tome 1
V.n. vesce de narb., févrette-II-V. Cultivé, mais aussi spontanée dans les broussailles, les champs. NE: Tnis, Borjel Amri(Lab.); CB:Henchir Soltane(Lab.) TC: l'Enfida(L.H.), Sousse(Bur.). Sfax (Espina). Aire géographique: mediterrannee.

280. Pouzolz, De. Flore du Département di Gard Vol. I. Montpellier/Paris; 1842.

Note: D.E.93/10/.

(Pouzolz, 1842)Flore du Département di Gard Vol. I
V. n.

Pubescentes principalement sur les bords 2-4 folioles. Fleurs pupurines, de 1-5, engrappes très-courtes. Gousse glabre sur les faces, veinée, cilié sur les sutures. Graines brunes, spherique, comprimés. Hile oblong. Plant d'une vert sombre radis termini vrille bifurquée.

var. genuina Gren. et Godr. fl. fr. p. 463 folioles entières au o(a?)ndulées. V. narbonensis, Guss. Syn. 2 p.281; Riv. tetr. irr., t. 58

var. B serratifolia

Folioles dentées, les inférieures au nombre de 4; les superieures de 6. Rchis terminée en vrille trifide. Stipules incisees. Gousses herisées(?), sur les bords, de pols fortement tuberculeux ê leur base.

Hab. les deux var.

le bord de fossés, ê bellegarde, le bois de Cygnan, le l(a/o)ng du Vistre

(I) Fl. mai-juin.

281. Quezel, P.; Santa, S. Nouvelle Flore de l'Algerie et des régions désertiques méridionales. Vol. I. Paris: Editions di Centre National de la Recherche Scientifique; 1962.

Note: D.E.93/10/ D.E./Perry/DEPHD.

(Quezel & Santa, 1962) Nouvelle Flore de l'Algerie et des régions désertiques méridionales. Vol. I

Vicia narbonensis

Boussailles-/Méd./-<<Bakher>>

Perry/Kew notes:

Algeria (Maghrebian zone)

Quezel, P., and Santa, S. (1962). Nouvelle Flore de l'Algerie et des Regions Desertiques Meridionales. Vols 1 and 2. Editions du Centre National de la Recherche Scientifique, Paris. (Checked at Kew, pc obtained).

Lists *V. narbonensis*. Lists *L. aphaca*, *L. ochrus*, *L. annuus*, *L. Allardi*, *L. odoratus*, *L. tingitanus*, *L. nissolia*, *L. hirsutus*, *L. sphericus*, *L. angulatus*, *L. inconspicuus*, *L. numidicus*, *L. setifolius*, *L. latifolius*, *L. cicera*, *L. quadrimarginatus*, *L. sativus*, *L. articulatus*, *L. saxatilis*, *L. niger*, *L. filiformis*, *L. montanus*.

Brief descriptions with concise but relatively detailed indications of local range and general distribution. covers all of Algeria except for the extreme south.

There are no other general flora treatments for Algeria published up to 1980.

282. Radwan, M. S.; Al-Fakhry, A. K.; Al-Saffar, S. M.; Al-Jubouri, H. H. Seed characteristics, palatability, and natural frequency of some wild annual legumes in northern Iraq. Mesopotamia J. Agric.. 1974; 9: 21-31.

Note: D.E.93/10/DEPHD.

283. Radwan, M. S.; Al-Fakhry, A. K. The value of vetches for forage production in northern Iraq. Mesopotamia Journal of Agriculture. 1975; 10: 35-40.

Note: D.E.93/10/DEPHD.

284. Raina, S. N.; Yamamoto, K.; Murakimi, M. Intraspecific hybridization and its bearing on chromosome evolution in *Vicia narbonensis* (Fabaceae). Pl. Syst.Evol.. 1989; 167: 201-217.

Note: D.E.93/10/ Faculty of Agriculture, Kagawa University, Kagawa-Ken, Miki-Tyo 761-07, Japan /DEPHD.

The chromosome complements of the 9 accessions examined resolved into 4 distinct types (A, B, C, D). Meiotic data from F1 hybrids (A X B, B X C, A X C) revealed that alteration in chromosome morphology is the result of segmental interchanges; parents differed from each other by 1-2 interchanges. Karyotype B, and not A as previously reported, was the normal karyotype of the species; and A and C were single homozygotes for unequal interchange. Comparative karyomorphology studies of parents and hybrids and of 2 interchange heterozygotes of 4 chromosomes each in F1 hybrids of A X C showed that (1) chromosomes involved in the single interchange homozygotes (A, C) are not common and (2) breaks in both interchanges occurred in the short and long arms of the chromosomes involved. Identification of the interchanged chromosomes in the complements and the frequency of ring and chain quadrivalents in the heterozygotes enabled location of the breakpoints. Interchange homozygosity (A) appeared to be firmly established, allowing the species to spread further by adapting to a wide range of habitats. The D genome was well differentiated from A, and possibly B and C, and is thought to deserve special status.

285. Raina, SN; Narayan, RKJ. Changes in DNA composition in the evolution of *Vicia* species. Theoretical and Applied Genetics. 1984, 68: 1/2, 187-192; 17 ref. 1984;

Note: Dep. Agric. Bot., Univ. Coll. Wales, Penglais, Aberystwyth, Dyfed SY23 3DD, United Kingdom. Numbered-Part / CAB86_84.

The composition of nuclear DNA in three *Vicia* species was compared. *V. eriocarpa*, *V. johannis* and *V. melanops* are from three separate subgeneric sections of *Vicia* and show a four-fold variation in their amounts of nuclear DNA. DNA melting experiments, buoyant density gradient analysis and Cot reassociation experiments showed that the quantitative change in nuclear DNA between the three species results from changes in the amounts of both repetitive and nonrepetitive DNA sequences. It is suggested that, while the increase in the repetitive fraction has occurred through the

proliferation of repetitive base sequences, the increase in the nonrepetitive fraction is due to the steady accretion of highly diverged base sequences resulting from mutations, deletions, insertions and base sequence rearrangements among families of repetitive sequences.

286. Ramsay, G.; Pickersgill, B.; Jones, J. K.; Hammond, L.; Stewart, M. H. Barriers to interspecific hybridization between *Vicia faba* and other species of section *Faba*. In: Hebblethwaite, P. D.; Dawkins, T. C. K.; Heath, M. C.; Lockwood, G., Eds. *Vicia faba: Agronomy, Physiology and Breeding*. Netherlands: Martinus Nijhoff/Dr. W. Junk: 201-208.

Note: D.E.95/1.

287. Ramsay, G.; Pickersgill, B. Interspecific hybridisation between *Vicia faba* and other species of *Vicia*: approaches to delaying embryo abortion. *Biologisches Zentralblatt*. 1986; 105(1/2): 171-179.

Note: Dep. Agric. Bot., Pl. Sci. Lab., Univ. Reading, Whiteknights, Reading RG6 2AS, UK. Numbered-Part /CAB86_84/ in *Genetics and breeding of Vicia faba* [edited by Rieger, R.]. DHK.

When plants of *V. faba* and *V. johannis* were crossed in a growth chamber at 10, 15 or 24°C, fertilization was most frequent and hybrid tissues developed furthest (continuing for 10 days) at the highest temperature. Crosses of *V. johannis* (section *Faba*, low nuclear DNA content), *V. lutea* and *V. melanops* (both section *Hypechusa*, high nuclear DNA content) with *V. faba* var. *paucijuga* (section *Faba*, highest nuclear DNA content), were compared. Hybrid tissues from crosses with *V. melanops* and *V. lutea* developed further than those from crosses with *V. johannis*. It is suggested that DNA content may be a better guide to postfertilization interspecific compatibility in *Vicia* than taxonomic relationships.

288. Raynaud, C. Monographie et iconographie du genre *Vicia* au maroc. *Bull. Inst. Sci.*. 1976; 1: 155-156.

Note: D.E.93/10/.

(Raynaud, 1976) Monographie et iconographie du genre *Vicia* au maroc

Vicia narbonensis

hab. -Forêts claires, pâturages, broussailles- Europe méridionale: nord de l'Afrique

Dsn au maroc-Nkor-Trifa; Moulouya; Tanger-Rif-Tazekka; Rharb; Rég. de rabat; Chaouia- Doukkala litt.; Abda-Haha litt.; Souss litt.; Moyen Atlas central.

289. Razoumffsky, A. de. Catalogue du Jardin des plantes. Moscou: N. Usevojsky; 1812.

Note: D.E.93/10/.

(Razoumffsky, 1812) Catalogue du Jardin des plantes(Moscou)

V. narbonensis/*V. serratifolia* listed p. 72.

290. Rechinger, K. H. *Flora Aegaea. Flora der Inseln und Halbinseln des ägäischen Meeres*. Akademie der Wissenschaften in Wien. Mathematisch-Naturwissenschaftl. Klasse Denkschriften 105. Band 1. Halbband. Wien: Springer Verlag; 1943.

Note: D.E.93/10/ D.E./Perry.

(Rechinger, 1943) *Flora Aegaea. Flora der Inseln und Halbinseln des ägäischen Meeres*

V. narbonensis

N: H.-I. Athos (Slaw. breuer).- NO: H.-I. Gallipoli: Helles (ing. 62), Suvla (Durh. 85).- O: Nytilene (Cand.) -Chios (orph.).- S: Rhodos : M. Akramiti bei Siana (R. 7443)

V. serratifolia

N: Thaso: Limenas (Bornm. & Sint. 435)

Perry notes(Kew):

Rechinger, K. H.(1943). *Flora Aegaea*. Springer-Verlag, Vienna. reprinted by Otto Koeltz Antiquariat, Koenigstein, 1973.

p335 gives extensive distribution data for *Lathyrus ochrus*, *L. cicera* and *L. sativus* for the Aegean islands, Crete and adjacent areas of Greece and Turkey.

291. Rechinger, K. H. *Flora of Lowland Iraq*. Weinheim: J. Cramer; 1964.

Note: D.E.93/10/.

(Rechinger, 1964) *Flora of Lowland Iraq*

Vicia narbonensis

LM: Khadamiyah (Khadimain) (Graham 598). Hafriyah, 60 km SE Baghdad (R. 9077).- Mirjana (Sutherland 276).

292. Rees, D. J.; Islam, M.; Samiullah, A.; Rehman, F.; Raza, S. H.; Qureshi, Z.; Mehmood, S. Rain-fed crop production systems of upland Balochistan, wheat (*Triticum aestivum*), barley (*Hordeum vulgare*) and forage legumes (*Vicia* species). *Exp. Agric.*. 1991; 27(1): 53-69.

Note: D.E.93/10/DEPHD.

293. Rees, DJ; Islam, M.; Samiullah, A.; Rehman, F.; Raza, SH; Qureshi, Z.; Mehmood, S. Rain fed crop production systems of upland Balochistan: wheat (*Triticum aestivum*), barley (*Hordeum vulgare*) and forage legumes (*Vicia* species). *Experimental Agriculture*. 1991, 27: 1, 53-69; 24 ref. 1991;

Note: ICARDA, Quetta, Pakistan. Numbered-Part /CAB91_90.

In field trials in upland Balochistan, Pakistan in 1985-88 the effects of 0 or 40 kg N/ha, 0 or 60 kg P2O5/ha, 0 or 60 kg K2SO4 and hand weeding or no weeding on the local wheat landrace and cv. Zarghoon and Zamindar were investigated. Yields of barley cv. LB7, Wadi Hassa, Tadmor, Arabi abiad, Arabi aswad from Syria and a local cultivar were also compared. Seeds of *Vicia sativa*, *V. narbonensis*, *V. villosa* subsp. *dasycarpa* [subsp. *varia*] and *Lens culinaris* were inoculated with *Rhizobium leguminosarum* or untreated. Economic analysis was carried out for the wheat and barley trials. Weeding and application of P fertilizer had little effect on wheat yields, but in the 'good' rainfall year 1986-87 the application of N fertilizer increased economic yields. Barley

cultivars from Syria generally produced better grain yields and, with the exception of Arabi abiad, poorer straw yields than a local cultivar. Genotype-environment analyses indicated that Arabi abiad could be expected to produce more grain, similar amounts of straw and larger gross benefits than the local cultivar in all except the most severe environments, when crop failure was inevitable. *V. villosa* subsp. *dasycarpa* showed negligible amounts of cold damage and produced greater herbage and straw yields than the other legume crops. Inoculation with *R. leguminosarum* produced large yield increases in 1986-87. The economic returns from crop production were poor and variable, but it is suggested that the productivity of the crop-livestock system could be increased by greater emphasis on barley, and by the introduction of Arabi abiad barley and *V. villosa* subsp. *dasycarpa*.

294. Reeve, R. C.; Saifaddin, H. Y.; Sadiq, A. R. S. The evaluation of grain legumes in rainfed agriculture in Northern Iraq. Annual Report, August 1985. Agro-pastoral Development Project, Erbil, Northern Iraq. Ann. Rep.. 1985: 117-118 & p.172.

Note: D.E.93/10/DEPHD.

295. Reichenbach, H. G.; Beck de Mannagetta, G. Icones Florae germanicae et helveticae simul terrarum adjacentum ergo mediae Europae. Opus auctoribus C. reichenbach et H. G. Reichenbach fil. conditum, nunc continuatum auctore Dre G. Equite Beck de Mannagetta Vol. XXII. Leguminosae. Lipsiae et Gerae: F. Zezschwitz; 1903.

Note: D.E.93/10/.

(Reichenbach & Beck de Mannagetta, 1903) Icones Florae germanicae et helveticae simul terrarum adjacentum ergo mediae Europae

Vicia narbonensis

crescit in cultis et satis per totam ditionem florum mediterraneae.

Helvetia: (Genf, Basel, Isteinerklotz).

Litorale austriacum: Trieste (rare); copiosus in Istria australi (Salvora, Dignano ad Lissignano), pr. Fiume, Dalmatia, Hercegovina (pr. Mostar, Trebinje), Montenegro (pr. Boljevic). Ubique in gallia meridionali, Italia callidiore, Graecia etc. Hinc inde spontanea introducta [(Helvetia/Basel), Germania (HH), Batavia (Nijmegen)], rarius colitur (Baden, Kleinkeins ad Istein et Effingen).

Bohemia (pr. Rozdalovic).

V. serratifolia

Crecescit in terris florum mediterraneae et ponticae. Gallia meridionalis, Italia calidior, Corsica, Austria inf. (c. Vindoboam, in mont. Leithagebirge), Hungaria (copiose), Slavonia, Transsylvania, Istria (rare), Montenegro (pr. Vir leg. Beck), in terris balcanicia, Rossia meridionalis. In Germania modo introducta (Berlin). Floret Majo, Junio.

296. Renfrew, J. Palaeoethnobotany. New York: Columbia University Press; 1973.

Note: D.E.93/10/.

Renfrew(1973) cites w.r. to *V. narbonensis*: Hector, J. M. (1936) p. 651 f Introduction to the botany of field crops; Bertsch, K. & Bertsch, F. (1949) p.161-> dsn map of the wild *V. narbonensis* (probably derived from Muratova);

V. narbonensis identified from pre-pottery neolithic B, Beidha, Palestine (Helbaek, 1966A, p.63

Vicia faba in Spain

El Gracel, Campos near Murcia, Almirazique and Pepim in Portugal (ref. Bertsch & Bertsch, Hopf, 1964; Renfrew, 1966 e.g. more refs.).

297. Rennie, P. J.; Weber, G.; Constabel, F.; Fowke, L. C.

Differentiation of chloroplasts in interspecific and homospesific protoplast fusion products *Vicia hajastana*, *Vicia narbonensis*, *Vicia angustifolia*, narrowleaf vetch. Protoplasma. Wien, Springer-Verlag. 1980. v. 103 (3) p. 253-262. ill. 1980; ; ISSN: ISSN: 0033-183X.

Note: DNAL 442.8-P94 Foreign 17 ref. Article agricola84_79.

298. Riceman, D. S.; Powrie, J. K. A comparative study of *Pisum*, *Vicia*, *Lathyrus* and *Lupinus* varieties grown in Buckingham sand in the Coonalpyn Downs, South Australia. C.S.I.R.O. Bulletin. 1952; No. 269.

Note: D.E.93/10/DEPHD.

(Riceman & Powrie, 1952) Over a 100 lines of various species of *Vicia*, *Lathyrus* and *lupinus* tested in the silicious sands of the Coonalpyn Downs.

V. amphicarpa [CPI 10322], *V. angustifolia* [CPI 10373], *V. articulata* (syn. *V. monantha*) [CPI 9187], *V. atropurpurea* [CPI 10485; N207; [Davis], [Comm.], CPI 10117], *V. aurantica* [CPI 10375], *V. cassubica* [CPI 10379], *V. calcarata* [WLN 134], *V. cordata* [CPI 10380], *V. cornigera* [CPI 10381], *V. dasycarpa* [CPI 9189], *V. disperma* [CPI 10313], *V. ervilia* [CPI 9995; CPI 10385], *V. faba* var. *equina* [Comm.], *V. ferruginea* [CPI10387], *V. globosa* [CPI 10389], *V. grandiflora* [CPI 12282], *V. hirsuta* [CPI 10488], *V. ludovitiana* [CPI 10392], *V. lutea* [CPI 10489], *V. macrocarpa* [CPI 10393], *V. melanops* [CPI 10121], *V. michauxi* [CPI 10395], *V. muricata* [CPI 9009], *V. narbonensis* [CPI 10122], *V. onobrychioides* [CPI 10398], *V. pannonica* [CPI 12500], *V. sativa* [P 4059; CPI 9996; CPI 10400, CPI 10402; CPI 10403; CPI 10707; CPI 9188, CPI 10404, C87, N 208; K262; Comm.] *V. sativa leucosperma* [CPI 10416], *V. sepium* [CPI 10421], *V. sinkiangensis* [CPI 9518], *V. striata* [CPI 11738], *V. villosa* [CPI 9807].

Lathyrus hirsutus [CPI 9741], *L. ochrus* [CPI 9124; W47], *L. sativus* [CPI 9668, CPI 10725; CPI 10781, CPI 10726], *L. tingitanus* [CPI 10628; CPI 10284; CPI W290; CPI 10662; W289; W144-A; W-144-B; S23-A; S23-B; [Davis]; CPI 10111] *Lupinus albus*, *L. angustifolius*, *L. luteus*, *L. pilosus*

Comparative yields of the grain legumes ref. to Bailey, Williamson & Duggar (1930), Madson (1951), McKee, Schoth and Stephens (1931), McKee (1948), McKee & Schoth (1949)

in Australia: Elliot (1939) [*V. faba* var. *equina*], Snook (1947) [*V. dasycarpa*, *L. tingitanus*], Baron Hay & Elliot (1939) *L. tingitanus*, W.A.R.I., 1943 [*L. tingitanus*]
Kennedy, 1925
Thomas (1947)
Watson (1950)
Mc Kee & McNair (1948)

A few species possessed a desirable degree of erectness e.g. *V. narbonensis*

Forage value

Toxins (Hurst, 1942, Webb, 1948)

With regard to the vetches, uncertainty in the literature as to the degree of toxicity is thought to be due to difficulties in the identification of some strains, coupled with the fact that HCN content may vary not only with the age of the plant, but also with the locality in which it is grown Johanson (1948).

All the cultivated vetches appear to be safe and valuable as fodder plants. In this regard McKee and Schoth (1949) and Goar (1934) have made reference to the following species: *V. villosa*, *V. dasycarpa*, *V. sativa*, *V. pannonica*, *V. articulata*, *V. atropurpurea*, *V. calcarata* and *V. angustifolia*, the latter frequently occurring as a weed. *V. dasycarpa* has given satisfactory results under intermittent grazing (CSIRO, 1950) *V. articulata* makes excellent hay and pasturage, and can survive a limited amount of trampling (McKee, Schoth and Stephens, 1931) *V. sativa* P4059 is considered safe for stock (Snook 1947, 1948a); the growing plant is palatable, but stock have to become accustomed to the grain before they will eat it readily (Watson, 1950)

In the Middle East, *V. sativa* var. *angustifolia* occurs as a weed among the crops of vetch and *Lathyrus sativus*; it is poisonous, particularly when immature (Mann, 1947). The herbage of *V. ervilia* is rather bitter and so is of little value as forage (Madson, 1950) (D. E. Does bitterness relate to canavanine metabolism cf. *V. villosa* palatability which also contains canavanine in the seeds), but the seed may be used for stock feed (Mann, 1947, McKee & Schoth, 1949).

299. Robson, T. O.; Americanos, P. G.; Abu-Irmaileh, B. E. Major weeds of the Near East. FAO Plant Production & Protection paper 104, FAO, Rome. 1991.

Note: D.E.93/10/DEPHD.

V. narbonensis syn. *V. serratifolia*. broad leaved vetch

important weed of cereal crops and rainfed cereals, common in orchards and occasional in all other crops in the region [D.E.: The perception of *V.n.* as a weed may be a fallacy e.g. in orchards it serves as a N-fix component, green manure; it also provides fodder for animals grazing the stubble of cereal crops, improves the digestibility of the straw/ competes for yield. Of course, it can be a nuisance, especially where water is

scarce, but it appears to be worth having a fresh look at its weed status/ bloody nozzle heads mentality-clean crops have advantages, but they are not the only viable system.]

Control measures

cultural: tillage

herbicides

atrazine, diuron, methazole, methazole & napropamide, monuron, noruron(norea), oxadiazon, propyzamide & simazine, simazine, terbacil.

300. Ronda Lain, E.; Morales Gallego, J. F.; Otero Cortes, J. Proporción de aminoácidos contenidos en las leguminosas de grano cultivadas en España. Rev. Nutr. Animal. 1963; 1(1): 24-32.

Note: D.E.93/10/ getreprint/Cubero.

AA analysis includes *V. narbonensis*.

301. Rosenthaler, L. The hydrocyanic acid question. XXII. Hydrocyanic acid in the genus *Vicia*. Pharm. Acta Helv.. 1928; 3: 31-32.

Note: D.E.2_94/reprint.

Rosenthaler(1928) HCN is known to exist in *Vicia sativa*, *L.* (0.0008% in seeds, Bruyning & Van Haarst) and var. *britannica* (0.00016%, B. & v.H.), var. *flore albo* and var. *bernayer*; *V. hirsuta* Gray, *V. angustifolia* (Clos) Roth (0.075% in seeds, Bertrand), *V. macrocarpa* Bertol., *V. villosa* Roth (unripe seeds). Free from HCN are *V. narbonensis* (except in the germ, R.), *V. cracca* L., *V. agrigentina* (?), *V. fulgens* Batt., *V. dumetorum* L., *V. villosa* Roth (in ripe seeds). By macerating the crushed seeds for 12-24 hrs with H₂O, distg. and testing HCN in the distillate by the NH₄SCN reaction. R. finds HCN present in the seeds of *V. ambigua* Guss., *V. atropurpurea* Steud. (traces), *V. biennis* L. (traces), *V. calcarata* Desf., *V. carnigera*, *V. cassubica* L. (0.008%), *V. disperma* DC. (traces), *V. gerardi* Vill. (traces; more HCN in the germ), *V. peregrina* L., *V. picta* Fisch. et Mey., *V. polyphylla* Waldst. et Kit. (traces), *V. pseudocracca* Bertol. (traces), *V. striata* Bieb. (0.028%), *V. sepium* L. (traces; also in the flowering green parts, cf. R., C.A. 17, 1269), *V. tricolor*. No HCN was found by R. in the seeds of *V. bithynica* L., *V. cuspidata* Boiss., *V. ferruginea*, *V. hybrida*, *V. onobrychioides* Bertol. but HCN was present in their germs. No HCN was found present in the seeds or germs of *V. faba* L. and / L.

302. Roupakias, D. G. Callus formation and plant regeneration from explants of *Vicia faba* L. and *Vicia narbonensis* L. FABIS. 1985; 11: 9-11.

Note: D.E.93/10/ Dep. Genetics & Pl. Breed., Aristotelian Univ., Thessaloniki, Greece.

Seeds of both species were germinated in Murashige & Skoog and B5 media with or without various concentrations of 2,4-D. Only explants from the apex, root, cotyledon and epicotyl of seedlings on the Murashige & Skoog 2,4-D media formed both roots and shoots in subsequent culture in the same media but containing various growth regulators (NAA, BA and kinetin). More explants from *V. narbonensis* formed roots and shoots than from *V. faba*.

303. Roupakias, D. G. Interspecific hybridization between *Vicia faba* (L.) and *Vicia narbonensis* (L.): early pod growth and embryo-sac development. *Euphytica*. 1986; 35(1): 175-183.

Note: D.E.93/10/ Dep. Genet. & Pl. Breed., Aristotelian Univ., Thessalonike, Greece. notduplicate.

Initial endosperm and embryo development and pod and ovule development were faster in *V. narbonensis* population A201 than in *V. faba* cv. Polycarpe. The growth rate pattern of the hybrid pods was similar to that of the maternal parent. In the cross *V. narbonensis* X *V. faba* the ovules stopped growing 9 days after pollination, while in the reciprocal it was after 15 days. Selfed *V. faba* and *V. narbonensis* embryo sacs reached the stage of 256 endosperm nuclei or 200 embryo cells in less than 9 days and at 4 days after pollination, respectively, while in *V. faba* X *V. narbonensis*, embryo sacs aborted before they reached this stage, and the embryos of the reciprocal aborted even earlier.

304. Roupakias, D. G. Interspecific hybridization between *V. faba* and *V. narbonensis*: prospects and limitations. Genetic manipulation in plant breeding. Proceedings international symposium organized by Eucarpia, September 8-13, 1985, Berlin (West), Germany. Horn, W.; Jensen, C. J.; Odenbach, W.; Schieder, O., eds. Berlin: Walter de Gruyter; 1986: 203-205.

Note: D.E.93/10/ Dep. Genet. & Pl. Breed., Univ. Thessaloniki, Greece notduplicate.

Flower buds of *Vicia faba* cultivars Polycarpe and 2N40S6 and 2 *V. narbonensis* populations (A201 and A202) were emasculated 1-2 days before anthesis and stigmas were dusted on the same or next day with pollen from newly opened flowers of the pollinator species. Plants were raised at 20/16.5°C and 23.5/16.5°C day/ night temperatures. Pod initiation occurred and pod length ranged from 20 to 49 mm in *V. faba* X *V. narbonensis* and from 37 to 50 mm in the reciprocal cross. Best results were obtained at the higher temperature (except in 2N40S6 X A202) and from the cross Polycarpe X A201 (and its reciprocal). However, by 20 days after pollination all the hybrid ovules had aborted. Hybrid embryo sacs aborted before they reached the stage of 256 endosperm nuclei. In selfed plants, early endosperm and embryo development were faster in *V. narbonensis* than in *V. faba*.

305. Roupakias, D. G.; Tai, W. Interspecific hybridization in the genus *Vicia* under controlled environment. *Zeitschrift fuer Pflanzenzuechtung*. 1986; 96(2): 177-180.

Note: D.E.93/10/ Dep. Plant Sci., Univ. Manitoba, Winnipeg, Canada.

The crossability of *V. faba* cultivars Polycarpe and 2N40S6 with *V. narbonensis* populations A201 and A202 was studied under day/ night temperature regimes of 20/16.5°C and 23.5/16.5°C. Double fertilization occurred in both reciprocal crosses and temperature regimes, in up to 50% of ovules. Hybrid pods grew and

were retained on the plants for >20 days after pollination. In general, the percentage of successful fertilization was higher at the higher temperature, where it was higher in Polycarpe X A201 (46-48%) than in 2N40S6 X A201 (10-35%). However, 2N40S6 X A202 gave a 92.2% success rate at the lower temperature. It is concluded that the potential exists to obtain hybrid plants using appropriate parental genotypes and embryo rescue techniques.

306. Roupakias, DG. Callus formation and plant regeneration from explants of *Vicia faba* L. and *Vicia narbonensis* L. FABIS Newsletter, Faba Bean Information Service, ICARDA. 1985, No. 11, 9-11; 8 ref. 1985;

Note: Dep. Genetics & Pl. Breed., Aristotelian Univ., Thessaloniki, Greece. Numbered-Part /CAB86_84.

Seeds of both species were germinated in Murashige & Skoog and B5 media with or without various concentrations of 2,4-D. Only explants from the apex, root, cotyledon and epicotyl of seedlings on the Murashige & Skoog 2,4-D media formed both roots and shoots in subsequent culture in the same media but containing various growth regulators (NAA, BA and kinetin). More explants from *V. narbonensis* formed roots and shoots than from *V. faba*.

307. Roupakias, DG. Interspecific hybridization between *Vicia faba* (L.) and *Vicia narbonensis* (L.): early pod growth and embryo sac development. *Euphytica*. 1986, 35: 1, 175-183; 4 ref. 1986;

Note: Dep. Genet. & Pl. Breed., Aristotelian Univ., Thessalonike, Greece. Numbered-Part /CAB89_87 notduplicate.

Initial endosperm and embryo development and pod and ovule development were faster in *V. narbonensis* population A201 than in *V. faba* cv. Polycarpe. The growth rate pattern of the hybrid pods was similar to that of the maternal parent. In the cross *V. narbonensis* X *V. faba* the ovules stopped growing 9 days after pollination, while in the reciprocal it was after 15 days. Selfed *V. faba* and *V. narbonensis* embryo sacs reached the stage of 256 endosperm nuclei or 200 embryo cells in less than 9 days and at 4 days after pollination, respectively, while in *V. faba* X *V. narbonensis*, embryo sacs aborted before they reached this stage, and the embryos of the reciprocal aborted even earlier.

308. Roupakias, DG; Tai, W. Interspecific hybridization in the genus *Vicia* under controlled environment. *Zeitschrift fur Pflanzenzuechtung*. 1986, 96: 2, 177-180; 5 ref. 1986;

Note: Dep. Plant Sci., Univ. Manitoba, Winnipeg, Canada. Numbered-Part /CAB86_84.

The crossability of *V. faba* cultivars Polycarpe and 2N40S6 with *V. narbonensis* populations A201 and A202 was studied under day/ night temperature regimes of 20/16.5°C and 23.5/16.5°C. Double fertilization occurred in both reciprocal crosses and temperature regimes, in up to 50% of ovules. Hybrid pods grew and were retained on the plants for >20 days after pollination. In general, the percentage of successful fertilization was higher at the higher temperature, where it was higher in Polycarpe X A201 (46-48%) than in 2N40S6 X A201 (10-35%). However, 2N40S6 X A202 gave a

92.2% success rate at the lower temperature. It is concluded that the potential exists to obtain hybrid plants using appropriate parental genotypes and embryo rescue techniques.

309. Roux, G. Flore de France. ; 1899.

Note: D.E.93/10/.

(Roux, 1899) Flore de France p.221-22

Hab.- Bords des fossés, cultures, bois -taillis, lieux humides du midi, Gironde, Charente-Inférieure, Corse;

a. graines brune

b. heterophylla: graines lisses

g. serratifolia: graines très finement alvéolées

hab. b, g: le midi, Lot, Puy-de-Dôme, Allier, Cher, Indre, Maine-et-Loire, Vendée, Charente, Charente-Inférieure, Deux- Sèvres, Eure-et-Loir, Corse.

310. Roux, H. Catalogue des plantes de provence spontanés au généralement cultivées. ; date?

Note: D.E.93/10/.

(Roux, date?) Catalogue des plantes de provence spontanés au généralement cultivées

V. narbonensis

Mai-Juin

éa et lê dans les champs au sur les bords, haies, rives et talus.

B.-R.- rare ê Marseille: ê la Servianne; aux Caillots, derrière le château de las Salle.

Martigues (Autheman!) A Saint-Giniez où il abonde.(Roux)

Aix: aux quartiers de Mauret et de Fontlèbe(F. et A.) Saint-Jean de Trets.(Roux)

Var. -Le Luc; Fréjus(Hanry). Nous l'avons trouvé très abondant dans les prairies des clairières du bois de la Sainte-Baume, du côté de l'avenue de nans; y avait-on jeté la graine?

A. M.- Peu commun. Menton; Nice: au Vinaigrier; l'Escarène.

311. Saalbach, I.; Pickhardt, T.; Machemehl, F.; Saalbach, G.; Müntz, K. A cimeric gene encoding the methionine-rich 2S albumin of the Brazil nut (*Berthollia excelsa* H.B.K.) is stably expressed and inherited in transgenic grain legumes. Mol. Gen. Genet.. 1994; 242: 226-236.

Note: D.E.2_94/reprint/DEPHD.

312. SAHIN, A.; BABAC, M. T. (Firat Universitesi, Fen Edebiyat Fakultesi, Biyoloji Bolumu, 23169 Elazig, Turkiye). Cytotaxonomic investigations of some Vicia L. species in East and Southeast Anatolia (Turkey): I. DOGA TURK BOTANIK DERGISI 14(2): 124-138. 1990; . CODEN: DTBDEG.

Note: BC26260 Leguminosae Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA91.

In this study, some taxa of Vicia L. growing naturally in East and Southeast Anatolia were investigated from the cytotaxonomic point of view. The materials were collected from their natural habitats between 1986 and

1988. After the seed were germinated the root tips were stained with Feulgen and the squash method was applied for the karyotype analysis. The chromosome numbers of the taxa were counted as $2n = 12$ (V. hyrcanica, V. noeana var. noeana, V. hybrida, V. cuspidata, V. lathyroides, V. sativa subsp. sativa, V. sativa subsp. nigra var. nigra) and $2n = 14$ (V. cracca subsp. cracca, V. ervilia, V. aintabensis, V. peregrina, V. michauxi, var. stenophylla, V. grandiflora var. grandiflora, V. narbonensis var. narbonensis, V. narbonensis var. serratifolia). The related taxa were compared with respect to their chromosome characteristics. It has been also observed that the differences between chromosome and gross morphologies of the taxa congruenced to each other in some extent.

313. Saini, H.; Batterham, T. Evaluation of anti-nutritional factors in feeds for pigs. Pig Industry Seminar, North Coast Agricultural Institute, Wollongbar, 16. 3. 1988, Department of Agriculture New South Wales.. 1988: 14-18. ISSN: ISBN 0 7305 4776 0.

Note: D.E.93/10/.

314. SALMANOWICZ, B. P.; SVENDSEN, I. (Inst. Plant Genetics, Polish Academy Sci., ul. Strzeszynska 34, 60-479 Poznan, Pol). Primary structure of a major seed albumin from different genera of the tribe Viciae (Leguminosae). GENETICA POLONICA 33(3): 187- 202. 1992; . CODEN: GPOLA4.

Note: BC07702 Micrococcaceae; BC07810 Endospore-forming-Gram- Positives; BC26260 Leguminosae Microorganisms; Eubacteria; Bacteria; Plants; Vascular plants; Spermatophytes; Angiosperms; Dicots /BA93 notduplicate.

The complete amino acid sequence of a major seed albumin from Lathyrus sativus L. and partial amino acid sequences (90%) of the corresponding protein from Pisum humile Boiss. et Noe and Vicia narbonensis L. have been determined by automatic Edman degradation. Peptide fragments have been obtained by chemical cleavage with cyanogen bromide and hydroxylamine and by enzymatic cleavages with endoproteinase Lys-C, Staphylococcus aureus V8 protease and a glutamic acid specific endopeptidase from Bacillus licheniformis. The investigated albumins proved to be dimers composed of subunits with the molecular mass 26 kDa, containing 230 amino acid residues. A sequence analysis showed a high degree of similarity of the examined albumins. Strong homology (88% residue identity) of the major seed albumin of Lathyrus sativus L. with the corresponding protein of Pisum sativum L. may be inferred from the literature data.

315. Saltini, Antonio. Storia delle Scienze Agrarie dalle Origini al rinascimento. : Edagricole via Emilia Levante, 31 Bologna; 1984. ISBN: ISBN-88-206-2412-5.

Note: D.E.93/10/ Rothamstedt/write.

gianormous work in 3 volumes->write to the author and ask about V. narbonensis.

316. Sammour, R. H. Chemical constituents and electrophoresis of seed proteins of some species of *Vicia*. *Fabis Newsletter*. 1987; 18: 30-32.

Note: D.E.93/10/ Dep. Bot., Fac. Sci., Tanta Univ., Tanta, Egypt.

Chemical analysis of the seed proteins of a number of wild species and 2 Egyptian cultivars of *Vicia faba* showed no association between mineral composition and *Vicia* species. Starch content varied between 14 and 26%, while protein content was 17- 32%. Electrophoresis of seed proteins showed variation among the wild species of *Vicia*. There was little variation among *V. narbonensis* cultivars, the species most closely related to them was *V. serratifolia*. In addition it has been suggested that *V. narbonensis* var. *aegyptiaca* had evolved from *V. narbonensis* var. *narbonensis* and *V. narbonensis* var. *jordanica*.

317. Sammour, R. H. Electrophoresis of the seed proteins of *V. faba* L. and its immediate progenitors- a reappraisal. *Plant Breeding*. 1989; 104: 196-201.

Note: D.E.93/10/ Department of Botany, Faculty of Science, Tanta University, Tanta, Egypt.

Of the 21 *Vicia* taxa examined, 3 were botanical varieties of *V. faba*, 3 were subspecies of *V. villosa* and 3 were subspecies of *V. narbonensis*. Analysis of seed proteins using PAGE indicated that *V. narbonensis* subsp. *narbonensis* is the immediate progenitor of *V. faba*. This study also indicated that *V. serratifolia* should be subsumed and treated as a subspecies of *V. narbonensis*.

318. Sammour, R. H. Seed proteins electrophoresis of *Vicia faba* L. and their immediate progenitors - a reappraisal. *Feddes Repertorium*. 1990; 101(5-6): 297-303.

Note: D.E.93/10/ Department of Botany, Faculty of Science, University of Tanta, Tanta, Egypt.

This paper has been abstracted previously from another source [see *Plant Breeding* (1990) 104 (3) 196-201].

319. Sammour, R.H. Chemical constituents and electrophoresis of seed proteins of some species of *Vicia*. *FABIS Newsletter*, Faba Bean Information Service, ICARDA. 1987, No. 18, 30-32; 17 ref. 1987;

Note: Dep. Bot., Fac. Sci., Tanta Univ., Tanta, Egypt. Numbered- Part /CAB89_87.

Chemical analysis of the seed proteins of a number of wild species and 2 Egyptian cultivars of *Vicia faba* showed no association between mineral composition and *Vicia* species. Starch content varied between 14 and 26%, while protein content was 17- 32%. Electrophoresis of seed proteins showed variation among the wild species of *Vicia*. There was little variation among *V. narbonensis* cultivars, the species most closely related to them was *V. serratifolia*. In addition it has been suggested that *V. narbonensis* var.

aegyptiaca had evolved from *V. narbonensis* var. *narbonensis* and *V. narbonensis* var. *jordanica*.

320. Sammour, R.H. Electrophoresis of the seed proteins of *Vicia faba* L. and its immediate progenitors a reappraisal. *Plant Breeding*. 1990, 104: 3, 196-201; 28 ref. 1990;

Note: Department of Botany, Faculty of Science, Tanta University, Tanta, Egypt. Numbered-Part /CAB91_90.

Of the 21 *Vicia* taxa examined, 3 were botanical varieties of *V. faba*, 3 were subspecies of *V. villosa* and 3 were subspecies of *V. narbonensis*. Analysis of seed proteins using PAGE indicated that *V. narbonensis* subsp. *narbonensis* is the immediate progenitor of *V. faba*. This study also indicated that *V. serratifolia* should be subsumed and treated as a subspecies of *V. narbonensis*.

321. Sammour, R.H. Seed proteins electrophoresis of *Vicia faba* L. and their immediate progenitors a reappraisal. *Feddes Repertorium*. 1990, 101: 5-6, 297-303; 28 ref. 1990;

Note: Department of Botany, Faculty of Science, University of Tanta, Tanta, Egypt. Numbered-Part /CAB91_90.

This paper has been abstracted previously from another source [see *Plant Breeding* (1990) 104 (3) 196-201].

322. Schäfer, H. I. The taxonomy of the *Vicia narbonensis* group. [Narbonne vetch]. *Kulturpflanze*, 1973, 21: 211-273. Ref. Eng. sum. 1973;

Note: Zur taxonomie der *Vicia narbonensis*-Gruppe DNAL 450-K95 Article; Bibliography /agricola78_70.

323. Schäfer, H. notes (pers. comm.).

Note: D.E.93/10/.

Schäfer(pers. comm.)Indications of cultivation only very rarely encountered in herbarium material

-Haußknecht, B., leg. 1864, cult. pr. Artern (Herbar Jena) Bezirk Halle

-Fleischer, B., leg. 1883, Bohem. sept. orient. Sloupnice, culta in agris (Herbar Jena & Halle)

-Mouterde, Lebanon 'seemed to be cultivated' (Specimen is var. *salmonea*)

-Ali, S. I., Revision of the genus *Vicia* Linn. from West Pakistan, Bot. Notis. 120, 1967 p. 45-56-> Lower Swat, cult.

324. Schäfer, H. I. Zur Taxonomie der *Vicia narbonensis* Gruppe. *Kulturpflanze*. 1973; 21: 211-73.

Note: D.E.93/10/DEPHD.

The present study follows the work of Mettin(1960 ff.) and Hanelt(Hanelt & mettin, 1966, 1970; Hanelt, 1972) and is related to the question of the origin of *Vicia faba* L. , which Schultze- Motel(1972) as well as Hanelt et al. (1972) have investigated more closely. No wild form is known of this cultivated plant, whose oldest finds are dated to 5000 years B.P.(D.E. cf. Kislev)

Several authors(Hooker, 1892), Buschan, 1895) but also Ball(1968) considered the possibility that *Vicia narbonensis* could be the ancestor of *Vicia faba*, because the tribes are morphologically similar. Initially it was necessary, to document the morphological diversity of *V. narbonensis* and

to critically evaluate the ranking of the individual taxa, because previous views differ considerably about this. Evaluation of herbarium material alone does not enable a satisfactory solution of this problem. Therefore, observations on living plants and especially results from crossing experiments were drawn upon.

Crosses between the individual tribes of *V. narbonensis* sensu lato, as well as with *V. faba* were carried out, and served primarily, on the basis of F1 fertility, to elucidate the genetic relationships. Factor analysis of morphological characters (Merkmale, markers) was left out of consideration.

Materials & Methods

Seed sources and herbarium specimen

The basis for the study was the genetic material of the Gatersleben Cultivated Plant Collection, as well as seed of populations which in part were obtained from botanical gardens and plant breeding stations, and in part from original field collections. A large number of accessions were obtained from Dr. E. Bennett (FAO Rome)(60) and Dr. R. Gerek (Pant Breeding Station Eskisehir)(44). Dr. D. A. Bond left us bulked up original material of the Plant Introduction Service beit Dagan (P.I.S.). Dr. Ch. Gunn(Agricultural Research Service Beltsville, Maryland) was also very helpful in the obtention of seed material. All are gratefully acknowledged.

A total of 140 populations was multiplied in isolation plots and were cultivated together under identical conditions in the years 1970 and 1971. I thank Mrs. B. Fouquet (D. E. c.f. field records obtained in Gatersleben during visit in 1991) and colleagues for their exemplary care.

To complement findings about the individual tribes, the extensive herbarium collections of the following herbaria were consulted: National herbarium of Iraq (BAG), Universitetets Botaniske Museum Kobenhavn (C), Herbarium Universitatis Florentinae, Istituto Botanico(FI), Herbar des Zentralinstitutes für Genetik und Kulturpflanzenforschung der Akademie der Wissenschaften der DDR in Gatersleben (GAT), Conservatoire et Jardin Botanique Genève (G), Herbarium der Universität Halle (HAL), Haussknecht-Herbarium Jena (JE), Royal Botanic Garden Kew (K), Herbarium of the Komarov-Institute for Botany of the Academy of sciences of the U.S.S.R., Leningrad (LE), Universitetets Botaniska Museum Lund (LD), Institut Botanique, Université de Montpellier (MPU), Herbarium of the Botanic Institute, University of Vienna (WU), as well as of the Museum for Natural History, Vienna (W)

Cytological investigations

etc., Buds have to be opened before flowering in order to pollinate, because fertilisation takes place way before the opening of the flowers.

To determine the fertility of the pollen, the pollen grains were stained with carmine acetic acid. Only normally build, dark red staining pollen was counted.

325. Scheibe, A. Über Vorkommen und Nutzungsweise der Wilderbse (*Pisum selatius* Stev.) und der 'Wildbohne' (*Vicia narbonensis* var. *intermedia* Strobl) in Anatolien. [The occurrence and utilization of the wild pea *Pisum elatius* Stev.) and the 'wild bean' (*Vicia narbonensis* var. *intermedia* Strobl) in Anatolia]. Züchter. 1934; 6(10): 234-240.

Note: D.E.93/10/ /DEPHD.

Scheibe(1934); described the use of wild legumes by Anatolian farmers in Turkey who use the grain of cereal/ legume (*Pisum elatius* and *V. johannis*) mixtures* either as stockfeed or for their own consumption in the form a bread. ' The mixed grain makes apparently a good, strong (nutritious) cottage-bread. With the preference of the Oriental for grain legumes (phaseolus- bean, lentil, chickpea etc.,) with their peculiar strong flavoured taste, such a judgement of the legume-cereal mixture is perfectly understandable.'

* Together with a whole series of other legumes like *Vicia peregrina* L., *V. hybrida* L., *V. dasycarpa* Ten., *V. elegans* Guss., *V. angustifolia* L., *V. purpurascens* DC., *V. cappadocica* Boiss. et Bas., *Medicago hispida* Gaertn., *M. gerardi* Kit., *M. orbicularis* All., *Trigonella aurantiaca* Boiss. and *Astragalus hamosus* L.

Herbage Abs March, 1935 (633.35+633.378(56):

The plants were generally found in the vicinity of cultivated land and among cereals, but also on the edges of the untouched Anatolian steppes. Considerable value is attached to them by the locals on account of their winterhardiness and drought resistance; if for one reason or another wheat or barley crops partially fail, these two weed components of the stand may be relied upon to make good the deficiency. They ripen at approximately the same time as the cereals and are ground together with them for bread, or the mixture is fed as meal to cattle.

Pisum elatius is further used as a vegetable, the green pods being collected.

D.E. translation

About the distribution and utilization of the wild pea (*Pisum elatius* Stev.) and the 'wild bean' (*Vicia narbonensis* var. *intermedia* Strobl) in Anatolia. Arnold Scheibe, Giessen a.L., Der Züchter 6(10) 234-240

Through the extensive studies of Vavilov and his collaborators it is now known that wide areas of Central- and East Anatolia belong, linked through the Caucasus and the Highlands of Iran, to the South-West Asia Gene centre of agricultural cultivars. Besides soft wheat, rye, small seeded flax and a series of vegetables and fruits originate most small seeded peas, lentils and vetches from this center (Vavilov, 1925, 1928, 1931). Indeed, the agricultural botanist encounters a rich diversity of all possible forms of legumes in the untouched steppes of Anatolia, which demand at least as much interest (curiosity) as the diversity of cereals in this area (c.f. Zhukovsky, 1933). This wealth of legumes is not

restricted to only Central Anatolia. Transitions are given through the intrusion of the long-stretched coastal strip of South-West Anatolia into the mediterranean climate, which lead over into another, by Vavilov more accurately sketched gene centre, the Mediterranean. From this center originated amongst plants of closer interest to us the large seeded pulses.

During the comprehensive studies during the years 1931-1933 on the wild flora of Anatolia, especially the weed flora of Central and East Anatolias cereal fields, I came upon a series of pea and vetch forms. These, although not 'cultivated', stimulated my special interest because of the primitive way they were utilized by the local people. From the collected material I would like to exhibit only the types *Pisum elatius* Stev. and *Vicia narbonensis* var. *narbonensis*, of which in the literature the first is generally known as wild- or primitive pea and the other is in genealogical line with the authentic *V. narbonensis* (var. *typica*)- or derived - sometimes mentioned in context with small seeded cultivated types of *V. faba*.

etc. etc.

brief descriptions of the plants follow

The just closer described legumes types show characteristically clear ecological and plant sociological associations. I found the described wild types as weeds in cereal fields, as well as on the fringes of the untouched grass steppe of Anatolia(Fig. 5 and 6). *V. narbonensis* was found in similar habitats also in Thrace(Thrazien). Preferred habitats were in general small depressions (Senken), field borders and edges of channels and creeks, in not too dried-out clearfelled sites and stands of cereals. In general, places under human influence (D.E.: anthropogenic habitats), and thereby next to or in a bit moist fields that were utilizable by cropping (suitable for cropping). The *V. narbonensis*-types appear to prefer somewhat more moist habitats than *P. elatius*. To both in common are habitats with high lime and colloid content in the soil. *P. elatius* is less demanding with respect to the last mentioned. I did find the plant relatively common alongside railway tracks on gravel rich sites (e.g. south of Eskishehir along the track to Kütahya). In small depressions, filled with washed sediments of finely dispersed ground material both types are able to grow. W. Kotte found *P. elatius* as well as *V. narbonensis* in the Hinterland of Ankara (in the vine-yards of the Ince-Su valley).

Exceptionally opulent specimen of the described types I found next to creeks(drainage, irrigation channels)(ditches?) of occasionally irrigatable and horticulturally used estates in the circumference of the city Eskishehir*; evidently they grow here since a long time. In large quantities they were found in summer 1933 also next to the village Keskin(north-west Vilajet Eskishehir), where they stood amongst wheat and barley stands in fields that are irrigated annually(Fig. 7

&8). Here as well as in neighboring villages they are since long well known to the local farmers. They are called Yabani bezelye(=wild pea) and Yabani baklasi(=wild bean) and are highly regarded by them. Areas on which these legumes , together with others such as *V. hybrida* L.(Kus baklasi = birds bean) and *V. sepium* (Yilan baklasi = snake bean) occur regularly are valued especially high. That is for the following reason: The farmers of such estates (land) know - after hard winters after which the wheat ripens to a high protein percentage, or after dry springs in which the barley germinates only sparingly- that then the wild beans and wild peas come up undamaged with lush growth to still give, together with the remaining cereals, nice closed stands. This mixed grain isn't then cleaned, but it is either fed in cracked form to horses, buffalos, oxen, bulls or sheep, or it is milled and used to bake bread. The mixed grain makes apparently a good, strong(nutritious) cottage-bread. With the preference of the oriental for grain legumes(Phaseolus-bean, lentil, chickpea etc.) with their peculiar strong flavored taste, such a judgement of the legume-cereal mixture is perfectly understandable.

* Together with a whole series of other legumes like *Vicia peregrina* L., *V. hybrida* L., *V. dasycarpa* Ten., *V. elegans* Guss., *V. angustifolia* L., *V. purpurascens* DC., *V. cappadocica* Boiss. et Bas., *Medicago hispida* Gaertn., *M. gerardi* Kit., *M. orbicularis* All., *Trigonella aurantiaca* Boiss. and *Astragalus hamosus* L.

326. Schinz, H.; Keller, R. Flore de la Suisse. Lausanne: F. Rouge & Cie; 1909.

Note: D.E.93/10/.

(Schinz & Keller, 1909) Flore de la Suisse

p. 351-352

V. narbonensis

-V.-B. (Zwingen), *V. (Leysin)*, G.

327. Schlesier, B. A gel electrophoretic study on the polypeptide structure of vicilin. Kulturpflanze. 1984; 32: S223-S225.

Note: D.E.93/10/ getreprint/ Zentralinstitut für Genetik und Kulturpflanzenforschung, 4325 Gatersleben, German Democratic Republic notduplicate.

Crude vicilin and legumin preparations from *Vicia faba*, *V. narbonensis*, peas and *Phaseolus vulgaris* were fractionated on acid polyacrylamide gels and individual bands were electrophoresed again on discontinuous SDS-gels. A general scheme for the subunit structure of vicilin-like 7S globulins is proposed, involving different ratios of 50 000 and 70 000 MW polypeptide chains.

328. Schlesier, B.; Manteuffel, R.; Rudolph, A.; Behlke, J. Studies on seed globulins from legumes VII. narbonin, a 2S globulin from *Vicia narbonensis* L. Biochem. Physiol. Pflanzen. 1978; 173: 420-428.

Note: D.E.93/10/ notduplicate.

329. Schlesier, B.; Scholz, G. Studies on seed globulins from legumes. II. A crystalline protein from the globulin

fraction of *Vicia narbonensis* L. [Narbonne vetch]. *Biochem Physiol Pflanz BPP*, 1974, 166 (4): 367-369. 1974;

Note: DNAL QK710.F5 Article /agricola78_70.

330. Schramm, J. Sozio-ökonomische Struktur der deutschen Bauern in Südosteuropa bis 1945. in: Ronneberger, F.; Teich, G. Von der Agrar- zur Industriegesellschaft. Sozialer Wandel auf dem Lande in Südosteuropa. : Verlag Happenstedt & Co; 1969; Vol 6.

Note: D.E.93/10/ Hohenheim/getreprint.

& also

Martle, J. (1968)

Bauer & Grundherr in der Geschichte der Balkanvölker

Background info to german settlement in South-Eastern Europe incl. Transsylvania/Siebenbürgen. Is there a connection with *Vicia serratifolia* cultivation?

331. Schultze-Motel, J. Die archäologischen Reste der Ackerbohne, *Vicia faba* L. und die Genese der Art. *Kulturpflanze*. 1972; 19: 321-358.

Note: D.E.93/10/ /DEPHD.

332. Schur, F. Phytogeographische Mittheilungen über Pflanzenformen aus verschiedenen Florengeländen des österreichischen Kaiserstaates. *Verhandlungen des Naturforschenden Vereines in Brünn*. 1877; 15(2): 1-200.

Note: D.E.93/10/.

(Schur, 1877) Phytogeographische Mittheilungen über Pflanzenformen aus verschiedenen Florengeländen des österreichischen Kaiserstaates

p.192

Vicia narbonensis - *V. narbonensis* var. *integrifolia* = var. *heterophylla*

Wird bei Karthaus im Grossen als Futterpflanze kultiviert und kommt in der Umgebung dieser Felder verwildert vor, Juli 1870 zum erstenmal beobachtet.

333. Schur, P. J. F. *Vicieae. Enumeratio plantarum Transsilvaniae*. Vienna: Braumüller; 1866.

Note: D.E.93/10/.

(Schur, 1866) *Vicieae. Enumeratio plantarum Transsilvaniae* p. 167

V. serratifolia = *V. narbonensis*

Auf Aeckern unter Saaten auf der Mézóség, bei Mühlenbach und bei Broos. Jul. Aug.

334. Schweinfurth, G. Ägyptens auswärtige Beziehungen hinsichtlich der Kulturgewächse. *Z. Ethnologie (Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*. Virchow, R. (ed.), Von A. Ascher & Co., Berlin). 1891; 23: 649-669.

Note: D.E.93/10/article seems to identical with Schweinfurth, G. (1891) *Sitzungsberichte Anh. G.*

Anthrop. Ges. Berlin /DEPHD.

Schweinfurth (1891)

pp. 661-662 Noted the exclusive occurrence of *V. narbonensis* in *V. faba* fields. Local name amongst the fellahs in the delta and near Fayoum: bâcher

c.f. Löw

' Allerdings ist die genannte Wicke noch heute als gelegentliches Unkraut in den Saubohnen-feldern Aegyptens und zwar nur ihnen, ziemlich häufig-> Unkraut oder Ackerkraut ausgeprägtestens Mediterranean characters.

Traditional name for *V. faba*: ater hahri, ater bâhari

Schweinfurth, G.

Ägyptens auswärtige Beziehungen hinsichtlich der Kulturgewächse

23

649-69.

335. Şçvulescu, T. *Flora republicii populare Romöne* Vol. 5. ; 1957.

Note: D.E.93/10/.

(Şçvulescu, 1954) *Flora republicii populare Romöne* Vol. 5 *Vicia narbonensis*

Statiunea. Pe coaste argiloase, printre mçrçcinisuri, semçnruri, vii.

Rêsp. in tarç: L reg. Constanta: Tuzla, Mangalia (r. Negru Vodê) Rêsp. gen. Regiunea mediteraneanê.

V. serratifolia

Statiunea. Pe arêturi in locuri ierboase si cu tuferisuri.

Rêsp. in tarç: rewg. Stalin: Rusi (r. Sibiv).

Reg. Hunedoura: sebes, mercurea Sibiului(r. sebes); Orêstie, Deva, Dobra (r. Ilia). Reg. Timisoara: Orsova. Reg. Craiova: Vörciorova, Gura Vêii(r. T. Severin); Craiova la Baltta verde; Timuresti (r. Gura Jiuui). Reg. Bucuresti: Comana (r. Vidra). Reg. Constanta: Constanta; Tuzla, Mangalia (r. Negru Vodê; Slava Cherchezê (r. istria); Cernacodê (r. Medgidia); Agighiol (r. Tulcea). Reg. Galati: Mêcin; Tifesti (r. Panciv). Reg. Iasi: Roman.

Interbuintêri. Atöt *V. narbonensis*, cöt si *V. serratifolia* se cultiva pentru seminte si furaj verde. Fat`a de *V. faba* este mai putin exigentê la umiditatea si fertilitatea solului. prin cultura lor se öndep`artenzê soarecii si cirtitele.

336. Sessous. *Anbau und Züchtung neuer Kulturpflanzen*. [Cultivation and breeding of new crop plants.]. *Mitt. Landw.* 1934; 49: 646-7.

Note: D.E.93/10/.

Several plants are indicated as being worthy of further study with a view to their adaptation and improvement for use in Germany. They include *Vicia dumetorum*, *V. narbonensis*, *Trifolium pratense* (greater persistence required), the sunflower and the soybean [Herb. Abs., Dec. 1934, p. 243]

D>E: Introduction has got a good dose of NS propaganda about self-sufficiency and about overcoming economic un-attractiveness by the blessing of work. e.g. labour cost does not enter the economic equation.

337. Simon, J. *Vysledky pokusu s novymi polnimi picinami a moznost zlepzeni produkce dnesnich okopanin urcenyh*

pro pici (no polish font). [Results of experiments with new field forage crops and the possibility of improving production of forage root crops.]. Casove Otaz. Zemed.. 1935; 49: 84-130.

Note: D.E.93/10/ getreprint/address: Seed Testing Sta. Inst., Agric. Res., Brno/Hanelt.

Moravia, *Lathyrus sativus*, *V. narbonensis*, *V. pannonica*, *Cicer arietinum*, *Vigna*,

Forage beet, sugar beet(feed), carrot, parsnip, turnip, rutabaga, marrow-stem kale, *Helianthus tuberosus*, *Setaria germanica*, Sudan grass, sorghum, soybeans(*Glycine max*), winter and spring *Brassica napus* and *B. rapa oleifolia*, white mustard(*Brassica*), buckwheat(*Fagopyrum*), *Phacelia* and *Symphytum*.

Data on yield, nutrient content and observations on vegetative characters are in numerous tables.

Lathyrus should be sown where there is risk of *Bruchus pisi* as a pest. If conditions are too dry for horse-beans, *Cicer* and *Vicia narbonensis* may be recommended.

V. pannonica proves quite successful in winter mixtures.[Herb. Abs. dec. 1936, p.355].

338. Singh, V. P.; Lelley, T. Giemsa C banding karyotype of *vicia narbonensis* as compared to *Vicia faba* Broadbeans. F A B I S Newsl. Aleppo, International Center for Agricultural Research in the Dry Areas, ICARDA. May 1982. (4) p. 22-23. ill. 1982;

Note: DNAL SB327.F32 Foreign 3 ref. Article agricola84_79 notduplicate.

339. Singh, V. P.; Lelley, T. Giemsa C-banding karyotype of *V. narbonensis* as compared to *V. faba*. FABIS. 1983; 4: 22-23.

Note: D.E.93/10/ getreprint.

340. something on narbon beans, grain legumes for the Mallee etc./not seen yet/get/urgent. Velthuis, R. G. Proc. 3rd Conference of Aust. Agron. ; 1985.

341. Sousa Da Camara, A. P. de; Coutinho, L. A. SubsÆdios para o estudo cariológico do género *Vicia*. [Contributions to the cytological study of the genus *Vicia*]. Rev. Agron. Lisboa. 1935; 23: 5-28.

Note: D.E.93/10/ getreprint/Silveira.

refs. to Sveshnikova (Bull. Appl. Bot. Leningrad 17 (3) 37-72, 1932) who made a key for the determination of 28 species of *Vicia* according to the morphology of their chromosomes.

Four species studied by these authors:

V. sativa, *V. macrocarpa*, *V. monantha*, *V. narbonensis*, using material from all over Portugal.

For *V. sativa* L.the same caryotype(1 : 0 : 5 : 0) was found in all material studied. In the metaphase plates one pair of chromosomes exhibited an interbracial ratio of > 2 : 1, and the remaining 5 pairs had heads.

V. macrocarpa Mor. (0 :2 : 4 : 0) appeared to be intermediate to the types described by Sveshnikova for *V. sativa* and *V. macrocarpa*..

For *V. narbonensis*, they found in addition to the six pairs of practically equal armed chromosomes described by Sveshnikova, another pair which are tri-articulate. Their measurements correspond closely to those made by Senjaninova-Korczagina (Bull. Appl. Bot. Leningrad ser. 2 No. 1, 91-118 (1932). (Herb. Abs. 3. 206. 1933)).

V. monantha (1 : 3 : 3 : 0), differed to Sveshnikova's. Chromosome shape was different, cases of fragmentation were occasionally encountered. The existence of a high degree of variability and forms with certain chromosomal abnormalities were demonstrated for this species.

D.E. comment: karyotypes may be useful for tracking down genetic origin of various *Vicia* & *Lathyrus* lines e.g. *V. narbonensis* has been found to have three different karyotypes (Schäfer, 1973, Raina et al., 1989). The high variability of *V. monantha* material from Portugal is noteworthy, especially in view of the fact that this species is/ or was cultivated on a large scale in Spain(c.f. Fisher, 193?).

342. St. v. Cselko. Wiener landwirtschaftliche Zeitung. 1888(2).

Note: D.E.93/10/ getreprint/Rae/not enough detail.

343. Stankevich, A. K. Systematic position of some sections of the genus *Vicia* L. Trudy po Prikladnoi Botanike, Genetike i Seleksii. 1982; 72(1): 21-27.

Note: D.E.93/10/ VIR, Leningrad, USSR.LA: Russian, LS: English.

In this revised taxonomy, the genus is divided into four separate genera, namely *Vicia*, *Ervum*, *Ervilia* and *Bona*. The genus *Ervum* contains 46 species in 4 sections and is made up of species formally assigned to sections *Ervum*, *Ervoides* and *Lenticula* of *Vicia*, which is here restricted to species of sections *Vicia* and *Cracca*. *Ervilia* is a monotypic genus containing *E. sativa* (formerly *V. ervilia*), while *Bona* contains *B. narbonensis* (formerly *V. narbonensis*) and *B. serratifolia* (*V. serratifolia*). It is thought that *Bona* may have a common origin with *Faba*, being intermediate between *Vicia* (the vetches) and *Faba* (broad bean, formerly *Vicia faba*).

344. Stankevich, AK. Systematic position of some sections of the genus *Vicia* L. Trudy po Prikladnoi Botanike, Genetike i Seleksii. 1982, 72: 1, 21-27; 13 ref. 1982;

Note: VIR, Leningrad, USSR. Numbered-Part /CAB86_84.

In this revised taxonomy, the genus is divided into four separate genera, namely *Vicia*, *Ervum*, *Ervilia* and *Bona*. The genus *Ervum* contains 46 species in 4 sections and is made up of species formally assigned to sections *Ervum*, *Ervoides* and *Lenticula* of *Vicia*, which is here restricted to species of sections *Vicia* and *Cracca*. *Ervilia* is a monotypic genus containing *E. sativa* (formerly *V. ervilia*), while *Bona* contains *B. narbonensis* (formerly *V. narbonensis*) and *B. serratifolia* (*V. serratifolia*). It is thought that *Bona* may have a common origin with *Faba*, being intermediate between *Vicia* (the vetches) and *Faba* (broad bean, formerly *Vicia faba*).

345. Stählin, A. in: Becker, M.; Nehring, K., eds. *Handbuch der Futtermittel*. Berlin: Paul Parey; 1969.

Note: D.E.93/10/ incomplete.

'Narbon vetch (*V. narbonensis*) is cultivated frequently in the Mediterranean region as a grain legume, however the plant is also well liked and profitably grown as a forage because it is more tender than the field bean (*V. faba*). The plant is seldom used for haymaking because it dries only with difficulty.

346. Steven, C. *Stirpes rariores in itinere Caucasico A. 1810 lectae a C. Steven. Mem. Soc. Imp. Natur. Mosc. (ctd. a T.III p. 270). 1810; 4: p. 93.*

Note: D.E.93/10/.

(Steven, 1810) *Stirpes rariores in itinere Caucasico A. 1810 lectae a C. Steven*

V. narbonensis

Marshall taur. cauc. n. 2416

Circa Derbentum hinc inde.

347. Steven, C. *Verzeichnis der aus der taurischen Halbinsel wildwachsenden Pflanzen. Bulletin de la Société Impériale des Naturalistes de Moscou. 1856; 29(3): 121-186.*

Note: D.E.93/10/.

(Steven, 1856) *Verzeichnis der aus der taurischen Halbinsel wildwachsenden Pflanzen*

V. narbonensis Fl. t.c. II. III. n. 1416

In *Tauriae campestribus* M. a. Bieb. Circa Jenicale ad bosphorum legi.

V. serratifoliam, quam cum Kochio aliisque pro distincta specie habeo, in tauria non vidi, sed ad fl. Kuban inferiorem inveni.

348. Stewart, A. M.; Moir, R. J. Report to the Australian Wool Board, January 1945. . 1945.

Note: D.E.93/10/ getreprint.

Stewart & Moir (1945) found that although sheep feeding on peas fatten readily, they do not produce a satisfactory growth of wool(ref. ex Bailey, 1952) This could be of interest with regard to Allden & Geytenbeek (1980) finding that sheep feeding on *Vicia narbonensis* had reduced wool growth; and also in relation to Eunice Carter's PH D work at ICARDA on palatability of pea forage .

349. Stockman, R. The poisonous principle of *Lathyrus* and some other leguminous seeds. *J. Hygiene. 1931; 31: 550-562.*

Note: D.E.93/10/.

Stockman (1931). Amongst the grain legumes grown since antiquity for food and feed, bitter vetch (*Vicia ervilia*) and the vetchling (*Lathyrus sativus*, *L. cicera*, *L. clymenum*) are suspicious for their potential toxicity.

Bitter vetch epidemic recorded by Hippocrates (D.E. tried to check Hippocrates(Loeb Classical Library), but no index to the first 4 vols., so it was hard to check, without a detailed citation, which Stockman does not

give. Most other citations in Hippocrates refer to the use of vetch for medicine).

Lathyrus has been noted for its toxicity to farm animals and humans, especially since the 17th century.

Bitter vetch is of limited importance as a cattle food. *Lathyrus* is extensively grown in France and Southern Europe, mainly as a fodder and to some extent also for human consumption. It is eaten by peasants as a pulse in cooked form and also, mixed with wheat flour, as bread. Therefore in times of scarcity and when the prices for cereals were high, its excessive use caused local outbreaks of poisoning. The grain (whole, ground, cooked in various ways) is the staple diet of large sections of the poorer classes in India and Kabylia (D.E. Algeria?, this word is not in the Dictionary (Shorter Oxford)) because it is cheap, palatable [D.E. cf. *V. sativa* vs. *V. villosa* palatability to pigs: the neurotoxic *V. sativa* is ingested in lethal quantities, while *V. villosa* is unpalatable] and very nutritious. Thus, during famines as a result of its increased consumption, pandemics have arisen (D.E. no. ref., but can be found elsewhere e.g. Selye).

In India large sections of the agricultural population subsist on diets containing *Lathyrus*(khesari, teora, matra). In North- West and Central India, 6% of the population are affected by paralysis of the lower limbs, in the worst affected villages 10%+ of the male adults are affected.

Cantani (Naples, 1873) named this disease, which was long well known to physicians in affected areas, *Lathyrism*. In Some Indian jails 4-6 ounces/person/day are fed without ill consequences (Buchanan). As the sole diet, paralysis occurs within 4-8 weeks (Grandjean, etc.). The grain varies in toxicity, and toxicity seems to depend on the amount eaten and to some extent the individual's susceptibility. Men are more affected than women (10-12 male:1 female), boys more than girls.

Slight cases manifest themselves as mild motor paralysis and spasticity in the lower limbs, which can disappear again.

In more severe cases paralysis appears suddenly and can affect the bladder, rectum, genitals, with pains around the waist, lightning pains, loss of sensation, numbness, cramps, prickling. All symptoms clear up again, except for the paralysis which is permanent and can vary in its degree of severity. Chevallier (France, 1841) mentions somnolence (D.E.: inclination to sleep, sleepiness, drowsiness cf. with *V. sativa* and pigs). Brunelli (around Rome, ca.1880) reported 11 cases, a kind of transient intoxications was noted after each meal in some individuals. Desparanches (extensive epidemic around Blois, ca. 1829) noted that convulsive movements of the limbs were the earliest symptoms.

McCombie Young(Ind. J. Med. res., 1927, 15) very detailed description of the symptoms. Proust (1883) Bull. Acad. Méd. 12, 829 gives a full details of an epidemic in Kabylia. No post-mortem information available(1931).

With regard to the utilisation of the whole plant and its grain as animal fodder, 20% of the grain in diets is well known to be innocuous, except for horses which are particularly susceptible. On 100% grain diets, herbivores and pigs thrive and remain well, although they are apt to develop a weakness of their hindlegs(D.E. cf. Loudon, 1880). Pigs grazing on *Lathyrus* have not infrequently died of acute

poisoning, and sheep and cattle have also died acutely. Ducks, geese and peacocks are readily poisoned by the grain, but pigeons, hens and partridges do well on them although perhaps not quite immune.

Experiments with monkeys and frogs on various legumes, including *Lens culinaris*, *Glycine max*, *L. sativus*, *L. cicera*, *V. ervilia* are described and it is curious that nervous symptoms were observed in a monkey (3.5 kg bodyweight) feeding on a diet consisting of cooked *Lens culinaris* and orange juice (120g/day) (some milk and fruit were given in addition), it ate well, gained weight and died after 52 days after showing nervous symptoms. This sample of lentils seemed to have been more poisonous than *L. sativus* and degenerative changes in the brain and spinal cord were similar to those observed with Lathyrism. (D.E.: 1. Could this have been a sample of *V. sativa* var. *platysperma*, the lentil mimic 2. The isoxazolinones of lentils may have something to do with it 3. any role for the Orange juice? 4. The cooked lentils could have gone off during storage, but this does not explain their immediate toxicity e.g. day 3.). An extract made from lentils, given hypodermically (4g), followed by another dose two days later (5g). (D.E. the involvement of mercuric chloride in the purification procedure is suspicious, otherwise it is worth repeating, in comparison to *V. sativa* which might have been the species unknowingly tested in this experiment).

Prevention of lathyrism.

The Dukes of Württemberg tried to ban *Lathyrus* from their domains. In India and Algeria similar attempts were made and proved unpopular and ineffective. Based on the assumption that *Lathyrus* is probably not more toxic than other grain legumes, Stockman suggests that a more varied and better balanced diet is the true preventive. Failing this, soaking the decorticated peas or the meal overnight in twice their weight of soft cold water and draining off the water with gentle pressure deprives them of a least one-quarter of the toxic substance. The cold water removes only very little protein and no starch. Undecorticated peas part with a mere fraction of the principle to cold water (D.E. cf. with chapter GEC, soaking whole *V. narbonensis* seed resulted in leaching of only negligible amounts of Ninhydrin +ve material).

Stockman thought that *Lathyrus* diets should not be supplemented by other pulses as these may be equally as dangerous, but rather by cereals, fresh vegetable, fats, foods which are, however, more expensive.

V. ervilia

Used for food by the ancient Greeks (D.E. probably based on Hippocrates). The Kabyles still use them as such (Proust). Plant grown in Algeria for fodder and there are occasional accounts of poisoning of animals by it and by the seeds.

In his discussion he raises some interesting points:

Whether the presence of neurostimulants in leguminous seeds had any influence on determining their almost universal use as human foods?

He suggests to class grain legumes as stimulant-narcotics, like coffee, opium, tobacco, which are stimulant in small doses, while being toxic in large ones. *Lathyrus* (grk: thouros, exciting, impetuous). *Cicer* (grk: kikis=force, vigour) Grk: erebinthos having the same significance (D.E.: pardon my Greek). Greek and Roman authors on agriculture, natural history and diet refer to and sometimes lay stress on the stimulant properties of pulses both for man and domestic animals, but modern authorities on dietetics seem to have lost sight of this and discuss them only in terms of protein, fat, carbohydrate, calories and vitamins.

350. Tarman, Ö. Baklagillerden yem bitkileri yetistirilmesi. (Cultivation of legumes as fodder plants). Ankara; 1954.

Note: D.E.93/10/ getreprint/Munzur/DEPHD.

351. Tarman, Ö. Yembitkileri çayır ve mer'a kültürünün Türkiye'nin bu günkü ve yarınki varlığı bakımından önemleri (The importance of fodder crops, meadow- and pasture cultivation for the current and future existence of Turkey). Ankara; 1964.

Note: D.E.93/10/ getreprint/Munzur/DEPHD.

352. Tegeder, M.; Kuch, A.; Pickardt, T.; Kohn, H.; Schieder, O. Protoplast technology in *Vicia*. *Physiologia Plantarum*. 1991, 82: 1, A10; also Eighth international protoplast symposium. 1991;

Note: [Abstract]. Institut für Angewandte Genetik, Freie Universität Berlin, Berlin, Germany. Numbered-Part /CAB92.

Protoplasts were isolated from etiolated shoot tips of *V. narbonensis* and *V. faba*, purified and embedded in alginate. Cell division and development of microcolonies were achieved in modified LP medium (*V. narbonensis*) and KM medium (*V. faba*). In *V. narbonensis*, mature plants could be regenerated via somatic embryogenesis. Callus derived from *V. faba* protoplasts formed morphogenic structures which failed to undergo further development. Experiments were also carried out on protoplast transformation and somatic hybridization between *V. faba* and *V. narbonensis*.

353. Tenore, M. Flora Napolitana, ossia descrizione delle piante indigene del regno Napoli e delle più rare species di piante esotiche. Napoli: Nella Stamperia Reale; 1811.

Note: D.E.93/10/.

(Tenore, 1811-1815). Flora Napolitana, ossia descrizione delle piante indigene del regno Napoli e delle più rare species di piante esotiche

V. narbonensis & *V. serratifolia* listed.

354. Terziiski, D. Scanning electron microscope study of the testa in Bulgarian species of *Vicia* L., II. Section *Faba* (Miller) Lebed.

Nauchni-Trudove,-Vissh-Selskostopanski-Institut-'Vasil-Kolarov'. 1983; 28(4): 67-76.

Note: D.E.93/10/ AD: Vissh Selskostopanski Institut Vasil Kolarov, Plovdiv, Bulgaria. LA: Bulgarian,LS: English not duplicate.

On the basis of a study of the species *V. faba*, *V. narbonensis*, *V. serratifolia* and *V. bithynica*, a classification of the various types of testa is presented. The ultrastructural characteristics of the testa, including the type of palisade epidermal cells, are used as a basis for examining taxonomic relationships between the species. Closely similar in the characters studied were *V. narbonensis* and *V. serratifolia*, and it is concluded that the latter may not merit specific rank. *V. faba* was clearly distinct from the other species.

355. Tivoli, B.; Berthelem, D.; Guen, le J.; Onfroy, C. Comparison of some methods for evaluation of reaction of different winter faba bean genotypes to *Botrytis fabae*. FABIS. 1986; 16: 46-50.

Note: D.E.93/10/ getreprint/INRA, Sta. de Phytopathologie, BP 29, 35650 Le Rheu, France.

The reactions of 9 genotypes of *Vicia faba* and one of *V. narbonensis* were studied using the detached leaf technique (DLT) and artificial infection in pots and in the field. Although genotypic differences could be identified with each method, there was little consistency in genotypic ranking because, it is suggested, each method resulted in the expression of a particular phenomenon related to the plant's defence mechanism. For example, in the DLT, the *V. faba* line 29H, which was the most susceptible during the early stages of artificial infection, showed limited disease development and delayed sporulation, indicating resistance under the DLT test conditions. It is suggested that crosses should be made between plants with different resistance mechanisms.

356. Tivoli, B.; Reynaud, B.; Maurin, N.; Berthelem, P.; Guen, le J. Comparison of some methods for evaluation of reaction of different faba bean genotypes to *Ascochyta fabae*. FABIS. 1987; 17: 35-38.

Note: D.E.93/10/ getreprint/Sta. Phytopath., BP 29 35 650 Le Rheu, France.

Differences in the reaction of 9 faba bean genotypes and 1 of narbon vetch (*Vicia narbonensis*) to *A. fabae* were studied in pot culture in the greenhouse and in the field under artificial epiphytotics. The greenhouse test was simpler and more economical and as effective as the field test in ranking genotypes.

357. Townsend, C. C. *Vicia* L. In: Flora of Iraq. Townsend, C. C.; Guest, E. Baghdad, Iraq: Ministry of Agriculture and Agrarian Reform of Iraq; 1974; 3: 512-544.

Note: D.E.93/10/ /DEPHD.

(Townsend, 1974) Flora of Iraq pp. 540-542 *Vicia narbonensis* refs. to taxonomy ; description Habitat and distribution

Quite common in the forest zone and steppe region of Iraq; also on the irrigated alluvial plain in the desert region; up to alt. 1150m; fl. & fr. mar-may

C & S Europe (Spain, Port, Fr., Corsica, Sardinia, Italy, Sicily, Hungary, Romania, Yugoslavia, Albania, Greece, Bulgaria, Crimea), Cyprus, tec. N. W. India, C. Asia (Turkmenia to Tian Shan [D. E.: does this refer to *V. johannis* rather than to *V. n.*].

Narbonne , broad-leaved vetch, French vetch; Habb Adh-dharit or Adh-dharait ' fart seed' (see also under *V. sativa* p. 535)

'It is recognised in our territory as a valuable forage plant; Gillet noted it under the name? Gagus(Kurd. Gillet 10436) in a foothill village some 19km N. E. of Arbil, where it was cultivated under irrigation, the seeds eaten as a pulse and the leaves fed to stock(p.541) [D.E.: Slide taken of this specimen at Kew Gds, 1991; have also talked to Mr. Gillet, who, unfortunately could not recall much detail about *V. narbonensis*]

var. *narbonensis*

Hab.

Moutains and valleuys, in oak scrub, on stony slopes, caly, andy loam, steppic upland plains, ofeten as a weed in fields, up to alt. 1150m, fl. fr. mar.-may-> detiled dsn given with refs. to herbarium specimen

name throughout the range of the species

Habb Adh-dhurit (Sa'diya, guest 1766), ? Pçlka Gayana (Kurd.- Sulaimaniya, Gawan 2114), ?Gagus (Kurd., arbil-Rawandez, Gillet 10436)

var. *serratifolia*

Hab. on cultivated land, alt. 30-350m fl.&fr. Mar.- Apr.

dsn very rare in Iraq-only found oce in the steppe region and once on the irrigated alluvial plain in the desert region

FKI, Kikuk, Rogers 0182!

LCA, nr. Falluja, Guest 961!

name Habb Adh-Dharait (Falluja, Guest 961).

358. Trautvetter, E. R. Catalogous Vicearum Rossicarum. Acta Horti Petropolitania. 1893; 3(1): 36.

Note: D.E.93/10/.

(Trautvetter, 1893) Catalogous Vicearum Rossicarum

V. narbonensis L. Ledeb. Fl. Ross. p. 665

Var. *integrifolia*

var. *serratifolia*

Speciei area septentrionem versus usque ad Jenikale (Stev.), castellum Gastagai prope Anapa situm (Lagowski in hb. Tr.) et pagum Buinaki Daghestaniae (Lagowski in hb. Tr.) extenditur. Orientem versus species haec ultra Gilan (hb. H. petr.) non observata est, meridiem autem occidentem versus ultra Rossiae fines longe procedit.

359. Tschiersch, B.; Hanelt, P. Die freien Aminosäuren der Samen von *Vicia* L. und die systematische Gliederung der Gattung. Flora, Abteilung A, Jena. 1967; 157: 389-406.

Note: D.E.93/10/ DHK /DEPHD /DEPHD.

(Tschiersch & Hanelt, 1967)None of Bell & Tirrimanna's VA3 was found for *V. narbonensis*.

Paperchromatography was used.

The plant material used in this study was, in contrast to Bell & Tirrimann's study, of verified identity, and synonymous names were pointed out for Bell & Tirrimann's data.

360. Turill, W. B. Contribution to the flora of Macedonia: I. Bull. of Miscellaneous Information (Roy. Bot. Gardens). 1918; 8 & 9: 249-341.

Note: D.E.93/10/.

(Turill, 1918) Contribution to the flora of Macedonia: I
Vicia narbonensis

Struma plain, about 3km south east of Orljak, in flower and fruit, 20-4-17, Turill, 84; seeds collected near Turica, 28-5-17 flowered at kew, 15-6-18, Turillseed-number), 14 Distr. S. Eur., N. Afr., Orient, Balkans, Greece, Alb., Bulg, Thrace

V. serratifolia

Struma plain, about 3km south east of Orljak, in flower and fruit, 20-4-17, Turill 87

Distr. S. Eur., N. Afr., Orient, Balkans; General.

361. Ulbricht Dahme. Der Landbote. 1890; 63: 533-537.

Note: D.E.93/10/.

362. Uphof, J. C. Dictionary of Economic Plants. Weinheim (Bergstraße): Engelmann; 1959.

Note: D.E.93/10/ incomplete/p. No. /DEPHD.

V. narbonensis cultivated in S. Europe, Abyssinia as fodder for live-stock and green manure.

363. Utkin, W. W. Seeds of wild vetches from the Crimea. Scientific transactions of High schools, Biological Sciences. 1965; 2: 101-110.

Note: D.E.93/10/.

p. 106

Vicia narbonensis, illustrated (key to seeds translated into english, ex Gunn collection).

364. Van Cruchten, C. Etude de la croissance des tubes polliniques dans les crissements intra et inter spécifiques de *Vicia faba* et *Vicia narbonensis*. Internal Report, Station D'Amelioration des Plantes, Dijon, France. 1974.

Note: D.E.93/10/ getreprint/nigel.

365. Van der Veen, J. P. H. Forage crops and cultivated pastures in Iraq. Bull. Dir.-Gen. Agric. Res. Proj., Minist. Agric., Iraq. 1959; pp. 40.

Note: D.E.93/10/.

Vicia narbonensis for dryland cultivation in the North.

366. Van der Veen, J. P. H. International development of grazing and fodder resources VII.Iraq. J. Brit. Grassland Soc.. 1960; 15: 137-144.

Note: D.E.93/10/DEPHD.

Van der Veen(1960) 'Only in the higher part of this [dry-land, sub-montane, rain-fed, wheat belt 400-600mm] zone are crops grown exclusively for feed, and then only on a very limited scale. Small fields of annual winter legumes planted for seed in parts of the mountain area. The produce is used as a concentrate for cows and mules in the following winter. In an area east of Erbil, *V. narbonensis* is used for this purpose, in other regions *V. ervilia*.'

V. narbonensis and *Lathyrus sativus* are the most promising annual legumes for this area. Other annual legumes(mostly *Vicia* and *Pisum* spp.) also adapted but are subject to damage by birds in Jan-Feb.

367. Van der Veen, J. P. H. Report to the Government of Syria on range management and fodder development. FAO/TA No.2351, 76pp. 1967.

Note: D.E.93/10/ getreprint/ref.
Kernick(1978)/FAO/DEPHD.

Van der Veen(1967); reports that two developed local cultivars 'Harastani'(*V.sativa*) and 'Aleppo'(*V.narbonensis*) are in agricultural use in Syria.

368. Vasconcellos, Jao de Carvalho. Ervas Forrageiras. Lisboa: Direcção-geral dos serviços agrícolas Serviço de informação agrícola; 1962.

Note: D.E.93/10/ /DEPHD.

(Vasconcellos, 1962) pp. 137-138

V. narbonensis

Ervilhaca de Narbone, Faveta de Beja

dsn: em Portugal

Tras-os-Montes, Estremadura, Ribatejo, Alentejo

Cultura:

Semeia- se no Outono, 140-200kg/ha. pode consociada com centeio ou aveia. â um tanto sensível ao frio.

Semente:

Mil sementes pesam 200 a 300 g. Um hectolitro pesa cerca de 80 kg. Grau de pureza 90% e facultade germinativa 85% (S.E.S.). Tem alta percentagem de sementem duras.

Utilizaçã o:

â particularmente recomendçvel, segundo Foury (1954), para ensilagem e sideraçã o.

Interesse forrageiro: Semelhante ao de outras ervilhacas.

Obs:

â muito afim desta espécie a *V. serratifolia* de folios e estipulos serrados.

369. Vavilov, N. I. Weeds as progenitors of cultivated plants. . Bulletin of Applied Botany, Genetics & Plant Breeding, Leningrad. 1926; 16: 195-217.

Note: D.E.93/10/ /DEPHD.

Vavilov used *V. narbonensis* as an example for a secondary crop which had evolved from weed to cultivated plant. While in Spain a weed, it is cultivated in Italy as a crop.

p.216

'*Vicia narbonensis* L. which in Transcaucasia and in Spain is a common weed, becomes in Italy a cultivated plant.'

370. Ven, M. Van De; Powell, W.; Ramsay, G.; Waugh, R.; Van, De Ven, M. Restriction fragment length polymorphisms as genetic markers in *Vicia*. *Heredity*. 1990, 65: 3, 329-342; 52 ref. 1990;

Note: Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA, UK. Numbered-Part /CAB91_90.

Genetic variability at the nucleic acid level was examined in 16 *V. faba* accessions and in 4 *Vicia* species. Both 6 and 4 bp cutting restriction enzymes together with cDNA clones were used to assess the level of polymorphism detectable in *Vicia* section *Faba*. Nei's estimate of the number of shared fragments and principal co-ordinate analysis were used to examine and quantify the relationship between the accessions. The degree of polymorphism detected was considerably reduced when the 4 wild species were excluded from the analysis. One *V. faba* genotype, A X B X C, a 3-way hybrid, was responsible for the majority of the RFLPs identified within the *V. faba* genotypes. It is suggested that the identification of hybridizable but diverse parents will improve the efficiency of creating a linkage map based on molecular markers.

371. Villax, E. J. La culture des plantes fourragères (dans la région méditerranéenne occidentale [Maroc-Portugal- Tunisie- Algérie- Espagne- France]). Les Cahiers de la recherche Agronomique, INRA, Rabat. 1963; 17: 1-641.

Note: D.E.93/10/ /DEPHD.

Vicia narbonensis L. Vesce de Narbonne

Hungarian name : Narbonni búkköny (Villax, 1963)

This legume is quite widespread in the Mediterranean basin where it is sometimes cultivated thousand grain weight 200-240g

If local experiments are conclusive, then it can be suitable sometimes as an annual forage. Its establishment is identical to that of *V.faba*. The quantity of seed necessary oscillates between 80-140kg/ha.

V. atropurpurea Desf., *V. ervilia*, *V. faba*, *V. monantha*, *V. pannonica*, *V. sativa*, *V. villosa*.

372. Vilmorin (not seen yet).

Note: D.E.93/10/ Rae/vilmorin was a french plant breeder and is often quoted without specific references, maybe a textbook by him exists, or some seed catalogues with *vicia* & *lathyrus* listed?

Vilmorin seed company is worth a visit in France

Vilmorin, Louis

Vilmorins illustrated flower garden

le bon jardinier Almanach pour ...

kew.

373. Visiani, R. de. *Flora Dalmatica* Vol. III. Lipsiae: F. Hofmeister; 1852.

Note: D.E.93/10/ /DEPHD.

(Visiani, 1852) *Flora Dalmatica* p. 318

Vicia narbonensis (local name: Bob Clivji)

hab. in satis et ad agrorum margines circa Zarai, Dernis, Sebenico, et in insula Lesina. Flores atrourpurei.

Floret vere (.).

374. Walton, G. H. A preliminary agronomic comparison of pulse crops in Western Australia. Technical Bulletin, Western Australian Department of Agriculture. 1982; 58.

Note: D.E.93/10/ Div. of Pl. Res., Western Australian Dep. of Agric., South Perth, W.A.6151, Australia /DEPHD.

(Walton, 1982) A range of pulse spp. were compared with *Lupinus angustifolius* at sites in the winter rainfall agricultural areas of Western Australia for development as pulse crops and as possible alternatives to fertilizer N or N through legume-based pastures. The characteristics of the following legume spp. are described: *Cicer arietinum*, *Lathyrus cicera*,

L. ochrus, *L. sativus*, *Lens culinaris*, *Pisum sativum*, *Vicia benghalensis*, *V. sativa*, *V. villosa* var. *villosa*, *V. villosa* subsp. *varia*, *V. faba* and *V. narbonensis*. *Faba* bean and *V. narbonensis* showed potential for development in the south region of the SW province of the state, while field peas showed potential for adaptation to low rainfall zones

in the N. and S. regions of the province.

375. Walton, G. H.; Trent, T. R. Evaluation of pulses and other seed legumes for crop rotations in Western Australia. Technical Bulletin, Western Australian Department of Agriculture. 1988; 79: 31pp.

Note: D.E.93/10/ Div. Plant Res., Western Australian Dep. Agric., South Perth, WA 6151, Australia /DEPHD.

(Walton & Trent, 1989)

Accessions of chickpeas, *Lathyrus sativus*, lentils, peas, *Trigonella foenum-graecum*, *Vicia faba*, *V. narbonensis*, *L. cicera*, *L. ochrus*, *V. benghalensis*, *V. ervilia* and *V. sativa* were compared with *Lupinus angustifolius* in 1975-84 for use in crop rotations. In every case the earlier maturing accessions were the highest yielding. Peas gave slightly lower yields than lupins on soils of pH 5.5-7.0 but higher yields on soils of pH 7.0-8.5. *V. faba* and *V. sativa* were ranked next after peas in order of seed yields. Chickpeas and lentils exhibited poor adaptation and seed yields. In an evaluation of peas, *V. sativa*, *V. faba*, *L. cicera*, *V. narbonensis* and *L. angustifolius* for fodder, peas gave the highest av. biomass of 4.01 t/ha and *V. narbonensis* the lowest of 2.15 t. Hay yields of 4.03-4.80 and 2.46-3.65 t/ha were obtained from peas and *V. benghalensis*, resp. *Trifolium subterraneum* cv. Nungarin, *L. angustifolius* cv. Illyarrie, peas cv. Derrimut and *V. sativa* cv. Languedoc increased mineralizable soil N by 23-41% and yields of oats or wheat by 23% or up to 33% if disease was a limiting factor in continuous cereal cropping. DM production in 12 of the above species was measured at 3 locations in Western Australia and RGR compared. The characteristics needed to improve the most potentially useful of these legumes are discussed.

376. Webb, C. J. Checklist of dicotyledons naturalised in New Zealand. 5. Leguminosae. New Zealand J. Bot.. 1980; 18: 463-472.

Note: D.E.93/10/.

(Webb, 1980) Checklist of dicotyledons naturalised in New Zealand. 5. Leguminosae
p. 471

Vicia narbonensis collected twice. No collections known since 1941.

377. Wilson, J. M. The Rural Encyclopedia or a General Dictionary of Agriculture Vol. IV, Q-Z. Edinburgh; 1852: 581-588.

Note: D.E.93/10/ /DEPHD.

Wilson(1852)

p. 581-588

9 spp. of *Vicia* wild in Britain, 70 have been introduced, nearly 40 more are known. A good many possess high agricultural value/ display a very considerable degree of floral beauty.

V. sativa

V. sativa segetalis(Corn vetch), *V. sativa nemoralis* (grove vetch)

White tare or Canadian lentil, or the Napoleon pea, *V. sativa alba*: white or cream coloured seeds, with a much milder taste. This variety has amore dwarfish habit, and produces a much greater quantity of seeds than the other varieties; and is cultivated chiefly for the sake of its seeds, and far more extensively in France and in Canada [D.E. Did the french bring it to Canada? Check on french colonial plant introduction records] than in Britain. Its seeds are used for human food, both green and ripe, in soups and other dishes, in the same manner as pease; and they are also ground into flour, for intermixture with the flour of wheat, for making bread.

The following species are discussed and their agricultural potential assessed/white flowered varieties are mentioned for some species/time of introduction to Britain and origin is given were applicable/flowering times and pfreed soil types are also given.

V. cracca (native)/*V. sylvatica* (native)/*V. sepium* (native)/*V. lutea* (native)/*V. angustifolia*/ *V. lathyroides* (native)/*V. hybrida* (native)/*V. laevigata* (native)/*V. biennis* (introduced 1753)/*V. pseudo-cracca* (introduced 1820)/*V. villosa* (introduced 1815, Germany)/*V. atropurpurea* (introduced 1815, Algiers)/*V. bicolor*(introduced 1820)/*V. pisiformis* (introduced 1739, Austria)/*V. dumetorum* (introduced 1752, France)/*V. benghalensis* (introduced 1792, India)/*V. intermedia* (introduced 1818, Southern Europe)/*V. pannonica* (introduced 1658, Hungary)

The Narbonne or broad-leaved vetch, *Vicia narbonensis*, is a native of France, and was introduced to Britain towards the close of the 16th century. Its root is annual; its stems are thick, soft, hollow, much branched, and naturally about 3 feet high, and do not rely much on other plants for support; its leaflets amount to about six on each leaf, and are entire, large,

and roundish; its flowers have a reddish purple colour, and bloom in June and July; and its pods are either sessile or have very short footstalks, and grow either singly or in twos or in threes, and are large, flattish, and of a darkish colour when ripe. This plant is cultivated in many parts of Continental Europe, in the same manner in which the common tare is cultivated in Britain. When sown in spring it yields a close and large crop of succulent fodder, of a strong beany taste, not well liked at first by cattle; and when sown in autumn, it stoutly withstands the severities of our winter, and grows very rapidly in spring, and yields a good bulk of spring forage, which cattle relish better than they afterwards do the first bites of clover.

V. serratifolia (saw-leaved vetch) is a native of Hungary, and was introduced to Britain in 1723. It so closely resembles the Narbonne vetch as to be considered by some botanists only a variety of it; and its duration, height, floral colour, time of blooming, and several other properties are the same; but its leaves and stipules are deeply sawed or indented while those of the narbonne vetch are quite or nearly entire. It is cultivated in the fields of some parts of Continental Europe.

The broad-podded or large-podded vetch, *V. platycarpus*, is a native of Germany, and was introduced to britain in 1723.

Its root is an annual; its stems are strong, nearly upright, and from 15-24 inches high; its leaves resemble those of narbonne vetch; its flowers have a purple colour, and bloom in July and August; and its pods are sessile, solitary, large, broad, and inflated. This species and the saw-leaved and the Narbonne differ more or less from all the other species in their comparative independence of support for climbing, in their somewhat strong and robust habit of growth, and in the thickness and succulency of their stems; and they may be regarded as possessing an intermediate character between the common tare and the bean. The broad-podded species, however, yields a much less bulk of produce than either of the other two.

Most of the annual vetches suitable for field crops are well adapted to cultivation in the intermediate year between different sorts of grain crops, for the double purpose of ameliorating the land and affording a supply of fodder. It has even been contended that vetches may be made the means of enabling the arable farmer to support as much live stock as the grazier.

..by a judicious combination of vetches with turnips, clover, and sainfoin, the poor downs, sheep walks, and other waste lands, may be rendered from ten to thirty times more valuable than they are at present.

vetch.. ought to be more generally grown in most situations, in proportion to the extent of the stock that is kept
Grown for the sake of its seed, or when it is allowed to stand till it approaches ripeness, it is one of the most impoverishing of all our commonly cultivated crops.

Most kinds of soils in ordinary cultivation are more or less suitable for vetches. Gravelly loams of medium dryness are the most generally suitable; and all other loamy sorts, from kinds bordering on thin gravel to kinds bordering on stiff clay, will do.

..but, a soil of inferior description is requisite for the seed produce of a vetch crop, as a rich soil sends the herbage of the plant into such excessive luxuriance as to occasion a deficiency in the yield of seed.

Mixtures

rye/winter tares; oats/summer tares & for other spring-sown vetches; Melilot/biennial vetch. Pease or beans for summer tares and other annual vetches intended to seed or to be cut green. Wheat may also do instead of rye, but it is less palatable to sheep and cattle in the green stage. Barley, may do as well as oats in mixture with summer tares for the purposes of fodder, but does not afford such a good support to the vetch plant by the strength of its culms. Beans greatly improve the quality of vetches, particularly with reference to their seeds, by keeping them well up from the ground and improving crop canopy structure, facilitate easier harvesting, and in the course of winnowing and riddling their seeds separate easily because of their different sizes.

Vetches grow so very densely and exert themselves so smothering an action upon weeds, that they require much less after-culture than most other kinds of green crop.

In Gloucestershire and Worcestershire, they sow tares as pasturage for horses, and cut them early enough to allow turnips to be sown the same season. In wet seasons, where the tare crops are large, the stems are, however, apt to become rotten upon the ground; in this condition such food often proves prejudicial to horses.

In Sussex tares are of such infinite importance that not one-tenth of the stock could be maintained without them: horses, cows, sheep, hogs, all feed on them

references: Withering's Botany; Smith's English Flora; Sinclair's Hortus Gramineus; Lawson's Agriculturalist's Manual; London's Works; Dr. Dickson's Practical Agriculture; Reports to the Board of Agriculture; Quarterly Journal of Agriculture; Journal of the Royal Agricultural Society; Museum Rusticum; Young; Low; Stephens.

378. Wittmarck, L. Landwirtschaftliche Samenkunde. Berlin, 2nd edn: Paul Parey; 1922.

Note: D.E.93/10/ incomplete /DEPHD.

581 pp.

379. Wittmark, L. Sitzb. Anthrop. Ges. Berlin. 1890: ca. 617.

Note: D.E.93/10/DEPHD.

The species is still cultivated here and there as a fodder crop. check: Z. Ethnologie (Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte. Virchow, R. (ed.), Von A. Ascher & Co., Berlin).

380. Yamamoto, K. Interspecific hybridization among *Vicia narbonensis* and its related species. Biologisches-Zentralblatt. 1986; 105(1/2): 181-197.

Note: D.E.93/10/ in Genetics and breeding of *Vicia faba* [edited by Rieger, R.]/ Fac. Agric., Kagawa Univ., Miki-Tyo, Kagawa-Ken 761-07, Japan. not duplicate.

V. narbonensis, *V. serratifolia*, *V. galilaea*, *V. johannis* and *V. hyaeniscyamus*, which all belong to the *V. narbonensis* species group, *V. faba* and *V. bithynica* were compared for karyotype, isoenzyme composition and morphological characters. On the basis of these results it is suggested that the *V. narbonensis* group, *V. faba* and *V. bithynica* are genetically remote from each other. Within the *V. narbonensis* group, *V. galilaea* is considered to be the most closely related to *V. faba*, while *V. narbonensis* is close to *V. serratifolia* and *V. johannis* to *V. hyaeniscyamus*. Interspecific crosses between the *V. narbonensis* group and *V. faba* or *V. bithynica* were unsuccessful. F1 interspecific hybrids were obtained within the *V. narbonensis* group however, but they were chlorotic and of low fertility, with the exception of *V. johannis* X *V. hyaeniscyamus*. Three karyotypes, designated A, B and C, were distinguished among 23 *V. narbonensis* strains, and variations in isoenzyme composition were also found.

381. Yamamoto, K. A note on interspecific hybridization between *V. narbonensis* and its related species. in: Chapman, G. P.; Tarawah, S. A., eds. Systems for cytogenetic analysis in *V. faba*. The Hague, Netherlands: Martinus Nijhoff; 1984: 141-142. (Advances in Agricultural Biotechnology; v. 11).

Note: D.E.93/10/ getreprint/N/A waite/is it worth purchasing or already out of date?

382. Yamamoto, K.; Moritani, O.; Ando, A. Karyotypic and isozymatic polymorphism in species of the section *Faba*. Techn. Bull. Fac. Ag. Kagawa University. 1982; 34: 1-12.

Note: D.E.93/10/.

Karyotype obs: pretreat root tips with 8-oxoquinoline 0.002M solution for 3 hrs, fix in acetic acid (3:1 eth/ac) Stain with acetic orcein, then squash

isozymes (leaves used)

PAGE slab disc method.

GOT-> useful

Staining according to Brewer (1970) 'An introduction to isozyme techniques, Academic Press, N.Y.

383. Yasui, T.; Endo, Y.; Ohashi, H. Infrageneric variation of the low molecular weight carbohydrate composition of the seeds of the genus *Vicia* (*Leguminosae*). Botanical Magazine, Tokyo. 1987; 100(1059): 255-272.

Note: D.E.93/10/ Nat. Food Res. Inst., Min. Agric. For. & Fish., Tsukuba, Ibaraki 305, Japan DHK /DEPHD /DEPHD.

(Yasui, T./Endo, Y./Ohashi, H., 1987) The low molecular weight carbohydrate compositions of the seeds of *V. amoena*, *V. amurensis*, *V. bifolia*, *V. dumetorum*, *V. fauriei*, *V. japonica*, *V. nipponica*, *V. pisiformis*, *V. pseudo-orobus*, *V. sylvatica*, *V. unijuga*, *V. venosa*, *V. cassubica*, *V. orobus*, *V. cracca* agg., *V. hirsuta*, *V. villosa* agg., *V. tetrasperma*, *V. oroboides*, *V. sepium*, *V. cuspidata*, *V. grandiflora*, *V. lathyroides*, *V. sativa* agg., *V. bithynica*, *V. faba*, *V. narbonensis*, *V. hybrida* and *V. lutea*, determined by gas

liquid chromatography, were found to be species specific. Principal component analysis of composition data showed that the species could be divided into 3 groups. Although the groups were not correlated with known subgenera, significant correlation between the groups and known sections was detected in the subgenus *Vicia*. It is concluded that carbohydrate composition could be important for clarifying relationships among closely related taxa of the genus.

Sucrose, raffinose, stachyose, verbascose and galactinol were detected in all seed samples examined. Although slight infraspecific variations of the CHO compositions were observed, CHO profiles were essentially species specific.

Vicine was tentatively identified, based on retention time and mass spectrum of the TMS derivative in several species of the subgenus *Vicia*, *V. oroboides*, *V. sepium*, *V. grandiflora*, *V. sativa*, *V. bithynica*, *V. faba*, *V. lutea*.

384. Youssef, S. S.; Hesemann, C. U. Nuclear DNA contents of some species of *Vicia* L. and some Egyptian varieties of *Vicia faba* L. *Egypt. J. Genet. Cytol.* 1985; 14: 111-121.

Note: D.E.93/10/ Dep. Genet., Fac. Agric., Cairo Univ., Egypt.

Cytophotometric measurements of 2C DNA content in 6 Egyptian *V. faba* varieties ranged from 95.0% to 101% of that of the German cv. *Kleine Thuringer*. Two varieties had significantly less nuclear DNA than *Kleine Thuringer*. Based on their 2C DNA content, the 9 species of *Vicia* examined, excluding *V. americana* which contained the least DNA, could be divided into 3 groups. In order of decreasing DNA content these are (1) *V. faba* and *V. narbonensis*, (2) *V. cracca* and *V. orobus*; and (3) *V. macrocarpa*, *V. angustifolia* [*V. sativa* subsp. *nigra*], *V. amphicarpa*, and *V. sativa*. The groups coincide with 3 of the 4 subdivisions of *Vicia* (*Faba*, *Cracca* and *Vicia*, respectively) proposed by P. W. Ball [in Tutin, T. G. et al., *Flora Europaea* 2. London, UK; Cambridge University Press (1968)].

385. Youssef, SS; Hesemann, CU. Nuclear DNA contents of some species of *Vicia* L. and some Egyptian varieties of *Vicia faba* L. *Egyptian Journal of Genetics and Cytology*. 1985, 14: 1, 111-121; 31 ref. 1985;

Note: Dep. Genet., Fac. Agric., Cairo Univ., Egypt. Numbered- Part /CAB86_84.

Cytophotometric measurements of 2C DNA content in 6 Egyptian *V. faba* varieties ranged from 95.0% to 101% of that of the German cv. *Kleine Thuringer*. Two varieties had significantly less nuclear DNA than *Kleine Thuringer*. Based on their 2C DNA content, the 9 species of *Vicia* examined, excluding *V. americana* which contained the least DNA, could be divided into 3 groups. In order of decreasing DNA content these are (1) *V. faba* and *V. narbonensis*, (2) *V. cracca* and *V. orobus*; and (3) *V. macrocarpa*, *V. angustifolia* [*V. sativa* subsp. *nigra*], *V. amphicarpa*, and *V. sativa*. The groups

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386. Zahariadi, C. Quelques taxons rares nouvellement deécouverts de la flore de la Grèce. *Annales Musei Goulandris (V or G)*. 1973; 1: 165-183.

Note: D.E.93/10/ incomplete/paste discussion.

(Zahariadi, 1973) Quelques taxons rares nouvellement deécouverts de la flore de la Grèce

Vicia narbonensis var. *pilosa*

Macédoine: Kavala, entre Platamon et Palea

Kavala, 28.4.1960, Goulimis 17873.

Dodécannèse: Rhodos, Lindos, 29.5.1969, Stamatiadhou 5888. Champs incultes

dsn gen.

localités peu nombreuses, peut-être par suite du caractère anthropophile et du fait qu'elle a pu être négligée par les collecteurs

D. E.: *Vicia bithynica* was found in Platamonas(21.5.91) growing on building site in the village, just behind the main road which runs along the shore.

No specimens found near Lindos, however plenty of other vetches.

387. Zaunick, R.; Wein, K.; Mülitzer, M. Johannes Franke "Hortus Lusatae" Bautzen 1594. Mit einer Biographie neu herausgegeben und erklärt. Bautzen: Naturwissenschaftl. Gesellschaft Isis, Bautzen; 1930.

Note: D.E.93/10/DEPHD.

'*Vicia narbonensis* belonged to the more popular plants of the 16th century. It can be traced in East Prussia(Wigand, 1583), Nürnberg (Camerarius, 1588), Silesia (Schwenckfeld, 1601), Erzgebirge(Annaberg: Jenisius, 1605). About later cultivation in this area no information could be found so far.

The greater part of foreign plants in the Hortus Lusatae originated from the Mediterranean region, probably from Italy p.268.

Franke also visited Montpellier.

388. Zeven, A. C.; de Wet, J. M. J. Dictionary of cultivated plants and their regions of diversity: excluding most ornamentals, forest trees and lower plants. Wageningen: Centre for Agricultural Publishing and Documentation; 1982.

Note: D.E.93/10/ DHK.

Zeven, A. C./de Wet, J. M. J., 1982

p. 40 Chinese-Japanese Region

Vicia unijuga A.Br.(syn. *Orobus lathyroides*). Two leaved vetch. 2n=12, (24, 36). E. Siberia, Manchuria and Japan. Occasionally cultivated.

p.83-84 Central Asian region

Vicia faba (syn. *Faba vulgaris*). Origin probably SW. Asia(Ladizinsky, G.(1975). On the origin of the broad bean , *Vicia faba* L.. *Israel J. Bot.* 24: 80-88) or Mediterranean Region(Zohary, D.(1977). Comments on the origin of cultivated broad bean, *Vicia faba* L.. *Israel J. Bot.* 26: 39-40)

Ladizinsky(1975c) and Abdalla & Günzel(1979, PflZücht. 83: 148-154) showed that *V. narbonensis* is not related to the field bean to the extent that it could be its ancestor

Large seededness in the broad bean developed relatively recently, for all archaeological finds from ancient sites belong to var. minor.. A find made in Iraq and dated to A.D. 1000 is the first record of seeds larger than var. minor(var. minuta)(Schultze-Motel, 1972).

p. 98 Near Eastern Region

Vicia narbonensis L. Narbonne vetch. 2n=14. Primary gene center probably in Eastern Georgia(USSR). Secondary gene centre in the Mediterranean Region. This species is a weed in wheat and barley fields of Transcaucasia and other areas in South East Asia. It is not cultivated there.

Vicia pannonica Crantz. Hungarian vetch. 2n= 12. Primary gene centre in Georgia (USSR), on the plateau of Akhalkalak, where it grows wild and is cultivated. Secondary gene center in Hungary.

p 116 Mediterranean Region

Vicia articulata Hornem. One-flowered vetch. 2n= ?. Mediterranean area , Asia minor, Madeira and Canary Islands. Cultivated.

Vicia benghalensis L.(syn. *V. atropurpurea* Desf.). Purple vetch. 2n=12, 14. Mediterranean area. Naturalized in the USA. Cultivated as a cover crop and green manure, and as a winter and spring forage.

Vicia calcarata Desf. Demehi. 2n-12, 14. Sahara Oasis, where it is cultivated for its seeds. Also Iran & cultivated in Tripolitana(Libya)

Vicia ervilia (L.) Willd. Bitter vetch, Ervil. 2n=14. Primary centre in the Mediterranean area. Cultivated in Spain. A characteristic group developed in Asia Minor(p.98). Used as forage and for grain.

Vicia narbonensis L. Secondary gene centre in the Mediterranean where it is cultivated.

pp. 157 European Siberian Region

Vicia cracca L. Gerard vetch . 2n=12, 14(21, 24), 28. Western Europe to Kamtchaska, Eastern China and Japan. Cultivated.

Vicia hirsuta(L.) S.F. Gray. Common tare, hairy tare. 2n=14. Europe, North Africa and West Asia. Cultivated in the West of USSR together with barley.

p 175 South American Region

Vicia graminea Smith. 2n=14. Argentina and Chile. Occasionally cultivated for its seeds as a source of anti-N-lectin(Nijenhuis et al., 1969) this is used as a test serum for human N-blood group.

389. Zhukovsky, P. M. Investigations of peasants' seed materials in E. Georgia. Tiflis: Isvestia Tiflisskogo Gosudarstvennogo Politeknicheskogo; 1924.

Note: D.E.93/10/ /DEPHD.

p. 46 (engl. transl.) The consistence of weed seeds in seed materilas of peasant's farming in Georgia as well as in all the Transcaucasia discloses many species having here a weed character, but cultured in Europe long ago, as for instance *Carmelina sativa*, *Cannabis sativa*, *Vicia*

sativa, *Medicago sativa*, *Vicia narbonensis*, especially *Coriandrum sativum*.

390. Zohary, D.; Hopf, M. Domestication of pulses in the old world. Science. 1973; 182: 887-894.

Note: D.E.93/10/.

-old-type grain agriculture : legumes (pea, lentil, broad bean) universal companions of wheats and barley.

-scanty remains do not allow distinction between collection of wild species of section *Faba* and cultivated broad beans.

Available evidence clusters around the following areas dsn of bronze age finds of broad beans (c.f. Hanelt, linguistics, 1972)

1)Iberian peninsula

portugal(38)

spain (39)

malta (40)

2) Lake dwellings (Western Switzerland)

(in Eastern Switzerland, Austria, Czechoslovakia, Italy, finds are late bronze age)

3) Greece and then Aegaeon

Lerna(41)

Crete(42)

Lengyel(Southeast Hungary)(32)

4) Eastern Mediterranean belt

Beit-Shan(Israel)(43)

Arad(Israel)(44)

Jericho(Israel)(9)

Aliki(Cyprus)(25)

Bronze age broad beans have relatively small seeds (*V. faba* var.minor). Wide variation in seed shape and size, perhaps some geographic divergence encountered even during the bronze age)

Oblong forms prevail in the West

rounded beans are more common in the East

section *Faba* : cluster of large-seeded wild vetches

The authors wrongly quoted Scheibe for cytogenetic analysis of *V.narbonensis*/ in relation to *V. faba*

For critical assessment of wild ancestry cytogenetic affinities need to be clarified between the various wild and cultivated members of section *faba*

Information about the wild relatives(section *Faba*) deplorably deficient

general wild stock from which *V. faba* is derived

Bitter vetch(*V. ervilia*)

characteristic angular seed

7th-sixth millenia B.C sites in Anatolia

rather common in éayönü, Turkey 7500-6500 B.C(8)

it is impossible to say whether cultivated or wild(van Zeist)

Can Hasan(11)

two large deposits at éatal Hüyük(5800B.C.) by Helbaek(10)

smaller sample in ceramic level at haçılar(5400 B.C.)(12)

in both sites also as contaminant of other grains

neolithic sites in Greece and the Balkans

neolithic nea Nikomedia, Macedonia(13)

Aeneolithic Tell Karanovo and Tel Azmak, Bulgaria(47)

neolithic Cşcioarele, Romania(47)

numerous finds bronze age, near east and balkan especially in the Balkan particularly common.

V. ervilia and aggregate of related wild forms, weedy races and cultivated varieies

Truly wild forms only known from Anatolia(23, Davies, Flora of Turkey)

Weedy races infest grain crops and grow on field borders all over the Near East and the Balkans.

Is it a primary or secondary crop?

The numerous large finds of V. ervilia in neolithic and bronze age sites suggests that this legume was cultivated at that time.

V. ervilia is part of the old-type agriculture which is till practiced in some places today. Its seeds are bitter and are used (at least since roman times) for animal food. It is regarded as a relatively inferior pulse for human consumption, consumed only by the very poor or in times of famine. Nothing is known about the use of bitter vetch in neolithic or bronze age sites.

Legumes

close companions of cereals

easy to store and nutritious seeds

ecological similarities between the ancestors of wheat, barley, pea and lentil.

391. Zohary, D.; Hopf, M. Domestication of Plants in the Old World. Oxford: Clarendon; 1988.

Note: D.E.93/10/ DHK /DEPHD /DEPHD.

narbonensis 102-107.

392. Zohary, M. Flora Palaestina. Jerusalem, Israel.: Israel Academy of Sciences and Humanities; 1972.

Note: D.E.93/10/.

V. narbonensis

text 194-209, plates 278-298

1. Mature pod with hairs tuberculate at base -> var. pilosa

-Mature pod glabrous or glabrescent, but with dentate-tuberculate and ciliate margins 2

2. Leaflets entire -> var. narbonensis

- leaflets, at least some of them, dentate or serrate -> var. serratifolia

var. narbonensis . V. narbonensis L.,

hab. spontaneous & sometimes also cultivated; fallow fields,

Acco Plain, Sharon Plain, Philistean Plain, Upper and Lower Galilee, Mt. Cramel, Esdraelon Plain, Judaeen Mts., W. and N. Negev, Upper & Lower Jordan Valley, Gilead, Ammon, Moav. Fairly common

var. pilosa Post, fl. Syr. Pal. Sin. 288(1883-1896). Leaflets 1-3-paired, alrge, obovate to ovate-orbicular. Pod over 1 cm. broad, hairy all over, also at maturity

hab. Fields and maquis. Upper and Lower Galilee, Esdraelon Plain, Samaria, Judaeen Mts., Hula Plain, Lower Jordan Valley, Ammon, Moav. Rather uncommon

ssp. serratifolia (Jacq.) Ser. in DC., Prodr. 2: 365 (1825). V. serratifolia Jacq., Fl. Austr. 5(app.): 30, t. 8(1778); Boiss. Fl. 2 : 578 (1872). Pubescent. Leaflets obovate to oblong-lanceolate, all, or only the upper or the lower leaflets, dentate or serrate

hab. Under crops and in fallow fields.

Philistean plain, Judaeen Mts., W., N + C. Negev, Lower Jordan Valley. fairly common.

Area of species: Mediterranean, with extensions into adjacent Euro-Siberian and Irano-Turanian territories

V. galilaea Plitm. et Zoh. in Plitm., Israel Journ. Bot. 14:91 91965). [Plate 298]

Annual, more or less pubescent, 10-50 cm. Stems ascending to erect, simple or branched at base, thick. Stipules large, semihastate-semiorbicular, entire or dentate, usually with a dark nectary spot beneath; tendrils shorter than leaves, simple to branched, almost 0 in lowermost leaves; leaflets 1-2(-3)-paired, up to 6x4 cm., ovate-orbicular, rounded, mucronulate, sparingly or densely pubescent, ciliate at margin. Racemes axillary, 13- flowered. Flowers 2-3.5. cm., Subsessile to short-pedicelled, delexed to erect. Calyx glabrescent; rim of tube oblique; teeth lanceolate, ciliate. Corolla about twice as long as calyx, lilac to crean-coloured and bluish, resembling that of V. faba; wings and keel shorter than standard, each with a dark violet tip. pod 1 cm. or more broad, 46 seeded, somewhat flattened, oblong or oblong rhomboidal, beaked, long- or short-pilose, tuberculate- denticulate and ciliate at margin. Seeds black, smooth. 2= 14. Fl. March-April

Subsp. galilaea. Stems up to 25 cm., pilose along ribs. Stipules dentate; leaflets 24, up to 6x4 cm., green, shiny, glabrescent to puberulent, minutely ciliate at margin. Flowers solitary in axils, 2 2.5.cm., short-pedicelled. Calyx teeth lanceolate. Pod broader than 1cm., oblong-rhomboidal, short-beaked, long pilose.

hab.: Maquis. Upper Galilee. rather uncommon

Subsp. *faboidea* Plitm. et Zoh., l.c. 92. Stems up to 50 cm., pilose. Stipules mostly entire; leaflets 2-4(-), 2-3.5 cm. broad, greyish-green, pubescent, densely ciliate. Flowers 1-3 in an axil, 2.5-3.5 cm., subsessile to short-pedicelled. calyx teeth lanceolate-triangular. Pod 1 cm. broad, oblong in outline, beaked, short-pilose.

hab. As above. Lower Galilee, Mt. Carmel, Esdraelon Plain, Samaria. rather uncommon.

Area of species: E. Mediterranean

Zohary, M.

Vicia

in

Vol. 2

text 194-209, plates 278-298.

393. Zohary, M. The genus *Vicia* in Palestine. Annual Research Report A 10-CR-II : M. Zohary. Critical revision of native legumes and grasses with special reference to economically important varieties. date?

Note: D.E.93/10/.

(Zohary, M., date?) The genus *Vicia* in Palestine

Vicia narbonensis ssp. *narbonensis*

var. *narbonensis*

hab.: cultivated and fallow fields. Acco Plain, Sharon Plain, philistean Plain, upper and Lower Glilee, Mt. Cramel, Esdraelon Plain, Jdaean Mts., W. and N. negev, Upper & Lower Jordan valley, Gilead, Ammon, (Moav)

var. *pilosa*

hab. Fields and maquis. Upper and lower Galilee, Esdraelon Plain, samaria, Judaeen Mts., Hula Plian, Lower Jordan Valley, QAmmon, Moav, Philistean Plain

ssp. *serratifolia*

hab. fields and fallow fields.

Philistean plain, Judaeen Mts., W-N + C. Negev, Lower Jordan Valley, Golan.

394. Zohary, M. Geobotanical Foundations of the Middle East. ; 1973; 2: 627.

Note: D.E.93/10/ incomplete /DEPHD.

vetches(*Vicia* spp.)

The genus *Vicia* is represented by 50 annual and about 25 perennial species. Seven annual species are cultivated

Large clusters of forms in the subspecies *sativa-amphicarpa-cordata*, are so far not adequately investigated for their agricultural value. This group and others, *dasycarpa-villosa*, *narbonensis-serratifolia*, *annonica* etc. differ scarcely from the respective cultivars' No use has so far been made in breeding work of the wide range of variation in these species, nor have other promising fodder vetches which occur in this area (Middle East) been exploited'

Lathyrus.

There are 35 annual species of this genus native to the Middle East; some of them are very near to the

cultivated *L. sativus* (*L. marmoratus*, *L. cicer*), others such as *L. ochrus* are very close to or identical with the wild form. The number of species which, according to their yearly vegetative production are most suitable for cultivation, is quite considerable; so far, however, little has been done in the direction of domestication of new fodder plants from these sources.

The genus *Trifolium* us represented in the Middle East by not less than 110 species. Some of the cultivated clovers, are identical with or very close to the wild ones, e.g. *T. repens*, *T. rubens*, *T. pratense*, *T. incarnatum*, *T. alexandrinum*, *T. resupinatum*. recent introductions are *T. hirtum*, *T. fragiferum*, *T. subterraneum*. These are most successful in various countries. Their cultivation could be largely improved by utilizing the varietal diversity of the wild stock.

other legume genera with a agricultural potential are *Onobrychis*, *Medicago*, *Melilotus*, *Lotus*, *Trigonella*, *Ornithopus*.

Grasses native to the Middle East: *Dactylis*, *Oryzopsis*, *Phalaris*, *Andropogon*, *Lolium*, *Poa*, *Festuca*, *Agropyron*, *Themeda*, *Cymbogon*, etc.

other fodder plants: *Erodium*, *Sanguisorba* and *Atriplex*

395. Zohary, M. Vetches, *Lathyrus*, and *Amphicarpy*. Ann. Res. Report. A10-CR-II. 11.3.1962-10.3.1963. 1963; 6 & 7: pp. 7.

Note: D.E.93/10/.

(Zohary, M., 1963) Vetches, *Lathyrus*, and *Amphicarpy*

V. narbonensis fl.: feb.-may, a.) var. *narbonensis* almost throughout the country

hab. Fields- AP; Sh; Ph; VG; LG; Ca; EP; Ju; UJ; LJ; Ne. rather common all over the Mediterranean territory of Palestine

b.) var. *serratifolia*

in cultivated and fallow fields. ph, Ju, WN, NN, LJ.

This variety is almost exclusively confined to the southern part of the Mediterranean territory of Palestine.

var. *heterophylla*?

c.) var. *pilosa*

Fields and maquis, mostly in the med. mountain region UG; LG; ED; Sa; Ju; HP; LP; A; M

-> dsn map of intermediate forms.

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