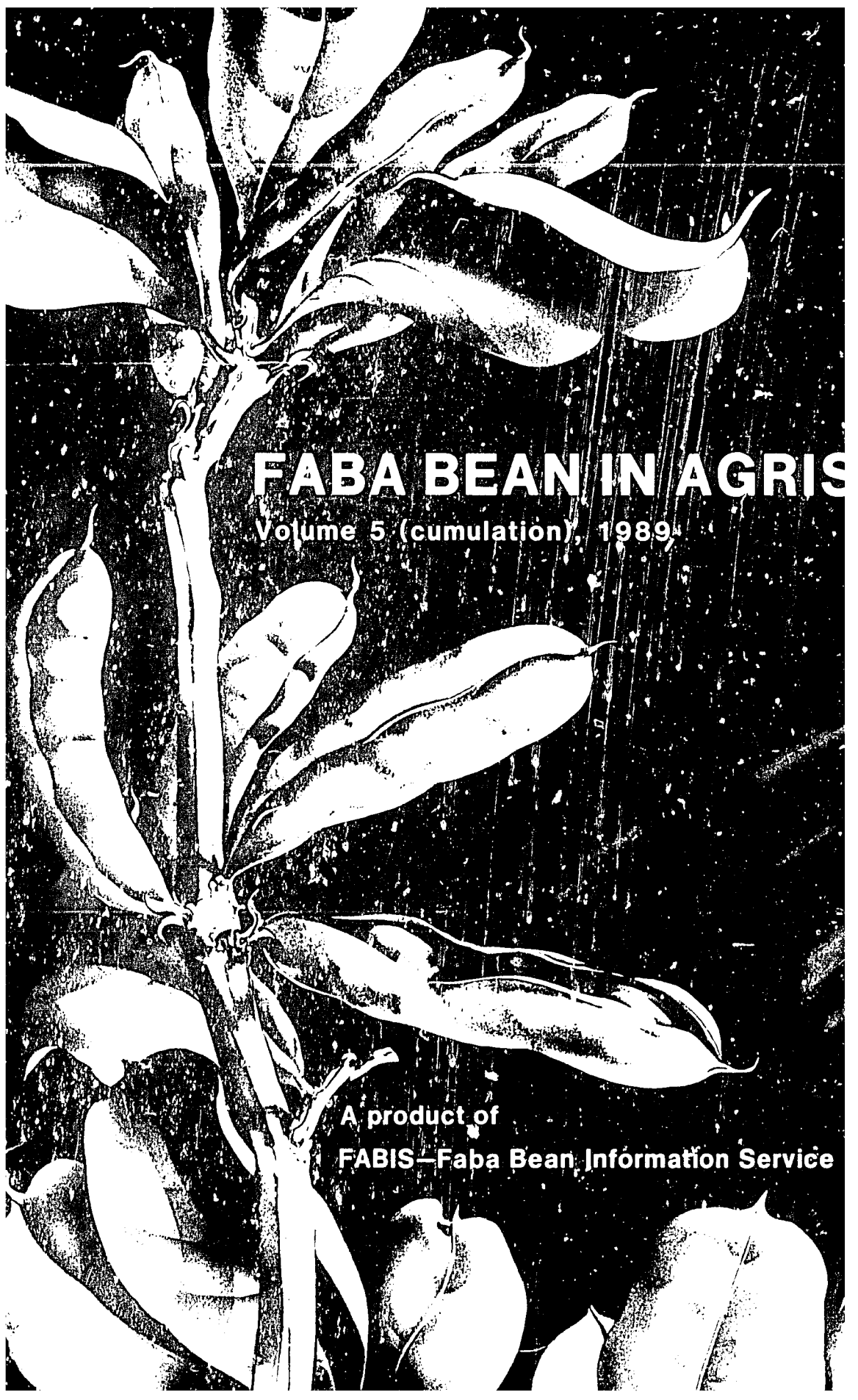

FABA BEAN IN AGRIS

Volume 5 (cumulation), 1989

A product of

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Faba Bean in AGRIS, Volume 5 (cumulation), 1989

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APPEAL TO AUTHORS

To assist FABIS in its efforts to supply needed documents to scientists in developing countries, authors of papers dealing with faba bean are invited to send one, or a few, reprints to:

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INTRODUCTION

The International Center for Agricultural Research in the Dry Areas (ICARDA) has been offering an information service on faba bean since 1979. Its main vehicle is the FABIS Newsletter, but this has been supplemented by efforts to provide a documentation service as well. Since 1981, ICARDA has had a contract with the Commonwealth Agricultural Bureaux (CABI) for the production of Faba Bean Abstracts. ICARDA plans to continue this contract but, at the same time, it now has an arrangement with the Food and Agricultural Organization of the United Nations (FAO) to produce a quarterly bibliography from the International Information System for the Agricultural Sciences and Technology (AGRIS). Although there is overlap between the CABI and AGRIS data bases, AGRIS is particularly rich in its coverage of the non-conventional documents produced in developing countries.

Faba Bean in AGRIS is distributed free of charge to individuals and institutions cooperating with ICARDA, and to others in the developing countries where faba bean is cultivated.

FAO produces this bibliography as a specialized output of AGRIS and provides ICARDA with film ready for immediate offset printing. As in Agrindex, English translations are given for the titles of documents written in other languages. English abstracts are included where these have been provided by AGRIS participating centers.

In 1987, FAO prepared retrospective outputs from the AGRIS data base that enabled ICARDA to publish

Volume 1: 1975-1985
Volume 2: 1986.

Quarterly issues started with Volume 3 (1987), and it is hoped to continue the practice of producing an annual cumulation to replace the issue for the fourth quarter of each year.

ICARDA is itself a center participating in AGRIS and, as such, reports all its own publications to be included in the data base. It appreciates the work of other AGRIS centers, without whose input this bibliography would not be possible. ICARDA sends Faba Bean in AGRIS to many of its sister centers in the AGRIS network, and is ready to cooperate with any of them to help ensure that future coverage is as complete as possible.

The printing and distribution of Faba Bean in AGRIS is supported by a grant from the International Development Research Centre (IDRC) of Canada.

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HOW TO USE THIS BIBLIOGRAPHY

The main chapter, Vicia faba Bibliography, is sequenced according to the reference numbers attached to the records in the AGRIS data base and in its printed version, Agrindex; from any other point of view (subject, author), this sequencing is essentially random, so users are counselled to approach it by first going to the indexes.

Every entry in the bibliography shows, in italics, a set of descriptors taken from the AGROVOC thesaurus. The set is often divided in two parts by a slash (/). The descriptors before the slash are those that are used to compile the Subject Index. It is this index that is recommended as the principal route for accessing the bibliography and for finding records that relate to a topic of interest.

Starting in 1986, AGRIS does not have a separate geographic index. However, geographic terms are included in the Subject Index and, since indexers have been encouraged to assign geographic descriptors to their records, users are advised that they often provide a valuable tool for finding records that respond to a particular need.

The Personal Author Index is a very complete record of the names of the individuals associated with the items in the bibliography. On the other hand, users are warned that the Corporate Entry Index is a very incomplete record of the institutions associated with these items. In particular, when a personal author is given in the record, that person's institutional affiliation is not normally given in the Corporate Author Index. However, it is often given in the record itself. Users wishing to locate the work of a particular institution are helped of course, if they know the names of some of the persons working there. Then they can expand their search to the co-authors of such persons and, since an institution's work normally relates to the country or region in which it is located, the geographical descriptors in the Subject Index can often be helpful.

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89-003866 Preferential sites for L 3,4-dihydroxyphenylalanine accumulation in Vicia faba L. (Fr) Sites d'accumulation de la L 3,4-dihydroxyphenylalanine chez Vicia faba L. [DOPA] Pourson, A. (Universite de Rennes-I (France) Laboratoire de Biologie Vegetale); Le Leuch, D.; Larher, F. *Comptes Rendus de l'Academie des Sciences Serie 3 Sciences de la Vie (France)* ISSN 0249-6313 (15 Aug 1988) v. 307(7) p. 469-474. 21 ref., Summaries (Fr, En)
vicia faba; phenolic compounds composition, leaves, nitrogen metabolism

89-004609 [First data on biology and criterion for determination of Cnephasia communana (Herrich-Schaeffer) (Lep.: Tortricidae)]. (Fr) Premieres donnees sur la biologie, et elements de determination de Cnephasia communana (Herrich-Schaeffer) (Lep. Tortricidae). Chambon, J.P. (Institut National de la Recherche Agronomique, Versailles (France). Station de Zoologie, Laboratoire de Faunistique Ecologique); Genestier, G. *Bulletin de la Societe Entomologique de France (France)* ISSN 0151-0517. (May-Jun 1986) v. 91(5-6) p. 181-189. 10 ref.
vicia faba, cnephasia, taxonomy pest insects, biological development

89-005202 Increased aberration capacity of chromosomes in Vicia faba under influence of combination of some herbicides after treatment in field cultures. (Sk) Zvysena aberantnost chromosomov u Vicia faba vplyvom kombinacie niektorych herbicidov po osetreni v polnych kulturach. Micieta, K. (Komenskeho Univ., Bratislava (Czechoslovakia) Ustav Molekularnej a Subcelularnej Biologie). *Polnohospodarstvo (Czechoslovakia)* (Dec 1987) v. 33(12) p. 1094-1100. 2 tables; 13 ref. Summaries (En, Ru, Sk)
vicia faba, phytotoxicity; czechoslovakia herbicides; chromosomes; mutation; residual effects

89-006210 The use of faba beans (Vicia faba L.) in growing bulls. (De). Einsatz von Ackerbohnen (Vicia faba L.) in der Bullenmast. Leitgeb, R. (Universitaet fuer Bodenkultur, Wien (Austria). Inst. fuer Nutztierwissenschaften. Abt. Tierernaehrung). *Wirtschaftseigene Futter (Germany, F.R.)* ISSN 0049-7711. (1987). v. 33(3) p. 140-146. 5 tables; 5 ref. Summaries (De, En).
bulls; vicia faba; fattening carcasses; analysis

89-009372 Fertilizer nitrogen recovery and biological nitrogen fixation in fababean-sugar beet and spring wheat-fababean cropping sequences. (En). Zapata, F. (FAO/IAEA Agricultural Biotechnology Lab., Seibersdorf (Austria)); Cleemput, O. van. *Fertilizer Research (Netherlands).* ISSN 0167-1731. (1986). v. 8(3) p. 263-268. 25 refs.; Summary (En).
vicia faba; beta vulgaris; spring crops; triticum; nitrogen fixation rotational cropping

89-009373 Estimation of residual N effect of faba bean and pea on two succeeding cereals using 15N methodology. (En). Senaratne, R. (IAEA Lab., Seibersdorf (Austria). Soils Unit); Hardarson, G. *Plant and Soil (Netherlands).* ISSN 0032-079X. (1988). v. 110(1) p. 81-89. 31 refs.; Summary (En).
pisum sativum; vicia faba; hordeum vulgare; nitrogen fixation; nitrogen sorghum bicolor; isotope labelling

89-010119 Phytic acid in faba bean and pea: effect on protein availability. (En). Carnovale, E.; Lugaro, E.; Lombardi-Boccia, G. *Cereal chemistry (USA).* ISSN 0009-0352. (Mar-Apr 1988). v. 65(2) p. 114-117. references. *US (DNAL 59.8 C33).
vicia faba, pisum sativum; varieties; phytic acid; proteins; nutrient uptake digestibility

89-012766 Effect of different levels of soil moisture and gibberellic acid on faba bean (Vicia faba L.) [Egypt]. (En). Ashoub, M.A. (Ain-Shams, Cairo (Egypt). Faculty of Agriculture); El-Zeiny, H.A.; Mahmoud, M.H. *Annals of Agricultural Science (Egypt).* (1987). v. 32(1) p. 179-198. 2 fig. 4 tables, 25 ref. Summaries (Ar, En). Issued 1988.
vicia faba, soil water content, soil; ga, egypt growth; weight; yields

89-012767 Faba bean in Yunnan, China [Vicia faba]. (En). Zhensu, L. (Yunnan Academy of Agricultural Science, Kunming (China)). *FABIS Newsletter (ICARDA).* Faba Bean Information Service. ISSN 0255-6448 (Aug 1987) (no. 18) p. 3. 1 ref.
vicia faba, yunnan plant production

89-012768 The effect of plant population, sowing date, and pigeon pea shelter (shading) on the incidence of the root rot/wilt disease complex and yield of faba bean [Vicia faba]. (En) Salih, F.A. (Shambat Research Station, Khartoum North (Sudan)); Ageeb, O.A.A. (Gezira Research Station, Wad Medani (Sudan)) *FABIS Newsletter (ICARDA).* Faba Bean Information Service. ISSN 0255-6448 (Aug 1987). (no. 18) p. 18-20. 2 tables; 3 ref. Summaries (Ar, En).
The effects of growing pigeon pea as a shelter, sowing date, and plant density on faba bean yield and its components were investigated. The shelter crop significantly reduced seed yield by 53 and 64% when it was grown for a short and long duration, respectively, due to reduced plant stand and significantly fewer pods/plant. Sowing in November and planting three rows/ridge resulted in significantly greater seed yield than sowing in October with one row/ridge. Sowing date and plant population significantly affected root rot and wilt incidence. Disease incidence decreased with late sowing and was significantly higher at 16.6 plants/m2 than at 49.9 plants/m2. *vicia faba; cultivation; root rots; wilts; sudan plant production; disease control; crop yield*

89-012769 Density studies on faba bean (Vicia faba). (En) Coelho, J.C. (Lisbon Univ. (Portugal) Agronomy Inst.) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448. (Aug 1987). (no. 18) p. 22-24. 3 tables; 1 fig.; 9 ref. Summaries (Ar, En).
The effects of changes in plant density on yield and yield components were studied in a local strain of faba bean (Tapada da Ajula). The plants were grown at five population densities (10, 20, 30, 40 and 50 plants/m2). The highest yield was obtained at 40 plants/m2 but this was not significantly different from the yields at 30 and 50 plants/m2. The increase in plant density resulted in a reduction in branching and number of pods plant but little change in pods/stem, seed size, or seeds/pods. *vicia faba, spacing; portugal plant production*

89-012770 Relations between seed yield and plant trials, and the constancy of harvest index in faba bean [Vicia faba]. (En). Marcellos, H. (New South Wales Dept. of Agriculture, Tamworth (Australia) Agricultural Research Centre). *FABIS Newsletter (ICARDA).* Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 27-29. 2 tables; 1 fig.; 10 ref. Summaries (Ar, En).
Correlations between seed yield and the plant traits above ground biomass, pod number, 100-seed mass, stem number, and plant number

were determined in three experiments in which seasons and genotypes differed. Seed yield was highly and positively most correlated with biomass and pod number, while other characters were of lesser importance. Harvest index showed little variability about a mean of 0.50 over 46 genotypes, and behaved in a manner consistent with a hypothesis that it tends towards constancy over a range of conditions. Seed yield was not correlated with harvest index. *vicia faba; seed; agronomic characters; australia; fruits; genotypes; biomass; stems; crop yield*

89-012771 Response of faba bean to sowing date at New Halfa, Sudan [Vicia faba]. (En) Gorashi, A.M. (New Halfa Research Station (Sudan)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1987). (no. 19) p. 9-11. 2 tables; 6 ref. Summaries (Ar, En)
Field trials were conducted to find the optimal sowing date for faba bean at New Halfa, Sudan. Seeds of three cultivars of faba bean BM9 3, BF2 2, and H72 were sown at 15-day intervals (from 1 October to 15 November for two seasons) in a randomized complete block design with four replications. The crops planted between 15 October and 1 November performed best, and the cultivars BF2 2 and H72 outyielded BM9 3, and appeared to be better adapted to conditions at New Halfa. Among the yield components seed weight plant was most affected by sowing date. *vicia faba; sowing date; sudan*

89-012772 Effects of intensification measures on yield dynamics in winter wheat continuously grown over ten years in Calcic Chernozem. (De). Wirkungen von Intensivierungsmassnahmen auf den Ertragsverlauf einer zehnjährigen Winterweizen-Monokultur auf Loess-Schwarzerde. Kreuz, E. (Institut fuer Getreideforschung, Bernburg-Hadmersleben (German, D.R.)). *Archiv fuer Acker- und Pflanzenbau und Bodenkunde (German D.R.)*. ISSN 0365-0340. (1988). v. 32(6) p. 411-417. 2 ill., 5 tables; 13 refs. Summary (De)
vicia faba; winter crops; triticum; loess soils; monoculture; intensification; crop yield; chernozems

89-013070 [Predicting the field germination of fodder beans with the conductor metrical method]. (Ru) Prognozirovanie polevoj vskhozhesti semyan kormovykh bobov metodom konduktometrii. Chapurin, F.K.; Putintsev, A.I. *Selektsiya i semenovodstvo (USSR)*. ISSN 0037-1459. (1987). (no.2) p. 40-41
vicia faba; feeds; germination; forecasting; ussr; methods

89-013071 Seed dressing with controlled release formulations: evaluation using a radioisotope technique and yield estimations for the control of aphids and stem nematodes in field beans (Vicia faba L.). (En) Schiffers, B.C.; Dreze, P.; Traselle, J.; Gasia, M.C. (Ministere de l'Education Nationale et de la Culture Francaise, Gembloux (Belgium) Faculte des Sciences Agronomiques de l'Etat)
IAEA, Vienna (Austria); FAO, Rome (Italy). Pesticides, food and environmental implications. Proceedings. IAEA-STI/PUB/764. ISBN 92-0-010188-3. Vienna (Austria): IAEA. 1988. p. 205-218. FAO Accession No. XF8878179
vicia faba; nematicides; insecticides; crop yield; evaluation; radioisotopes; tracer techniques; formulations

89-013152 Response of different crops to zinc application [Egypt]. (En) Dahdoh, M.S.A. (Ain-Shams Univ., Cairo (Egypt). Faculty of Agriculture). Thesis (Ph.D. in Soil Science) Cairo (Egypt). 1986. 122 p. 12 ill., 21 table., ref. p. 89-117; Summaries (Ar, En); *Library, Faculty of Agriculture, Ain-Shams Unsdiv., Egypt.
barley; zea mays; vicia faba; application methods; crop yield; growth; egypt; zinc phosphide; superphosphate

89-013263 Effect of cultivars, plant densities and phosphatic fertilizer levels on seed yield and other agronomic characters in faba bean (Vicia faba) [Egypt]. (En) Salem, S.A. (Alexandria Univ. (Egypt). Faculty of Agriculture); El-Massri, M.E. *Alexandria Journal of Agricultural Research (Egypt)*. (1986). v. 31(3) p. 127-137. 2 tables; 19 ref. Summaries (Ar, En). Issued 1988
vicia faba; varieties; phosphate fertilizers; seeds; crop yield; spacing; egypt

89-013264 Response of faba bean to chicken manure and split nitrogen application [Vicia faba]. (En) Yousif, Y.H. (Shambat Research Station, Khartoum North (Sudan)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 20-21. 2 tables; 1 ref. Summaries (Ar, En)
Under the soil and climatic conditions of Soba Research Farm, faba bean var. BF 2 2 was tested for its response to application of chicken manure and nitrogen for three seasons. Application of chicken manure and splitting nitrogen as 20 kg N/ha both at sowing and after 1 month gave the best yields throughout the study. The increase in yield due to chicken manure was in general more than 25%, while combined chicken manure and the two split nitrogen doses gave more than 50% increase. Both chicken manure and two split nitrogen doses combined gave significantly more pods and seeds, and taller plants. *vicia faba; manures; split dressings; nitrogen fertilizers; sudan; fertilizer application; chickens*

89-013404 Irrigation studies in faba bean [Vicia faba]. (En) Singh, S.P.; Singh, N.P.; Pandey, R.K. (G.B. Pant Univ. of Agriculture and Technology, Pantnagar (India) Department of Agronomy.) *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 24-26. 2 tables; 5 ref. Summaries (Ar, En)
Field experiments were conducted during the winter seasons of 1980-81 and 1982-83 at the Crop Research Centre of G.B. Pant University of Agriculture and Technology, Pantnagar to study the irrigation requirements of faba bean. Treatments consisted of zero, one, two, and three irrigations at various physiological stages (branch initiation, flowering, and mid-pod filling). Dry matter accumulation, plant height, branches, pods/plant, and grain and biological yield were strongly influenced by increasing irrigation. This study suggests that irrigation at the flowering stage benefited the crop, but high yield potentiality was achieved by applying three irrigations at branch initiation, flowering, and the mid-pod filling stage. *vicia faba; irrigation; plant developmental stages; india; water requirements; branching; flowering; fruits*

89-013854 Progress in the studies of resistance to Aphis fabae in Vicia faba [Antibiosis, Antixenosis]. (En). Poehling, H.M. (Universitaet Hannover (Germany, F.R.). Institut fuer Pflanzenkrankheiten und Pflanzenschutz)
Organisation Internationale de Lutte Biologique et Integree contre les Animaux et les Plantes Nuisibles, Guyancourt (France). SROP. Section Regionale Ouest Palearctique. Working group EUCARPIA-IOBC: breeding for resistance to insects and mites. Report of the fourth meeting held from 23 to 25 September 1986 at Hundested, Denmark. ISBN 92-9067-013-4. Guyancourt (France). OILB. 1988. p. 43-44. Bulletin SROP (France). v. 11(3).
vicia faba; pest resistance; aphis; pest insects; composition; amino acids; carbohydrate content; sap; models; antagonism

89-013855 Effect of rotenone on the meiosis of Vicia faba [Egypt]. (En). Amer, S.M.; Mikkael, F. (National Research Centre, Cairo (Egypt). Laboratory of Genetics and Cytology). *Annals of Agricultural Science (Egypt)*. (1987). v. 32(1) p. 469-478. 1 fig. 3 tables; 10 ref. Summaries (Ar, En). Issued 1988.
vicia faba; insecticides; meiosis; egypt; flowers; pollen

89-013856 Effect of the synthetic pyrethroid insecticide cypermethrin on the mitosis of Vicia faba [Egypt]. (En). Amer, S.A. (National Research Centre, Cairo (Egypt). Laboratory of Genetics and Cytology); Farah, O.R.; Mohamed, F.I. *Annals of Agricultural Science (Egypt)*. (1987). v. 32(1) p. 479-491. 2 fig. 2 tables; 16 ref. Summaries (Ar, En). Issued 1988.
vicia faba; insecticides; meiosis; egypt; root treatment; seed treatment

89-013857 Inheritance of seed coat weight in faba bean (Vicia faba L.). (En). Waly, F.A.; Abdel-Aal, S.A. (Assiut Univ. (Egypt). Horticulture Dept.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 4-6. 3 tables; 1 fig.; 7 ref. Summaries (Ar, En)
Statistical analysis of specific seed coat weight in faba bean (Vicia faba L.) revealed that the character was under the control of both additive and non-additive gene actions. Somaly and Balady (Local) showed significant GCA effects for lower seed coat weight. In both the parents and the F1 hybrids, there was a small positive correlation between seed coat weight and both seed weight and pod width, but it was not significant. *vicia faba; inheritance (genetics); testa; genetics; weight; diallel crossing; plant breeding*

89-013858 Variation of storage protein subunits in different genotypes of Vicia faba L. (En). Polignano, G.B.; Splendido, R.; Uggenti, P. (National Research Council, Bari (Italy). Germplasm Inst.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 6-9. 3 fig.; 4 ref. Summaries (Ar, En).
In this study the diversity of seed storage protein patterns in six genotypes of faba bean (Vicia faba L.) was examined. The genotypes used were well adapted to South Italy. SDS-PAGE was used to examine the variation in banding patterns of total and globulin seed polypeptides. Little variation among genotypes was detected. With the exception of the local selection Locale di Putignano, genotypes appeared to be electrophoretically uniform. Our results also confirm that protein composition within genotypes may be characterized reproducibly using bulk seed extracts. *vicia faba; proteins; genotypes; seed; italy; globulins; quality*

89-013859 Isolation and evaluation of a bold-seeded mutant of Vicia faba var. minor. (En) Sinha, R.P.; Choudhary, S.K. (I.C.A., Dholi (India)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18) p. 9-10. 1 table; 3 fig.; 5 ref. Summaries (Ar, En)
A tall variant was isolated from a local faba bean variety maintained at Dholi Centre, Bihar, India. It had long pods and bold seeds. After multiplication and evaluation in later generations it was found to be stable for these characters. The 100-seed weight of the mutant line was 54 g while that of the parent was 32 g. *vicia faba; mutants; seed; size; india; varieties; plant developmental stages; evaluation*

89-013860 Introduction of a new faba bean recommended for the Caspian regions (Gorgan and Mazandaran) [Vicia faba; Iran]. (En). Sadri, B. (Seed and Plant Improvement Inst., Karadj (Iran). Food Legume Improvement Dept.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1987). (no. 19) p. 3-4. 2 tables. Summaries (Ar, En)
In Iran, the line ILB 1209 (New Mammoth) was identified for release, from an international trial provided by the International Center for Agricultural Research in the Dry Areas (ICARDA). The new line, which was named Barkat, is recommended for the Caspian region. In three years of testing Barkat outyielded the local check by an average of 128% and in one year by 230% in dry seed and green pod, respectively. This line also proved to be moderately resistant to foliar diseases, i.e. chocolate spot, rust, and alternaria leaf spot. *vicia faba; plant introduction; high yielding varieties; iran; rusts; disease resistance; yield increase*

89-013861 Faba bean induced mutants for resistance to broomrape (Orobanche crenata L.). (En) Hussein, H.A.S.; Youssef, S.S.; Hussein, E.H.A.; Hussein, B.A. (Cairo Univ., Giza (Egypt). Dept. of Genetics)
Joint FAO/IAEA Div. of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development. Vienna (Austria).

Improvement of grain legume production using induced mutations. Proceedings. IAEA – STI PUB 766. ISBN 92-0-111188-6. Vienna (Austria). IAEA. 1988. p. 127-144. FAO Accession No: XF8878631.
vicia faba; induced mutation; egypt; resistance to injurious factors; orobanche; breeding aims

89-013862 Induction of variability for low vicine content and resistance to Sclerotinia stem blight in a Greek faba bean (Vicia faba L.) cultivar by gamma rays. (En). Kara, D.V.; Lithourgidis, A.S.; Tsaftaris, A.S.; Roupakias, D.G.; Psomas, J.E.; Travella-Klonari, K. (Aristotelian Univ. of Thessaloniki (Greece)).
Joint FAO/IAEA Div. of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development. Vienna (Austria). Improvement of grain legume production using induced mutations. Proceedings. IAEA – STI PUB 766. ISBN 92-0-111188-6. Vienna (Austria). IAEA. 1988. p. 145-155. FAO Accession No: XF8878633.
vicia faba; gamma radiation; greece; plant breeding; varieties; resistance to injurious factors; sclerotinia; blights; mutation; glucosides

89-013876 Gamete irradiation for gene and chromosome mutations in higher plants. (En). Saccardo, F. (Comitato Nazionale per l'Energia Nucleare, Rome (Italy)).
Joint FAO/IAEA Div. of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development. Vienna (Austria). Improvement of grain legume production using induced mutations. Proceedings. IAEA – STI PUB 766. ISBN 92-0-111188-6. Vienna (Austria). IAEA. 1988. p. 111-123. FAO Accession No: XF8878629.
pisum sativum; vicia faba; capsicum annuum; induced mutation; italy; gametes; irradiation; chromosomes; chromosome manipulation; varieties

89-014370 Occurrence of stress grains in the root cells of broad bean and barley plants under desiccation conditions. (En). Nishizawa, N. (Tokyo Univ. (Japan) Faculty of Agriculture); Mori, S. *Soil Science and Plant Nutrition (Japan)*. ISSN 0038-0768. (Dec 1986). v. 32(4). p. 599-608. 11 plates; 6 ref.; Summary (En).
vicia faba; barley; stress; roots; cell structure

89-014623 Physiological effects of colchicine. 1.- Effect of colchicine on hormonal changes accompanying germination and seedling growth of treated broad bean seeds [Egypt]. (En). Hassanein, R.A. (Ain-Shams Univ., Cairo (Egypt). Faculty of Agriculture); El-shafey, A.M.S. *Annals of Agricultural Science (Egypt)*. (1987). v. 32(1). p. 1-13. 2 fig. 1 table; 13 ref. Summaries (Ar, En). Issued 1988.
vicia faba; seeds; colchicine; plant growth substances; egypt; germination; physiological functions; seedlings; growth

89-014624 Physiological effects of colchicine. 2.- Effect of colchicine on metabolic changes accompanying germination and seedling growth of treated broad bean seeds [Egypt]. (En). Hassanein, R.A. (Ain-Shams Univ., Cairo (Egypt). Faculty of Agriculture); El-Shafey, A.M.S. *Annals of Agricultural Science (Egypt)*. (1987). v. 32(1). p. 15-26. 16 ref. Summaries (Ar, En). Issued 1988. (See also).
vicia faba; seeds; colchicine; physiological functions; egypt; seedlings; growth; germination

89-014625 Effects of salinity and relative humidity on growth and ionic composition of faba bean [Vicia faba]. (En). Salim, M. (National Agricultural Research Centre, Islamabad (Pakistan) Land Resources Section). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1987). (no. 18). p. 11-14. 2 tables; 1 fig.; 10 ref. Summaries (Ar, En).
Faba bean was grown in growth cabinets in nutrient solutions with and without 50 mM NaCl at either 30 +- 5% or 90 +- 5% relative humidity (RH). Plant growth was significantly better under high RH conditions in both non-saline and saline root environments. Cation (K, Na, Ca, Mg) and anion (Cl) accumulation in different plant parts was higher in lower RH than in high RH. Hence there was a negative correlation between the ions built-up in plant shoots and shoot growth depression. The data indicate possibilities of improving plant growth in salt-affected soils by manipulating RH. *vicia faba; ions; salinity; arid soils; humidity; plant habit*

89-014626 The emergence of faba bean as related to soil temperature in the field [Vicia faba; Poland]. (En). Labuda, H. (Agricultural Univ., Lublin (Poland) Institute of Horticultural Production). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1987). (no. 19). p. 5-7. 3 tables; 1 fig.; 6 ref. Summaries (Ar, En).
Soil temperatures at which seven cultivars of faba bean (Vicia faba L. var. major) emergence were studied. The sum of temperatures at 5 cm deep from sowing till emergence was 222 deg C on average. The time from sowing till emergence, in days, depended on the mean temperature of soil (x), according to the equation Y = a/x. The value of a was determined to be 229.4. The time from germination till emergence varied from 8 to 3 days at 9 deg C and 22 deg C, respectively. *vicia faba; emergence; soil temperature; poland; plant ecology*

89-015160 Studies on insect vectors of plant virus diseases infesting legumes in Egypt. (En). El-Defrawy, G.M.M. Ain-Shams Univ., Cairo (Egypt) Faculty of Agriculture. Thesis (M.Sc. in Entomology). Cairo (Egypt). 1987. 260 p. 28 ill. 5 fig. 55 tables; ref. p. 226-253; Summaries (Ar, En). *Library, Faculty of Agriculture, Ain-Shams Univ. Cairo, Egypt.
legumes; plant viruses; chemicophysical properties; viroses; egypt; crop yield; weight; vicia faba; aphis; vectors

89-015424 Phyllody of faba bean in the Sudan. 2. Detection of the disease by light microscopy: fluorescence, bright field, interference contrast and observation of MLOs by transmission electron microscopy [bisbenzimid H]. (En). Dafalla, G.A. (Institut National de la Recherche Agronomique, Versailles (France) Centre de Versailles, Station de Pathologie Vegetale). Cousin, M.T. *Agronomie (France)*. ISSN 0249-5627. (1988). v. 8(6). p. 495-502. 6 illus.; 15 ref.; Summaries (En, Fr).
vicia faba; phyllody; microscopy; mycoplasma; sudan

89-015425 Studies on the epidemiology of broad bean wilt disease. (Ch). Xu Zhigang; Liu Dehu; Fang Zhongda (Nanjing Agricultural Univ. (China). Section of Plant Pathology). *Journal of Nanjing Agricultural University (China)*. ISSN 1000-2030. (Jun 1988). v. 11(2). p. 43-47. 2 ill.; 3 tables; 9 ref. Summaries (Ch, En).
vicia faba; viroses; wilts; infectivity; epidemiology; jiangsu; hosts; species; myzus; elisa; indicator plants; chemical control

89-015426 Further studies on the interaction between some viral and fungal diseases of legumes [Egypt]. (En). Abo-El-Abbas, F.M. Ain-Shams Univ., Cairo (Egypt). Faculty of Agriculture. Thesis (Ph.D. in Plant Pathoology). Cairo (Egypt). 1985. 291 p. 31 ill. 49 tables; ref. p. 241-282. Summaries (Ar, En). *Library, Faculty of Agriculture, Ain Shams Univ., Egypt.
vicia faba; viroses; mycoses; fungicides; egypt; plant viruses; infection; rusts

89-015427 The efficiency of certain broad bean seed treatments on controlling damping-off disease [Egypt]. (En). Abd-El-Rehim, M.A.; Abou-Taleb, E.M.; Tohamy, A. (Alexandria Univ. (Egypt). Faculty of Agriculture). *Alexandria Journal of Agricultural Research (Egypt)*. (Apr 1986). v. 31(1). p. 295-304. 3 tables; 11 ref. Summaries (Ar, En). Issued 1988.
vicia faba; seed treatment; rhizoctonia; fusarium; damping off; egypt; plant growth substances; herbicides

89-015428 Causal viruses of mosaic disease of broad bean and its seed transmission in Chosei district of Chiba prefecture [Japan]. (Ja). Nagai, Y. (Chiba-ken. Agricultural Experiment Station (Japan)); Akiyama, K.; Noguchi, T.; Kochi, T.; Natsuaki, K.T.; Yamashita, S. *Proceedings of the Kanto-Tosan Plant Protection Society (Japan)*. ISSN 0388-8258. (Nov 1986). (no.33). p. 68-70.
vicia faba; plant viruses; viroses; disease transmission; japan; seeds

89-015429 Cultural control of mosaic disease of broad bean. (Ja). Nagai, Y. (Chiba-ken. Agricultural Experiment Station. (Japan)); Noguchi, T. *Proceedings of the Kanto-Tosan Plant Protection Society (Japan)*. ISSN 0388-8258. (Nov 1986). (no.33). p. 71-72.
vicia faba; viroses; cultural control

89-015430 Electrophoretic separation: an alternative simple procedure for the purification of broad bean mottle and Alfalfa mosaic viruses [Vicia faba]. (En). Makkouk, K.M. (ICARDA, Aleppo (Syria)); Katul, L.; Rizkallah, A. (American Univ. of Beirut (Lebanon). Faculty of Agricultural and Food Sciences). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1987). (no. 19). p. 12-14. 1 table; 1 fig.; 6 ref. Summaries (Ar, En).
A procedure to purify broad bean mottle virus (BBMV) and alfalfa mosaic virus (AMV) using agarose-acrylamide gel electrophoresis was developed. Infected tissue was extracted in 0.2 M phosphate buffer, pH 7.2 containing 0.01 M EDTA and 1% sodium sulfite. The extract was clarified by low speed centrifugation (10,000 rpm, 20 min) and the virus was then precipitated by 6% polyethylene glycol + 2% sodium chloride and centrifugation at 12,000 rpm for 20 min. The partially purified virus preparation was electrophoresed in 0.5% agatose + 2% acrylamide gel for 4 h at 250 V. BBMV preparation produced one dense band and AMV produced two dense and two faint bands with no corresponding bands in the healthy extracts. When rabbits were injected with the gels containing the virus-specific bands of BBMV and AMV, the quality of the antiserum produced was good for the detection of the two viruses by ELISA. *vicia faba; viroses; electrophoresis; plant viruses*

89-015569 Study on the effect of Igran herbicide on nodulation, yield of faba bean, residual effect and associated weeds [Egypt]. (En). Hussein, A.H.A. (Ministry of Agriculture; Cairo (Egypt). Field Crops Research Inst.); Hassanein, E.E.; Al-Marsfy, H.T. *Annals of Agricultural Science, Moshtohor (Egypt)*. (1985). v. 23(1). p. 29-40. 5 tables; 13 ref. Summaries (Ar, En). Issued 1988.
vicia faba; herbicides; root nodulation; crop yield; residues; weeds; egypt; weight gain

89-015675 Effect of foliar application of some herbicides un the growth and yield components of faba bean [Egypt]. (En). El-Hayatmy, Y.; Abd-El-Hafeez, S.; Abs-El-Daiem, S. (Ministry of Agriculture, Cairo (Egypt). Field Crops Research Inst.). *Agricultural Research Review (Egypt)*. (1983). v. 61(8). p. 15-33. 5 tables; 20 ref. Summaries (Ar, En). Issued 1988.
vicia faba; herbicides; foliar application; egypt; growth; crop yield; varieties; protein content

89-015676 Control of Orobanche spp. with Scepter herbicide [Vicia faba]. (En). Sauerborn, J.; Saxena, M.C.; Masri, H.; Linke, K.H. (ICARDA, Aleppo (Syria)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1987). (no. 19). p. 14-17. 2 tables; 9 ref. Summaries (Ar, En).
Scepter (imazaquin) was tested as a new herbicide for controlling Orobanche spp. in faba bean crop. Two applications of Scepter at 10 g a.i./ha each, once at the tubercle stage and the second time at the bud stage of the underground development of Orobanche plant, gave almost complete control of the parasite (mostly Orobanche crenata). The treatment also resulted in some increase in the yield of faba bean over untreated check. Rates higher than 20 g a.i./ha of Scepter decreased faba bean yield. *vicia faba; orobanche; herbicides/ weeds; chemical control; yield increase*

89-015677 Estimation of Orobanche seeds in soil [Vicia faba]. (En) Kachelriess, S. (ICARDA, Aleppo (Syria)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1987) (no. 19) p. 17-19. 2 tables, 9 ref. Summaries (Ar, En)
A simple method to determine the number of seeds of Orobanche spp. in soil is to centrifuge a sample of soil in a suspension of MgSO4 to which a small amount of Kaolinite is added and then to pour the supernatant through a 500 micron sieve over a 53 micron sieve. The seeds that accumulated on the 53 micron sieve can be counted easily if transferred to a graduated petridish and examined under a binocular microscope (16 X magnification). *vicia faba; orobanche; soils; methods; weeds*

89-016474 [Alternative protein feedstuffs in pig fattening]. (De) Alternative Eiweissfuttermittel in der Schweinemast. Salewski, V. (Fachhochschule, Bad Kreuznach (Germany, F.R.)). *Deutsche Gesellschaft für Tierzuchtwissenschaft und Schweineproduktion (Germany, F.R.)* ISSN 0340-3888. (1985) v. 37(30) p. 939-941. 1 ill., 5 tables
swine; fattening; soybean meal; rapeseed meal; vicia faba; pisum sativum; skim milk

89-016504 Vicia faba L., minor, in broiler finishing diets. (En) Tortuero, F.; Rodriguez, M.L.; Rioperez, J. (Consejo Superior de Investigaciones Cientificas, Madrid (Spain) Instituto de Alimentacion y Productividad Animal). Barrera, J. *Archivos de Zootecnia (Spain)* ISSN 0004-0592. (May-Aug 1988) v. 37(138) p. 183-193. Numerical tables, 22 ref. Summaries (En, Es)
broiler chickens; vicia faba; diet; weight gain; pancreas; liver; carcass composition; feed consumption; fatty acids; haemoglobin; faeces

89-016528 Evaluation of some local and imported feed stuffs for poultry [Egypt]. (En) Atta, M.Y.A. (Ain-Shams Univ., Cairo (Egypt)). Faculty of Agriculture. Thesis (Ph.D. in Poultry nutrition). Cairo (Egypt) 1987. 92 p. 3 ill. fig. 13 tables, ref. p. 72-86. Summaries (Ar, En). *Library, Faculty of Agriculture, Ain-Shams Univ., Cairo, Egypt
chickens; feeds; composition; amino acids; vicia faba; fish meal; meat meal; egypt

89-019495 Effect of rhizobium inoculation and phosphorus fertilizer levels on nodulation, seed yield and other agronomic characters of faba bean (Vicia faba) [Egypt]. (En) Salem, S.A. (Alexandria Univ. (Egypt) Faculty of Agriculture). El-Massri, M.F. *Alexandria Journal of Agricultural Research (Egypt)* (1986) v. 31(3) p. 115-125. 1 ill., 2 tables, 10 ref. Summaries (Ar, En). Issued 1988
vicia faba; rhizobium; phosphate fertilizers; seeds; yields; egypt

89-019496 Studies on phosphate dissolving actinomycetes in calcareous soils [Egypt]. (En) Abbas, M.H. (Ain-Shams Univ., Cairo (Egypt)). Faculty of Agriculture. Thesis (M.Sc. in Agricultural Microbiology). Cairo (Egypt) 1986. 230 p. 20 ill. 10 fig. 25 tables, ref. p. 202-223. Summaries (Ar, En). *Library, Faculty of Agriculture, Ain-Shams Univ., Egypt
vicia faba; actinomycetales; phosphate fertilizers; calcareous soils; egypt; microorganisms; rhizosphere; soil biology; nutrient uptake; growth

89-019497 Study on the action of three rhizobial strains and their combination on Vicia faba L. (En) Shukla, R.S.; Singh, S.B.; Khare, D.; Koutu, G.K. (J.N. Agricultural Univ., Jabalpur (India)). Department of Plant Breeding and Genetics). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1987) (no. 19) p. 7-8. 1 table, 3 ref. Summaries (Ar, En)
The rhizobia isolated from faba bean, soybean, and chickpea were tested, alone and in combination for their symbiosis with faba bean (host). Measurements of nodules and yield indicated that rhizobia isolates from faba bean were most effective in symbiosis with faba bean. Plants grown in soil inoculated with mixtures that included rhizobia isolates from faba bean with those from chickpea or soybean performed better than other combinations (i.e., faba bean + chickpea + soybean, and chickpea + soybean). *vicia faba; cicer arietinum; soybeans; rhizobium; greenhouses*

89-019653 Low temperature and faba bean (Vicia faba L.) yield. (En) Liu, Z.S.; Zhao, Y.Z.; Bao, S.Y.; Wen, G. (Yunnan Academy of Agricultural Science, Kunming (China)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1987) (no. 18) p. 14-17. 2 tables, 6 ref. Summaries (Ar, En)
The hardiness of the faba bean flower and its ovary covered with corolla till 10 days after fading was observed. Varieties with greater number of flowers and longer duration of flowering had greater ability for self-regulation and complementation under a certain degree of low temperature, hence possessed potentialities of stable high yields. Total dry matter (DM) decreased after top removal, the earlier the removal the greater the decrease. It is total DM increase per unit area that can effectively increase the yield. Dry matter and harvest index can be used for selection of high yielding genotypes. Improvement of environmental conditions and enhancement of field management can also enable the total DM and harvest index to reach a desirable level, i.e., markedly increase the yield. *china; vicia faba; temperature; cold; crop yield; plant production*

89-019813 Texture of faba beans (Vicia faba) as affected by seed size and cooking conditions [Egypt]. (En) El-Banna, A.A. (Alexandria Univ. (Egypt) Faculty of Agriculture). Youssef, M.M.; Ziena, H.M. *Alexandria Journal of Agricultural Research (Egypt)* (1986) v. 31(3) p. 197-206. 2 tables, 16 ref. Summaries (Ar, En). Issued 1988
vicia faba; size; cooking; quality; egypt

89-019814 Effect of seed coat and cotyledons on the texture of cooked faba bean (Medammis) [Vicia faba]. (En) Shehata, A.M.E.; Zeinab, H.M.; Youssef, M.M. (Alexandria Univ. (Egypt) Department of Food Science and Technology). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1987) (no. 19) p. 20-22. 11 ref. Summaries (Ar, En)
The effect of seed coat on the hydration capacity of dry seeds and on the hydration and texture of cooked ones was studied on six freshly harvested faba bean samples [3 hard-to-cook (H) and 3 soft-to-cook (S)]. The seed coat had a slight effect on the hydration capacity of dry seeds (7 to 14% for S samples, and 11 to 17% for H samples). In S samples, although the seed coat constituted only 13-14% of the seed weight, it was reflected in 64-65% of the texture of cooked seeds indicating the significance of its chemical nature rather than its permeability. The cotyledon has almost as much effect as the seed coat on the texture of H samples. *vicia faba; testa; cotyledons; texture; cooking; hydration; quality*

89-020272 Chemical constituents and electrophoresis of proteins of some species of Vicia. (En) Sammour, R.H. (Tanta Univ. (Egypt) Department of Botany). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1987) (no. 18) p. 30-32. 1 table, 1 fig., 17 ref. Summaries (Ar, En)
This study was carried out on the seed proteins of a number of wild species and two Egyptian cultivars of Vicia. Chemical analysis 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 Vicia narbonensis varieties; the species most closely related to them was V. serratifolia. In addition it has been suggested that V. narbonensis var. aegyptiaca has evolved from V. narbonensis var. narbonensis and V. narbonensis var. jordanica. *vicia faba; vicia; proteins; electrophoresis; egypt; chemical analysis*

89-020273 Variation in testa fraction with seed weight in faba bean [Vicia faba]. (En) Marcellos, H. (New South Wales Dept. of Agriculture, Tamworth (Australia) Agricultural Research Centre). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1987) (no. 18) p. 33-34. 1 table, 1 fig., 3 ref. Summaries (Ar, En)
The fraction of the whole seed contained in the testa was measured on 30 inbred lines of faba bean developed from Mediterranean, Middle Eastern, North African, and Indian sources. There was an inverse relationship between testa fraction, which varied from 12.2 to 18.2% across genotypes, and 1000-seed weight which was 280-620 g. A group of Indian lines had high testa fractions, in excess of 16%. *vicia faba; seeds; weight; testa; genotypes*

89-020274 Effect of wilt and root rot disease complex on some quality parameters of faba bean (Ful Masri) seeds [Vicia faba]. (En) Saeed, E.M.A.; Freigoun, S.O. (Gezira Univ., Wad Medani (Sudan)); Omer, M.E. (ARC, Wad Medani (Sudan)), Hanounik, S.B. (ICARDA, Aleppo (Syria)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1987) (no. 19) p. 23-26. 2 tables; 1 fig.; 9 ref. Summaries (Ar, En)
In addition to its effect on the productivity of the crop, the wilt and root rot disease complex adversely affected the quality parameters investigated. Seeds collected from diseased plants were found to be lighter and smaller than those collected from healthy plants. They were also shriveled and contained higher percentages of hard seeds. The protein content and digestible protein were significantly reduced by the disease. Seeds from healthy plants required significantly longer cooking time and contained higher amounts of fiber than the ones from diseased plants. The adverse effects on seed quality were more pronounced with higher disease incidence. *vicia faba; protein content; fibre content; wilts; root rots; cooking; quality*

89-020577 Whole-crop barley, whole-crop peas and whole-crop field beans for dairy cows. (Da) Byg aerter og hesteboenner som helsaedsafgroeder til malkekoeer. Skovborg, E.B.; Kristensen, V.F. Statens Planteavlsforsoeg, Statens Husdyrbrugsforsoeg. Copenhagen (Denmark) Copenhagen (Denmark) SPL, SH. 1988. 30 p.
Beretning fra Faellesudvalget for Statens Planteavls- og Husdyrbrugsforsoeg (Denmark). no. 12. 18 tables, 28 ref. Summaries (Da, En)
whole crop silage; dairy cattle; cows; denmark; barley; pisum sativum; vicia faba; composition; silage making; nutritive value; crop yield; feed conversion efficiency; weight gain; milk yield

89-020584 Biological value of [five] new varieties of field beans with different tannin content. (Pl) Ocena wartosci biologicznej bialka nasion nowych rodow bobiku o zroznicowanej zawartosci tanin. Maciejewicz-Rys, J.; Ernest, I.; Kumalska-Drozdz, K. (Instytut Zootechniki, Krakow (Poland)). *Roczniki Naukowe Zootechniki (Poland)* Polish Journal of Animal Science and Technology. ISSN 0137-1657. (1987) v. 14(1) p. 267-275. 20 ref. Summaries (De, En, Ru). Distributed 1988
No significant differences in biological value of protein of the five new varieties and commercial Nadwislanski variety of field beans was stated. A significant negative correlation between the true protein digestibility in rats and the tannin content was found. *grain feed; rats; vicia faba; varieties; poland; tannins; methionine; amino acids; proteins; nutritive value; digestibility*

89-020787 Faba beans (Vicia faba L.) and their role in the human diet. (En) Askar, A. *Food and nutrition bulletin (USA)* ISSN 0379-5721. (Sep 1986) v. 8(3) p. 15-24. charts, 71 ref. Literature review. *US (DNAL: TX341.F622)
A major review discusses the production, chemical composition, and use of faba beans as a nutritional food for the human diet. Topics include: popular methods for preparing faba beans in the Middle East (stewing, cooking, bean cakes); nutritional studies on faba beans concerning their content of protein, amino acids, starch, and oligosaccharides, air-classification techniques, flatus-producing factors, and other characteristics of faba beans (protease inhibitors, lectins-hemagglutinins; tannins; phytate (phytins), and favism-inducing factors). Compositional data are presented in 8 tables. *vicia faba; nutritive value; foods; composition; enzyme inhibitors; lectins; tannins; phytic acid*

89-021936 [Favorite crops in France [oil crops, legumes]. (De). Die Favoriten des franzoesischen Ackerbaus. Uhlmann, I. (Bundesforschungsanstalt fuer Landwirtschaft, Braunschweig (Germany, F.R.). Inst. fuer Landwirtschaftliche Marktforschung). *DLG-Mitteilungen (Germany, F.R.).* ISSN 0341-0412. (1988). v. 103(1). p. 19-20. 5 tables.
france; rape; helianthus; production; pisum sativum; vicia faba; land use; markets

89-022337 [Broad bean market]. (Fr). Le marche des feves. Anon. *Marche International des Fruits et Legumes Frais (France).* ISSN 0335-9840. (29 Sep 1988). (no. 20). p. 27-28.
vicia faba; netherlands; vegetables; markets; plant production; imports; exports

89-022887 Production of faba bean and pea in China. (En). Lang, L.J. (Zhejiang Academy of Agricultural Sciences, Hangzhou (China). Crop Research Inst.); Zheng, Z.J.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1135-1151. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 7 refs.; Summary (En).
vicia faba; pisum sativum; china; plant production

89-022890 Production of chickpea, lentil, pea and faba bean in South-East Asia. (En). Malik, B.A. (National Inst. of Health, Islamabad (Pakistan). Pakistan Agricultural Research Council); Verma, M.M.; Rahman, M.M.; Bhatterai, A.N.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1095-1011. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 5 refs.; Summary (En).
cicer arietinum; lens culinaris; pisum sativum; vicia faba; south east asia; plant production; pests of plants; plant diseases

89-022892 Production of cool season food legumes in West Asia and North Africa. (En). Nassib, A.M. (Field Crops Research Inst., Giza (Egypt)). Sakar, D.; Solh, M.; Sahh, F.A.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1081-1094. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 33 refs.; Summary (En).
lens culinaris; vicia faba; cicer arietinum; pisum sativum; middle east; north africa; plant production; pests of plants; plant diseases

89-022900 Factors which limit the productivity of cool season food legumes in Nepal. (En). Bhattarai, A.N. (Department of Agriculture, Kathmandu (Nepal). Div. of Agronomy, Grain Legume Improvement Program). Bharati, M.P.; Gyawali, B.K.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 217-228. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 15 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; nepal; stress; water deprivation; nutrient availability; plant diseases; pests of plants; varieties; crop yield

89-022901 Production of pea, lentil, faba bean and chickpea in North America. (En). Slinkard, A.E. (Saskatchewan Univ., Saskatoon (Canada). Crop Development Centre); Blain, H.L.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1059-1063. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; north america; plant production

89-022902 Production of pea, lentil, faba bean and chickpea in Europe. (En). Picard, J.J.A. (Station de Genetique et d'Amelioration des Plantes INRA, Dijon (France)); Bond, D.A.; Monti, L.; Steuckardt, R.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1065-1080. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 7 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; europe; plant production; pests of plants; plant diseases

89-022903 Cool season food legumes in East Africa. (En). Telaye, A. (Institute of Agricultural Research, Addis Ababa (Ethiopia)).
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1113-1124. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 9 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; east africa

89-022904 Production practices and economic importance of pea, lentil, faba bean and chickpea in New Zealand and Australia. (En). Jermyn, W.A. (Crop Research Div. DSIR, Christchurch (New Zealand)).
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1125-1133. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; new zealand; australia; plant production; pests of plants; plant diseases

89-022911 The influence of some controllable factors on the production of dry biomass of crops in various agroecological systems. (Cs). Vliv nekterych regulovatelnych faktoru na produkci susiny biomasy plodin v ruznych agroekosystemech. Vach, M. (Vyzkumny Ustav Rostlinne Vyroby, Prague-Ruzyne (Czechoslovakia)). *Rostlinna Vyroba - UVTIZ (Czechoslovakia).* ISSN 0370-663X. (Oct 1987). v. 33(10). p. 1011-1018. 4 tables; 13 ref. Summaries (Cs, De, En, Ru).
beta vulgaris; triticum aestivum; trifolium pratense; vicia faba; biomass; dry matter content; nitrogen fertilizers; application rates; rotational cropping; yield factors; trials

89-023312 Harvesting and storage factors that affect seed quality in pea, lentil, faba bean and chickpea. (En). Ellis, R.H. (Reading Univ. (UK). Dept. of Agriculture); Agrawal, P.K.; Roos, E.E.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 303-329. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (66 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; seed; quality; seed storage

89-023313 Seed storage practices and problems for cool season food legumes. (En). Delouche, J.C. (Mississippi State Univ., Mississippi State, MS (USA). Dept. of Agronomy and Seed Technology).
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 331-339. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 32 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; seed; quality; seed storage

89-023314 Seed and seedling vigour. (En). Roberts, E.H. (Reading Univ. (UK). Dept. of Agriculture); Osei-Bonsu, K.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 897-910. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 27 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; seed longevity; quality; seed

89-023842 Water requirements and the irrigation management of pea, lentil, faba bean and chickpea crops. (En). Farah, S.M. (Gezira Agricultural Research Station, Wad Medani (Sudan)); Arar, A.; Miller, D.E.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 271-278. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 30 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; water requirements; irrigation; stress; water deprivation

89-023955 Energy balance in various crop rotations with irrigation. (Cs). Energeticke bilance v odlisnych osevnich sledech se zavlahou. Strasil, Z. (Vyzkumny Ustav Rostlinne Vyroby, Prague-Ruzyne (Czechoslovakia)). *Rostlinna Vyroba - UVTIZ (Czechoslovakia).* ISSN 0370-663X. (Oct 1987). v. 33(10). p. 1039-1048. 4 tables; 15 ref. Summaries (Cs, De, En, Ru).
zea mays; triticum aestivum; beta vulgaris; vicia faba; energy balance; rotational cropping; cropping patterns; tillage; seed; irrigation; fertilizer application; harvesting; costs; input output analysis; efficiency; economics

89-024383 Studies of resistance to aphids in faba bean and its wild relatives in genus Vicia [antibiosis, antixenosis]. (En). Birch, A.N.E. (Scottish Crop Research Institute, Dundee (UK). Zoology Department); Holt, J.
Organisation Internationale de Lutte Biologique et Integree contre les Animaux et les Plantes Nuisibles, Guyancourt (France). SROP. Section Regionale Ouest Palearticque. Working group EUCARPIA-IOBC: breeding for resistance to insects and mites. Report of the fourth meeting held from 23 to 25 September 1986 at Hundested, Denmark. ISBN 92-9067-013-4. Guyancourt (France). OILB. 1988. p. 45-47. Bulletin SROP (France). v. 11(3).
vicia faba; vicia; pest resistance; aphis; acyrthosiphon; pest insects; selection; food preferences; antagonism

89-024384 Exploitation of wild relatives of the food legumes. (En). Ladizinsky, G. (Hebrew Univ. of Jerusalem, Rehovot (Israel). Levi Eshkol School of Agriculture); Pickersgill, B.; Yamamoto, K.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 967-978. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 49 refs.; Summary (En).
vicia faba; lens culinaris; pisum sativum; cicer arietinum; gene pools; resource exploitation

89-024385 Current status of cool season food legume crop improvement: an assessment of critical needs. (En). Hawtin, G.C. (British Columbia Univ., Vancouver, B.C. (Canada). International Development Research Centre (IDRC). Crops and Animal Production Systems); Muehlbauer, F.J.; Slinkard, A.E.; Singh, K.B.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht

(Netherlands). Kluwer Academic Publishers. 1988. p. 67-80. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 27 refs. Summary (En).
cicer arietinum; vicia faba; lens culinaris; pisum sativum; plant breeding

89-024398 Genetic basis for pulse crop improvement: collection, preservation and genetic variation in relation to needed traits. (En). Maesen, L.J.G. van der (Landbouwuniversiteit Wageningen (Netherlands). Vakgroep Plantentaxonomie); Kaiser, W.J.; Marx, G.A.; Worede, M.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 55-66. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 33 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; genetic variation; plant collections; plant breeding

89-024399 Breeding for disease resistance in pulse crops. (En). Bernier, C.C. (Manitoba Univ., Winnipeg, Manitoba (Canada). Dept. of Plant Science); Bijga, G.; Nene, Y.L.; Cousin, R.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 97-106. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 28 refs.; Summary (En).
pisum sativum; cicer arietinum; vicia faba; lens culinaris; disease resistance; plant breeding

89-024400 Screening and breeding for insect resistance in pea, lentil, faba bean and chickpea. (En). Reed, W. (International Crops Research Inst. for the Semi-Arid Tropics (ICRISAT), Patancheru, AP (India)); Cardona, C.; Lateef, S.S.; Bishara, S.I.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1135-1152. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 27 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; pest resistance; pest insects; plant breeding; selection

89-024401 Breeding for morphological traits. (En). Erskine, W. (International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo (Syria)); Nassib, A.M.; Telaye, A.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 117-127. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (60 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; plant anatomy; germplasm; plant breeding

89-024402 Seed quality and nutritional goals in pea, lentil, faba bean and chickpea breeding. (En). Bressani, R. (Institute of Nutrition of Central America and Panama (INCAP) (Guatemala). Div. of Food and Agricultural Sciences); Elias, L.G.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 381-404. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (97 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; breeding aims; quality; seeds; nutritive value

89-024403 Applications of isozyme analysis in pulse crops. (En). Weeden, N.F. (Cornell Univ., Geneva, NY (USA). Dept. of Horticultural Sciences); Zamir, D.; Fadmor, Y.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 979-987. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 37 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; isoenzymes; plant breeding

89-024404 Future breeding strategies for pea, lentil, faba bean and chickpea. (En). Rheenen, H.A. van (International Crops Research Inst. for the Semi-Arid Tropics (ICRISAT), Patancheru, AP (India)); Bond, D.A.; Erskine, W.; Sharma, B.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 1013-1029. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (73 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; plant breeding; biotechnology

89-024626 Increased frequency of sister chromatid exchanges in Vicia faba under influence of combination of herbicides Topogard, Dual, Ladob. (Sk). Miceta, K. (Komenskeho Univ., Bratislava (Czechoslovakia). Ustav Molekularnej a Subcelularnej Biologie). *Polnohospodarstvo (Czechoslovakia)*. (May 1988). v. 34(5). p. 438-442. 1 table, 16 ref. Summaries (En, Ru, Sk).
vicia faba; chromosomes; czechoslovakia; seedlings; herbicides; metabolites; cytology

89-024888 Identification of 3-hydroxy-2-indolone-3-acetylaspartic acid as a new indole-3-acetic acid metabolite in Vicia roots. (En). Tsurumi, S. (Kobe Univ. (Japan)); Wada, S. *Plant and Cell Physiology (Japan)*. ISSN 0032-0781. (Apr 1986). v. 27(3). p. 559-562. 2 plates; 16 ref.; Summary (En).
vicia faba; iaa; metabolism; identification; roots; aspartic acid

89-024903 Factors which affect water use efficiency in rainfed production of food legumes, and their measurement. (En). Cooper, P.J.M. (International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo (Syria)); Campbell, G.S.; Heath, M.C.; Hebblethwaite, P.D.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 813-829. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 45 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; grain legumes; evapotranspiration; water uptake; measurement

89-024942 Growth/environment interactions in SO2 responses of grasses. (En). Mansfield, T.A.; Jones, T.
Winner, W.E.; Mooney, H.A.; Goldstein, R.A. (eds.). Sulfur dioxide and vegetation: physiology, ecology, and policy issues. ISBN 08-047-12344. Stanford, Calif. (USA). Stanford University Press. 1985. p. 332-345. *US (DNAL QK753.S85S85).
grasses; sulphur dioxide; pollutants; air pollution; gramineae; lolium perenne; phleum pratense; vicia faba; fumigation; growth; photosynthesis; translocation; environment

89-025166 Heat shock protection against induction of chromatid aberrations is dependent on the time span between heat shock and clastogen treatment of Vicia faba root tip meristem cells. (En). Rieger, R. (Zentralinstitut fuer Genetik und Kulturpflanzenforschung, Gatersleben (German D.R.)); Michaelis, A. *Mutation Research (Netherlands)*. ISSN 0166-0934. (1988). v. 209(3). p. 141-144. 10 refs.; Summary (En).
vicia faba; meristems; chromosomes; heat

89-025168 Root growth of chickpea, faba bean, lentil, and pea and effects of water and salt stresses. (En). Gregory, P.J. (Reading Univ. (UK). Dept. of Soil Science).
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 857-867. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 38 refs.; Summary (En).
cicer arietinum; vicia faba; lens culinaris; pisum sativum; roots/ growth; salinity; stress; water deprivation

89-025170 Photo-thermal regulation of flowering in pea, lentil, faba bean and chickpea. (En). Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture); Roberts, E.H.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 911-922. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 23 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; flowering/ temperature; photoperiodicity

89-025851 [Investigations on resistance of Vicia faba varieties against Aphis fabae (Scop.)]. (De). Untersuchungen zur Resistenz von Vicia faba (L.) Sorten gegenueber Aphis fabae (Scop.). Morvan, Y. Hannover Univ. (Germany, F.R.). Fachbereich Gartenbau. Diss. (Dr. rer. hort.). Hannover (Germany, F.R.). 1987. 139 p. 31 ill., 25 tables. Bibliography 177 ref. Summary (De). *Univ. Hannover (Germany, F.R.). Universitaetsbibliothek.
vicia faba; aphis; pest resistance; varieties

89-025858 Pest, disease and weed problems in pea, lentil, faba bean and chickpea. (En). Emden, H.F. van (Reading Univ. (UK). Dept. of Horticulture); Ball, S.L.; Rao, M.R.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 519-534. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 19 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; pests of plants; plant diseases; weeds

89-026290 Detection of some persistent plant viruses in their vectors by ELISA and transmission tests. (De). Nachweis einiger persistenter Pflanzenviren in ihren Vektoren mittels ELISA und Uebertragungstest. Kastirr, R.; Svoboda, K. (Institut fuer Phytopathologie, Aschersleben (German D.R.)). *Archiv fuer Phytopathologie und Pflanzenschutz (German D.R.)*. ISSN 0323-5408. (1988). v. 24(2). p. 87-92. 5 tables; 8 refs. Summaries (De, En, Ru).
brassica alba; solanum tuberosum; hordeum vulgare; vicia faba; myzus; macrosiphum; plant viruses; elisa; vectors

89-026437 Phyllody of faba bean in the Sudan. 1. Progress of symptom expression, host range and transmission to Catharanthus roseus through dodder [Cuscuta subinclusa]. (En). Dafalla, G.A. (Institut National de la Recherche Agronomique, Versailles (France). Centre de Versailles, Station de Pathologie Vegetale); Cousin, M.T. *Agronomie (France)*. ISSN 0249-5627. (1988). v. 8(5). p. 441-449. 10 illus., 13 ref., Summaries (Fr, En).
vicia faba; phyllody; sudan/ disease transmission; environmental temperature

89-026438 A simple procedure for the purification and antiserum production of bean yellow mosaic virus. (En). Makkouk, K.M. (International Center for Agricultural Research in the Dry Areas

(ICARDA), Aleppo (Syria)); Katul, L.; Rizkallah, A. *Journal of Phytopathology (Germany, F.R.)* ISSN 0931-1785 (1988) v. 122(1) p. 89-93. 1 ill., 1 table; 12 ref. Summaries (De, En)
A simple procedure was developed to purify bean yellow mosaic virus from infected faba bean. The procedure included clarification of tissue homogenate by 25 per cent chloroform followed by low-speed centrifugation, virus concentration by polyethylene glycol precipitation and further purification by agarose-acrylamide gel electrophoresis. The partially purified virus preparation was electrophoresed in 0.5 per cent agarose-2 per cent acrylamide gel for 4 h. Gel bands containing the virus were collected, homogenized, and mixed (1 : 1) with Freunds adjuvant. Four weekly intramuscular injections and a booster injection four weeks after the fourth injection were given to a rabbit. Antisera collected from the first five bleedings produced high A405 readings in ELISA (0.475-0.790) with virus-infected faba bean leaves and low readings (0.030-0.065) with healthy tissue. Plates were coated with 5 microg ml of gammaglobulins (IgG) fractionated from the different bleedings of the antiserum prepared and a 1 : 1000 dilution of the IgG from the third bleeding conjugated to alkaline phosphatase was used. *vicia faba; plant viruses; immune serum; isolation; methods*

89-026439 Virus diseases of broad bean (Vicia faba L.) [Bean common mosaic virus, Bean leaf roll virus, Bean yellow mosaic virus, Pea enation mosaic virus, White clover mosaic virus, Watermelon mosaic virus, Clover yellow vein virus, Clover yellow mosaic virus, Broad bean wilt virus, Broad bean stain virus, Broad bean true mosaic virus, Alfalfa mosaic virus, Cucumber mosaic virus, Red clover vein mosaic virus]. (Hu) A lobab (Vicia faba L.) virusos betegsegei. Simay, E. (Novenyvedelmi Intezet, Tapioszele (Hungary) Agrobotanikai Kozpont). *Novenytermeles (Hungary)* ISSN 0546-8191 (1986). v.35(5) p. 459-468. 1 table; 4 ref. Summaries (En, Hu)
vicia faba; plant viruses

89-026441 Identification, significance and transmission of seed borne pathogens. (En) Mathur, S.B. (Danish Government Inst. of Seed Pathology for Developing Countries, Copenhagen (Denmark)); Haware, M.P.; Hampton, R.O.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 351-365. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (71 refs.). Summary (En).
cicer arietinum; vicia faba; pisum sativum; lens culinaris; seedborne organisms; pathogens; disease resistance; diagnosis

89-026442 Root rot and wilt diseases of food legumes. (En) Kraft, J.M. (Irrigated Agriculture Research and Extension Center USDA-ARS, Prosser, WA (USA)); Haware, M.P.; Hussein, M.M.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 565-575. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (59 refs.). Summary (En)
cicer arietinum; vicia faba; lens culinaris; pisum sativum; root rots; wilts; pythium; rhizoctonia; aphanomyces; fusarium; thielaviopsis; macrophomina phaseolina; fusarium oxysporum

89-026448 Fungal and bacterial foliar diseases of pea, lentil, faba bean and chickpea. (En) Nene, Y.L. (International Crops Research Inst. for the Semi-Arid Tropics (ICRISAT), Patancheru, AP (India)); Hanounik, S.B.; Qureshi, S.H.; Sen, B.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 577-589. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (72 refs.). Summary (En)
pisum sativum; lens culinaris; vicia faba; cicer arietinum; mycoses; bacterioses; disease control; disease resistance

89-026449 Viruses and virus diseases of pea, lentil, faba bean and chickpea. (En) Bos, L. (Instituut voor Plantenziektenkundig Onderzoek, Wageningen (Netherlands)); Hampton, R.O.; Makkouk, K.M.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 591-615. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (113 refs.). Summary (En)
pisum sativum; lens culinaris; vicia faba; cicer arietinum; viroses; plant viruses

89-026450 Seedling vigour and susceptibility to diseases and pests. (En) Matthews, S. (Aberdeen Univ. (UK). Dept. of Agriculture); Powell, A.S.; Spaeth, S.C.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 619-625. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 42 refs.; Summary (En)
pisum sativum; vicia faba; cicer arietinum; lens culinaris; mycoses; sitona; pests of plants; disease resistance; pest resistance; emergence

89-026637 High temperature stress. (En) Saxena, M.C. (International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo (Syria)); Saxena, N.P.; Mohamed, A.K.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 845-856. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 34 refs.; Summary (En)
grain legumes; cicer arietinum; lens culinaris; pisum sativum; vicia faba; temperature resistance; heat

89-026638 Water-stress-induced changes in the abscisic acid content of guard cells and other cells of Vicia faba L. leaves as determined by enzyme-amplified immunoassay. (En) Harris, M.J.; Outlaw, W.H. Jr.; Mertens, R.; Weiler, E.W. *Proceedings of the National Academy of Sciences of the United States of America (USA)* ISSN 0027-8424. (Apr 1988). v. 85(8) p. 2584-2588. ill. references. *US (DNAL 500 N21P).
vicia faba; leaves; stomata; aba; respiration; radioimmunoassay; photosynthesis; transpiration; water deprivation; stress; microscopy

89-026640 Winterhardiness in pea, lentil, faba bean and chickpea. (En). Murray, G.A. (Idaho Univ., Moscow, ID (USA). Dept. of Plant, Soil and Entomological Sciences); Eser, D.; Gusta, L.V.; Eteve, G.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 831-843. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (51 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; winter hardiness

89-026778 [Weed control in 1988: What is new?]. (De). Unkrautbekaempfung 1988: Was ist neu? Heil, M. (Pflanzenschutzdienst, Frankfurt 93 (Germany, F.R.)). *DLG-Mitteilungen (Germany, F.R.)*. ISSN 0341-0412. (1988). v. 103(4) p. 158-160. 4 ill.
sugar beet; cereals; weed control; herbicides; zea mays; vicia faba; pisum sativum

89-026828 Adjustment of sowing technique: a promise to reduce herbicides in horse beans. (De). Angepasste Bestelltechnik: eine Voraussetzung zur Reduzierung des Herbizidaufwands, Beispiel Ackerbohnen. El Titi, A. (Landesanstalt fuer Pflanzenschutz, Stuttgart (Germany, F.R.)). *Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz (Germany, F.R.)*. ISSN 0340-8159. (1988). (suppl.11) p. 219-224. 4 tables; 6 ref. Summaries (De, En).
In three years on-farm experiments to sowing techniques combined with two different weed control regimes were compared. Spaced – seed – drilled horse bean stands (row distance: 45 cm/seeds 5-7 cm), combined with row-application of herbicides (ca. 20 cm) and hoeing were compared with adjacent currently drilled ones (28 cm) with an overall herbicide spraying regime. The results obtained indicate a highly efficient weed control in the spaced-seed stands. The control efficiency is found to be as high as, or even higher (1987) than the overall herbicide spray. The yield of the in-row cropped beans was not different, 1987 even higher (P = 5 per cent) than that of the commonly drilled crops. The row- drilling of horse beans offered a major prerequisite to control weed by band-spraying and hoeing. This resulted in a reduction in the total use of herbicides averaging to 50 per cent and improvement of the financial returns. *vicia faba; weed control; herbicides; cost analysis; cropping patterns; seedbed preparation*

89-026830 Use of bentazone, alone and in combination with other herbicides, in peas, faba-beans, soybeans, and flax. (De). Einsatz von Bentazon und Kombinationen in Erbsen, Ackerbohnen, Soja und Flachs. Klaassen, H. (BASF – Badische Anilin- und Soda-Fabrik A.G., Limburgerhof (Germany, F.R.). Landwirtschaftliche Versuchsstation); Schoenhammer, A.; Menck, B.-H. *Zeitschrift fuer Pflanzenkrankheiten und Pflanzenschutz (Germany, F.R.)*. ISSN 0340-8159. (1988). (suppl.11) p. 447-454. 8 ill., 4 ref. Summaries (De, En).
As a result of the ban of Aretit fluessig and the increasing acreage of grain legumes, especially in 1987, an increased number of trials with Basagran alone and in spray sequences with other herbicidal compounds were conducted. The selectivity of Basagran in peas, soybeans and flax is generally good, in Faba-beans selectivity is given with reduced rates until the crop reaches a height of 10 cm. Anthemis arvensis, Capsella bursa-pastoris, Galium aparine, Matricaria chamomilla, Polygonum persicaria, Sinapis arvensis and Stellaria media are well controlled by Basagran. The efficacy gap Basagran against Lamium- and Veronica-species as well as against Viola arvensis in peas and Faba-beans was prevented by a preemergence-treatment with Stomp. A wide spectrum of herbicidal activity was achieved in Faba-beans with the sequence 3,0 l/ha Patoran FL preemergence + 1,0 l/ha Basagran postemergence. A good combination effect with Basagran was obtained in flax with Bromoxynil and in soybeans with Acifluorfen. *pisum; vicia faba; glycine max; weeds; linum usitatissimum; herbicides; weed control*

89-026832 Weeds in food legumes: problems, effects and control. (En). Knott, C.M. (Processors and Growers Research Organization (PGRO), Thornhaugh, Peterborough (UK)); Halila, H.M.
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 535-548. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (60 refs.); Summary (En).
pisum sativum; vicia faba; cicer arietinum; lens culinaris; weed control; herbicides; crop yield; quality

89-026966 Insect depredation during storage. (En). Bushara, A.G. (Hudeiba Research Station, Ed Damer (Sudan)).
Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands) Kluwer Academic Publishers. 1988. p. 367-378. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (69 refs.); Summary (En).
vicia faba; pisum sativum; cicer arietinum; lens culinaris; pest insects; storage

89-027656 [Comparison of three nitrogen sources: soybean, lupin and horsebean for fattening butchers foals from 6 - 12 months]. (Fr) Comparaison de trois sources azotees: tourteau de soja, lupin, feverole pour l'engraissement du poulain de boucherie de 6 a 12 mois. Trillaud-Geyl, C. (Ministere de l'Agriculture, Pompadour (France). Station Experimentale des Haras); Bigot, G.; Martin-Rosset, W. *Bulletin d'Information et de Liaison Chevaux Lourds (France)* (1988) (no. 3) p. 35-42.
foals; fattening; soybean meal; lupinus; vicia faba; nutritive value; weight gain, growth rate, meat yield; horse meat

89-030878 The effect of different intensity of soil cultivation in crop rotations on the chemical properties of chernozem. (Cs). Vliv ruzne intenzity zpracovani pudy v osevnich postupech na chemicke vlastnosti cernozeme. Rozsypal, R.; Suskevic, M. (Vyzkumny Ustav Rostlinne Vyroby, Prague-Ruzyne (Czechoslovakia)). *Rostlinna Vyroba - UVTIZ (Czechoslovakia)* ISSN 0370-663X. (Oct 1987) v. 33(10) p. 1105-1113. 8 tables, 15 ref. Summaries (Cs, De, En, Ru).
hordeum vulgare; beta vulgaris; zea mays; vicia faba; soil chemistry; chernozems; zero tillage, ploughing, rotational cropping; monoculture; ph; phosphorus, potassium, trials

89-031071 Nitrogen fixation and yield of faba bean, lentil and chickpea in response to selected agricultural practices in Egypt. (En). Abdel-Dayem, M. (Agricultural Research Center, Giza (Egypt)). Soils and Water Research Inst.); Hassan, M.F.; Hamdi, Y.A.; Abdel-Ghaffar, A.S. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 189-204. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 36 refs.; Summary (En).
vicia faba; lens culinaris; cicer arietinum; nitrogen fixation; egypt; crop yield, fertilizer application, herbicides

89-031072 Translocation and utilization of nitrogen by pulses. (En). Herridge, D.F. (New South Wales Dept. of Agriculture, Tamworth, NSW (Australia). Agricultural Research Centre); Sudin, M.N.; Pate, J.S.; Peoples, M.B. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 793-800. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 32 refs.; Summary (En).
vicia faba; cicer arietinum; lens culinaris; pisum sativum; glycine max; nitrogen fixation; nitrogen; translocation

89-031078 Role of inoculants in improving nitrogen fixation in legumes. (En). Clark, K.W. (Manitoba Univ., Winnipeg (Canada). Dept. of Plant Science); Brockwell, J.; Thompson, J.A. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 731-743. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 36 refs.; Summary (En).
lens culinaris; pisum sativum; vicia faba; nitrogen fixation; inoculation

89-031083 Environmental effects on nitrogen fixation. (En). Sprent, J.I. (Dundee Univ. (UK). Dept. of Biological Sciences); Stephens, J.H.; Rupela, O.P. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 801-810. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 34 refs.; Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; nitrogen fixation; environmental conditions

89-031169 Soil fertility requirements of pea, lentil, chickpea and faba bean. (En). Mahler, R.L. (Idaho Univ., Moscow, ID (USA). Dept. of Plant, Soil and Entomological Sciences); Saxena, M.C.; Aeschlimann, J. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 279-289. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (76 refs.); Summary (En).
pisum sativum; lens culinaris; cicer arietinum; vicia faba; soil fertility; plant requirements; root nodulation; fertilizer application

89-031590 Treatments for reducing total vicine in Egyptian faba bean (Giza 2 variety). (En). Abd Allah, M.A. (Ain Shams Univ., Cairo (Egypt). Food Science Dept.); Foda, Y.H.; Abu Salem, F.M.; Abd Allah, Z.S. *Plant Foods for Human Nutrition (Netherlands)* ISSN 0377-3205. (1988) v. 38(3) p. 201-210. 10 refs.; Summary (En).
vicia faba; poisoning; glucosides; egypt; foodborne diseases; soaking

89-031712 [Nutritional utilization of faba beans, lentils and chickpeas in growing rats. Effects of intestinal microflora on nitrogen digestion in the large intestine]. (Fr) Utilisation nutritionnelle de la feve, de la lentille et du pois chiche chez le rat en croissance. Influence de la flore intestinale sur la digestion azotee dans le gros intestin. Achi, T. Universite de Clermont-Ferrand-2 (France). UER Scientifique et Technique. These (Docteur-Ingenieur). Clermont-Ferrand (France). 9 Dec 1987. 94 p. 58 tables, 31 graphs. Bibliography. Summary (Fr). * INRA-CNRZ, Unite Centrale de Documentation, Domaine de Vilvert, 78350 Jouy-en-Josas (France)
vicia faba; lens culinaris; cicer arietinum; digestibility; rats; microbial flora, intestines; digestion; protein metabolism, amino acids; growth rate, feed conversion efficiency; specific pathogen free state; digestible protein; protein quality, protein content; casein

89-031713 Formulation and characteristics of new recipes of Egyptian patti beans (Falafel). (En). Ziena, H.M. (Alexandria Univ., El Chatby (Egypt). Dept. of Agricultural Industries). Abdel-Aal, M.H.; Youssef, M.M. *Plant Foods for Human Nutrition (Netherlands)* ISSN 0377-3205. (1988) v. 38(3) p. 225-234. 16 refs.; Summary (En).
vicia faba; soybean products; egypt; cooking; organoleptic properties; digestibility; composition

89-031714 Utilization of food legumes in human nutrition. (En). Newman, C.W. (Montana State Univ., Bozeman, MT (USA). Dept. of Animal and Range Science); Newman, R.K.; Lockerman, R.H. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 405-411. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. 4 refs.; Summary (En).
pisum sativum; vicia faba; lens culinaris; cicer arietinum; nutritive value; processing

89-031855 Formulation, acceptability, chemical composition and in vitro digestibility of novel snack food and meat ball analogue. (En). Youssef, M.M. (Alexandria Univ., El-Chatby (Egypt). Food Science and Technology Dept.). *Plant Foods for Human Nutrition (Netherlands)* ISSN 0377-3205. (1988). v. 38(3) p. 243-249. 20 refs.; Summary (En).
meat substitutes; soybean products; vicia faba; organoleptic properties; composition

89-031919 Future potential of pulses for use in animal feeds. (En). Marquardt, R.R. (Manitoba Univ., Winnipeg (Canada). Dept. of Animal Science); Bell, J.M. Summerfield, R.J. (Reading Univ. (UK). Dept. of Agriculture). World crops: cool season food legumes. ISBN 90-247-3641-2. Dordrecht (Netherlands). Kluwer Academic Publishers. 1988. p. 421-443. Current Plant Science and Biotechnology in Agriculture (Netherlands). no. 5. Bibliography (96 refs.); Summary (En).
pisum sativum; lens culinaris; vicia faba; cicer arietinum; feeds; composition

89-032227 Induction of micronuclei in Vicia faba root tips treated with heavy metals (cadmium and chromium) in the presence of NTA. (En). De Marco, A. (Universita La Sapienza, Roma (Italy). Centro di Genetica Evoluzionistica CNR); Paglialunga, S.; Rizzoni, M.; Testa, A.; Trinca, S. *Mutation Research (Netherlands)* ISSN 0165-1218. (1988) v. 206(3) p. 311-315. 18 refs.; Summary (En).
vicia faba; cadmium; chromium, pollutants; environmental effects

89-033877 Alternative crops and their place in Nordic cropping systems. (Da) Alternative afgroeder og deres indplacering i nordiske dyrkningssystemer. Jacobsen, S.E. (Kgl. Veterinaer- og Landbhoeiskole, Koebenhavn (Denmark). Inst. for Landbrugets Plantekultur). Nordic post-graduate course in plant production science. Ninth course: agroecosystems, cropping systems and crop rotations. Vol. 2. Niende nordiska forskarkursen i vaextodling-plantekultur. Agroekosystem, odlingssystem och vaextfoeljder. Garpenberg den 29 februari - 4 mars 1988. Vol. 2. Garpenberg (Sweden). Sveriges Lantbruksuniv. 1988. vp. 18 ref. Summary (En). *SI
pisum sativum; cereals; vicia faba; glycine max; phaseolus vulgaris, lupinus albus, lupinus luteus; lupinus mutabilis; lupinus angustifolius, linum usitatissimum; chenopodium quinoa; fagopyrum esculentum; surpluses; uses; starch; plant oils; plant proteins; alcohols; fuel crops, rotational cropping; fungi; noxious animals; weeds

89-034203 Contributions to the seed production technique for garden broad beans. (Ro). Contributii la stabilirea tehnologiei de producere a semintelor la bobul de gradina. Eisler, V.; Moldovan, V. (Institutul de Cercetari pentru Legumicultura si Floricultura, Vidra (Romania)). *Analele Institutelor de Cercetari pentru Legumicultura si Floricultura, Vidra (Romania)* (1987). v. 8 p. 263-268. 6 tables; Summaries (En, Fr).
The paper shows the results of the experiments carried out in order to determine the seed production technique for garden broad beans. For three years (1983-1985) the authors have studied different cultivars, plant densities, seeding periods and the most efficient fertilization formulas. In the end the authors make recommendations concerning the best plant densities, seeding periods and fertilizer doses. *vicia faba; seed production; technology transfer; varieties; spacing; timing*

89-034853 In situ induction of G-bands and macrocoils in plant chromosomes. (En). Yang, X.; Zhang, Z. (Nankai Univ., Tianjin (China)). *Hereditas (Sweden)* ISSN 0018-0661. (15 Sep 1988). v. 109(1) p. 45-51. 18 ref. Summary (En).
secale cereale; hordeum vulgare; vicia faba; chromosomes

89-035073 Raw protein level in seed of field bean (Vicia faba L.), 1 : Variability of raw protein levels and its causes. (De). Rohproteingehalt im Samen der Ackerbohne (Vicia faba L.) I. Mitteilung: Variabilitaet des Rohproteingehaltes und ihre Ursachen. Scheybal, S. (VEG. Pflanzenproduktion, Gotha (German D.R.)). *Archiv fuer Zuechtungsforschung (German D.R.)* ISSN 0365-8406. (1988). v. 18(3) p. 149-158. 2 ill., 9 tables; 8 refs. Summaries (De, En, Ru).
vicia faba; protein content; environmental conditions; crossbreds; selection

89-035074 Breeding of field bean (Vicia faba L.) with early maturity. (En). Aikaisia tuleentuvan haerkaepavun (Vicia faba L.) jalostus. Hovinen, S. (Hankkija Plant Breeding Inst., Hyrylae (Finland)). *Journal of Agricultural Science in Finland (Finland)* ISSN 0782-4386. (1988). v. 60(4) p. 261-267. 3 graphs; 22 ref. Summaries (En, Fi).
vicia faba; plant breeding; early maturation; adaptation

89-035079 Research concerning the peas and broad beans resistance to low temperatures. (Ro) Cercetari privind rezistenta la temperaturi scazute la mazare si bob. Scurtu, I.; Ionescu, C.; Scurtu, M.; Ionescu, A.; Mirghis, R. (Institutul de Cercetari pentru Legumicultura si Floricultura, Vidra (Romania)). *Analele Institutului de Cercetari pentru Legumicultura si Floricultura, Vidra (Romania)* (1986) v. 8 p. 187-203. 2 ill.; 10 tables; 7 ref.; Summaries (En, Fr)
pisum sativum; vicia faba; temperature resistance; cold; plant anatomy; growth chambers

89-035631 Epidermal abscisic acid [of Vicia faba] as detected by immunofluorescence: Effect of proline. (En) Curvetto, N.R. (Universidad nacional del Sur, CERZOS-CONICET, Bahia Blanca (Argentina) Dept. de Agronomia); Delmastro, S.E.; Brevedan, R.R. *Plant and Cell Physiology (Japan)* ISSN 0032-0781. (Dec 1986) v. 27(8) p. 1469-1474. 2 tables; 1 plate; 23 ref.; Summary (En)
vicia faba; leaves; epidermis; aba; immunofluorescence; proline

89-035632 Abscisic acid-induced stomatal closure in Vicia faba epidermal strips: Excretion of solutes from guard cells and increase in elastic modulus of guard cell wall. (En) Kondo, N. (National Inst. of Agro-Environmental Sciences, Tsukuba, Ibaraki (Japan)); Maruta, I. *Plant and Cell Physiology (Japan)* ISSN 0032-0781. (Mar 1987) v. 28(2) p. 355-364. 3 tables; 5 plates; 42 ref.; Summary (En)
vicia faba; stomata; aba; kinesis; osmotic pressure

89-035888 Dioxindole-3-acetic acid conjugates formation from indole-3-acetylaspartic acid in Vicia seedlings. (En) Tsurumi, S. (Kobe Univ. (Japan)); Wada, S. *Plant and Cell Physiology (Japan)* ISSN 0032-0781. (Dec 1986) v. 27(8) p. 1513-1522. 10 plates; 39 ref.; Summary (En)
vicia faba; seedlings; aspartic acid; biochemistry; iaa; anabolism

89-036017 Dry matter accumulation at specific pod positions on field bean (Vicia faba L.) plants and possible relations with indoleacetic acid and abscisic acid levels. (En) Peter, M. (Hohenheim Univ., Stuttgart (Germany, F.R.) Inst. fuer Pflanzenbau); Authammer, W.; Bangerth, F. *Plant Growth Regulation (Netherlands)* ISSN 0167-6903. (1988) v. 7(4) p. 261-270. 20 refs.; Summary (En)
vicia faba; aba; iaa; seeds; growth

89-036313 [Guidance in plant protection in agricultural and special crops]. (Da) Vejledning i plantebeskyttelse i landbrugs- og specialafgroeder. Nielsen, G.C. (ed.). Statens Planteavlsforsoeg, Copenhagen (Denmark). Copenhagen (Denmark). SPF. 1987. 182 p. 22 ill.; 10 tables
denmark; cereals; rape; pisum sativum; vicia faba; potatoes; cabbages; daucus carota; beetroot; trifolium; carum carvi; linum usitatissimum; scorzonera; spinacia oleracea; papaver somniferum; zea mays; medicago sativa; allium cepa; plant protection; plant diseases; pests of plants; disease control; pest control; weeds; symptoms; epidemiology

89-038155 [Use of field beans and peas in the fattening of bulls]. (De) Einsatz von Ackerbohnen und Ackererbsen in der Bullenmast. Leitgeb, R. (Universitaet fuer Bodenkultur, Vienna (Austria) Inst. fuer Nutztierwissenschaften). *Deutsche Gesellschaft fuer Zuechtungskunde e.V. und Gesellschaft fuer Tierzuchtwissenschaft, Proceedings (Germany, F.R.)* (1988) (no.B2 9) 5 p. 5 ill.; 1 table; 4 ref. Summary (De). [Vortragstagung Deutsche Gesellschaft fuer Zuechtungskunde Stuttgart-Hohenheim (Germany, F.R.) 17-18 Sep 1987.] *DE
beef cattle; fattening; vicia faba; pisum sativum; bulls; carcasses; quality

89-038223 [Feeding horsebeans, peas and rape meal]. (De) Fuetterung von Ackerbohnen, Erbsen und Rapsextraktionsschrot. Niess, E. (Bonn Univ. (Germany, F.R.) Inst. fuer Tierernaehrung). *Tierzuechter (Germany, F.R.)* ISSN 0040-7364. (1987) v. 39(8) p. 345-347. 3 ill.; 4 tables
swine; layer chickens; vicia faba; pisum sativum; rapeseed meal; soybean meal; animal feeding; nutrient content; glycosides; pollutants; amino acids

89-038228 Native peas and beans as protein sources in pig diets. (En) Hanrahan, T.J. (Foras Taluntais, Dublin (Ireland) Fermoy). *Farm and Food Research (Ireland)* ISSN 0046-3302. (Oct 1988) v. 19(5) p. 7-8. 2 tables; Summary (En)
swine; fattening; feeds; pisum sativum; vicia faba; ireland

89-041601 Studies on amylase inhibitors in some Egyptian legume seeds. (En) Shekib, L.A. (Alexandria Univ. (Egypt) Faculty of Agriculture, Food Science and Technology Dept.); El-Iraqui, S.M.; Abo-Bakr, T.M. *Plant Foods for Human Nutrition (Netherlands)* ISSN 0377-3205. (1988) v. 38(4) p. 325-332. 17 refs.; Summary (En)
vicia faba; cowpeas; lens culinaris; cicer arietinum; amylases; egypt; heat treatment; soaking; germination; enzyme inhibitors

89-043038 [Guaranteed quantities for peas, beans and lupins (legumes)]. (De) Garantiemengenregelung fuer Erbsen, Puffbohnen, Ackerbohnen und Suesslupinen (Huelsenfruechte). Derenthal, H. *AID Informationen. Arbeitsunterlagen fuer Berufsbildung und Beratung (Germany, F.R.)* ISSN 0176-9936. (1988) v. 37(19) p. 1-6
european communities; production controls; pisum sativum; regulations; producer prices; vicia faba; lupinus; food production

89-044951 Joint cultivation of peas and supporting plants. (Sv) Samodling av aerter och stoedvaexter. Bengtsson, A.; Larsson, S. (Sveriges Lantbruksuniv., Uppsala (Sweden) Inst. foer Vaextodlingslaera). ISBN 91-576-3670-2. Uppsala (Sweden). Sveriges Lantbruksuniv. 1988. 37 p.
Vaextodling (Uppsala 1988) (Sweden) ISSN 1100-1151. no. 4. 4 ref. Summaries (En, Sv). *SE
pisum sativum; protective plants; mixed cropping; oats; barley; vicia faba; brassica alba; rape; seed mixtures; inoculation; nitrogen metabolism

89-045416 Study on the biotechnology applied in crop breeding Report 2: the effect of exogenous DNA on the cytology and isozyme in Vicia faba. (Ch) Zhu Xiuying; Chen Zhang; Lu Qin (Fujian Agricultural Coll., Fuzhou (China) Inst. of Genetics and Crop Breeding). *Journal of Fujian Agricultural College (China)* ISSN 0427-7082. (Mar 1988) v. 17(1) p. 15-25. 10 ill.; 7 tables; 11 ref. Summaries (Ch, En)
vicia faba; dna; biotechnology; plant breeding; cytology; enzyme activity; roots; buds; chromosomes; esterases; oxidoreductases; isoenzymes

89-045895 Localization of abscisic acid binding sites in epidemal tissue by the peroxidase-antiperoxidase technique. (En) Curvetto, N.; Delmastro, S.; Brevedan, R. (Universidad Nacional del Sur, Bahia Blanca (Argentina) Dept. de Agronomia). *Anales de Edafologia y Agrobiologia (Spain)* ISSN 0365-1797. (May-Jun 1987) v. 46(5-6) p. 721-729. Ills.; 1 numerical table; 35 ref. Summaries (En, Es)
vicia faba; aba; epidermis; water deprivation; stress; peroxidases; proline

89-045896 Biological values of maternally differentiated field bean seeds (Vicia faba L. ssp. minor). (Pl) Wartosc biologiczna maternalnie zroznicowanych nasion bobiku (Vicia faba L. ssp. minor). Gorecki, R.; Sojka, E. (Akademia Rolniczo-Techniczna, Olsztyn (Poland)). Polska Akademia Nauk, Warszawa (Poland) Wydzial Nauk Rolniczych i Lesnych. Problems of seed biology and seed production. Zagadnienia biologii nasion i nasiennictwa. ISBN 83-01-03321. Warszawa (Poland). Panstwowe Wydawnictwo Naukowe. 1987. p. 151, 168-181. Zeszyty Problemowe Postepow Nauk Rolniczych (Poland). ISSN 0084-5477. no. 240. 8 tables; 29 ref. Summaries (En, Ru).
The quality of broad been seeds was found to be greatly affected by stalk position, those from the bottom and middle part of the plant showing better quality than those from the upper part. Rainfall and sunshine hours during plant growth were found to have a substantial modifying effect in this respect. *vicia faba; seed; inflorescences; viability; germinability; proteins; protein content; enzyme inhibitors; proteases; enzymic activity; protein quality; seeds; insolation; rain*

89-046091 Nodule specific polypeptides of broadbean (Vicia faba L.). (En). Mohapatra, S.S.; Perlick, A.; Puhler, A. *Symbiosis (USA)* ISSN 0334-5114. (1987) v. 3(3) p. 219-232. ill. references. *US (DNAL QH548.S9).
vicia faba; molecular biology; in vivo experimentation; root nodulation; peptides; nitrogen fixation; genes

89-046421 Survey of active ingredients of pesticides used on arable farm crops during the production year 1987. (De) Erhebungen ueber Art und Menge der waehrend des Erntejahres 1987 in verschiedenen Ackerbaukulturen angewendeten Wirkstoffe von Pflanzenschutzmitteln. Hille, M. (Biologische Bundesanstalt fuer Land- und Forstwirtschaft, Braunschweig (Germany, F.R.) Dienststelle fuer Wirtschaftliche Fragen und Rechtsangelegenheiten im Pflanzenschutz). *Mitteilungen aus der Biologischen Bundesanstalt fuer Land-und Forstwirtschaft Berlin-Dahlem (Germany, F.R.)* ISSN 0067-5849. (1988). (no.243) p. 1-67. 25 tables; 12 ref. Summaries (De, En)
In order to assess the influence of active ingredients of pesticides on the soil data are needed on the amount of a certain active ingredient applied to a particular arable farm crop. Such data were drawn from 500 farms by a special questionnaire on the application of pesticides during the production year 1987. The results show distinct differences as to the amount of particular active ingredients and to the frequency of their application in certain crops. *zea mays; cereals; brassica rapa; beta; solanum tuberosum; vicia faba; grasslands; pastures; herbicides; fungicides; insecticides; application rates; german federal republic*

89-046980 Studies on the hymenopterous parasitoids of Liriomyza trifolii (Burgess) (Dipt., Agromyzidae) on broad beans in Egypt. (En). Shahein, A. (Zagazig Univ. (Egypt). Faculty of Agriculture); El-Maghraby, M.M.A. *Journal of Applied Entomology (Germany, F.R.)*. ISSN 0044-2240. (1988) v. 106(4) p. 377-380. 2 tables; 11 ref. Summaries (De, En).
The relationship between infestation of Liriomyza trifolii (Burgess) and their parasitoids in the field of broad beans in Zagazig region, Egypt was studied. The distribution density of L. trifolii mines corresponded sharply with the level of the same plant. Generally there were no or little mines on the upper level, while the middle and lower one were highly infested and reached its maximum at the late season of plantation. The percentage of parasitoids began with a low value and reached also its maximum by 3rd and 5th collection. Both, Diglyphus sp. (Hym., Eulophidae) and Opius sp. (Hym., Braconidae) were the dominate species and more effective against L. trifolii than the other three parasitoids namely Hemiptarsenus sp. (Hym., Eulophidae), Halticoptera sp. (Hym., Pteromalidae) and Achrysocharella sp. (Hym., Eulophidae) which appeared generally with neglected percentages. The percentage of the parasitoids occurrence was enough to keep the population size of L. trifolii beyond the economic level. *vicia faba; liriomyza; hymenoptera; biological control; arthropods; parasites; egypt*

89-047417 Antigen preparation from plant tissues of pathogenic mycoplasms (MLO) causing flavescence doree disease. (Fr). Preparation des antigenes des mycoplasmes (MLO) pathogenes de la flavescence doree, a partir de tissus vegetaux. Caudwell, A. (Institut National de la Recherche Agronomique, Dijon Cedex (France) Station de Recherches sur les Mycoplasmes et les Arbovirus des Plantes); Kuszala, C.; Fleury, A. *Journal of Phytopathology (Germany, F.R.)* ISSN 0931-1785. (1988) v. 123(2) p. 124-231. 2 ill.; 21 ref. Summaries (De, En, Fr)
Extraction and purification of plant yellow's pathogen mycoplasms (MLO) from plant tissues is a difficult problem. It concerns indeed non cultivable, heterogeneous and fragile organisms which are localized in the fibrous and resistant phloem tissue. In a work directed by an infectivity test by leafhopper injection, our laboratory investigated the best host plant and the best extraction method for this type of pathogen. Broad

bean, Vicia faba gave better extracts than Vitis vinifera. Stems are better than petioles or lamina. The best results were obtained with the top region of the stem, at the level where symptoms are apparent on young plants. The most efficient mincing method is achieved with razorblades moved alternatively by the rapid vertical movement of an electric knife. The extraction medium already published (Caudwell and Kuszala 1986) has to be modified for plants by various additional components, histidine buffer, antioxidizers (glutathion 0.2 mg per ml) and polymers (0.5 to 1 p 100 PVP or Polyclar 1-2 p 100 PEG). 1 g of plant infected tissue is minced in 4 ml of medium. The extracts are filtered through a 100 mesh nylon cloth. After this stage the purification method goes parallel to that used for leafhopper extracts (Caudwell and Kuszala 1986). It is possible to obtain 4 x 10(6) infectious units from 1 g of broad bean stem (for calculation, see Caudwell 1977). The possibility to extract MLO, either from infectious leafhopper or from diseased plants enabled cross immunological assays involving antigens from one host and antibodies directed towards the other host antigens. The first step was the successful ISEM visualization of the MLOs (Caudwell et al. 1982), the second is the immunoenzymatic MLO-detection (Boudin et al. 1986). *vicia faba; mycoplasma; antigens; methods*

89-051991 [Are earthworms a growth factors?]. (De). Der Regenwurm, ein Wachstumsfaktor? Durst, L.; Kahnt, G. *DLG-Mitteilungen (Germany, F.R.)* ISSN 0341-0412. (1988). v. 103(17). p. 910-911. 1 ill., 2 tables. Summary (De).
tape; earthworms; tillage; soil structure; soil fauna; zea mays; medicago sativa; vicia faba

89-054954 [Regional trials with grain maize, peas, field beans and potatoes, Hesse 1986]. (De). Landesversuche mit Koernermais, Koernererbsen, Ackerbohnen und Kartoffeln in Hessen 1986. Hessisches Landesamt fuer Ernaehrung, Landwirtschaft und Landentwicklung, Kassel (Germany, F.R.); Hessische Landwirtschaftliche Versuchsanstalt, Kassel (Germany, F.R.). Kassel (Germany, F.R.). 1986. 87 p.
Landwirtschaftlicher Informationsdienst (Germany, F.R.). ISSN 0344-2152. no. 27. *Zentralbibliothek der Landbauwissenschaft, Bonn (Germany, F.R.)
zea mays; vicia faba; pisum sativum; solanum tuberosum; hesse; trials

89-056056 Influence of different crop rotations and preceding-crop effects on yield development on calcic chernozem. (De). Einfluss unterschiedlicher Fruchtfolgen und Vorfruchteffekte auf die Ertragsentwicklung eines Loess-Schwarzerdestandortes. Koeppen, D.; Boelke, U. (Forschungszentrum fuer Bodenfruchtbarkeit, Muencheberg (German D.R.)). *Tagungsbericht – Akademie der Landwirtschaftswissenschaften der DDR (German D.R.)* ISSN 0138-2659. (1988). (no. 261). p. 397-401. 1 table. Summaries (De, En, Ru). [Symposium: Crop rotation research and crop rotation design. Halle (German D.R.), 26-28 May 1987.]
zea mays; triticum; winter crops; potatoes; sugar beet; vicia faba; chernozems; rotational cropping; soil fertility; crop yield

89-056457 Genetic studies using isoenzymes in Vicia faba L. (En). Adham, Y.J. London Univ. (UK). Wye Coll. Thesis (Ph. D.). 1982. 113 p. 56 tables, 10 fig., 5 plates. Bibliography (106 ref.). Summary (En). *ICARDA, Aleppo (Syria)
The formal genetics of esterase isoenzymes in young leaves of Vicia faba L. were investigated following separation by electrophoresis in polyacrylamide gels. The faba bean lines studied revealed a total of 26 bands, which occurred at widely different frequencies in each line. The genetics of 10 of the bands were controlled by five genes designated as A, B, C, D, and E, segregating in appropriate Mendelian ratios. Gene A possessed two alleles, genes B and C three alleles each, with all 8 alleles producing a band at a characteristic Rf value. All genotypes for all three of these genes were identified from all populations investigated. Genes D and E were each detected by a single active allele, together with an inferred inactive or null allele, and therefore gave Mendelian ratios appropriate to genes showing complete dominance. Experiments were performed, using these genes as markers to study self-and-cross-pollination patterns. The benefits of using semi-dominant genes (i.e. A, B and C) for such studies were clearly revealed. The first experiment, using cages to prevent contamination, enclosing beehives to ensure at least some cross-pollination, showed that low bean densities gave higher out-cross values, presumably by allowing better access of bees to lower inflorescence. The second experiment, under open field conditions, permitted cross-pollination to be detected with two alternative pollen parents (which possessed different allelic frequencies). This experiment showed a high degree of bee movement between plots and revealed a substantial reduction in this movement when the border between plots considered of either a cereal or a vertical cotton screen, compared with the control treatment of continuous beans. Conventional methods for measuring out-crossing use recessive markers such as white hilum or white flower and need offspring plants to be grown for a long period before assessment. These isoenzyme genes offer increased precision, use variation already present in most populations, and can be assessed using seedlings. *vicia faba; genetics; isoenzymes; pollination; genes; hives; cereals; inflorescences; cross pollination; self pollination; outbreeding*

89-056793 Nocturnal heat budget of a broad bean leaf during mid-winter. (Ja). Takatchi, M. (Osaka Prefectural Univ., Sakai (Japan). Coll. of Agriculture). *Journal of Agricultural Meteorology (Japan)* ISSN 0021-8588. (Sep 1987). v. 43(2). p. 113-120. 13 ref., Summary (En).
vicia faba; leaves; heat transfer; winter; temperature resistance

89-057304 Regulation of apoplastic pH in source leaves of Vicia faba by gibberellic acid. (En). Alons, B.; Daie, J.; Wyse, R.E. *Plant physiology (USA)* ISSN 0032-0889. (Oct 1988). v. 88(2). p. 367-369. references. *US (DNAL 450 P692).
vicia faba; leaves; ga; ph; growing media

89-058648 Bionomics of Bruchus dentipes Baudi and varietal resistance in Vicia faba L. (En). Tahhan, O. Reading Univ. (UK). Department of Agriculture and Horticulture. Thesis (Ph. D.). 1986. 229 p. 34 tables, 50 ref., 20 plates. Bibliography (132 ref.). Summary (En). *QV.
A survey, made in the market and in farmers' fields in the main growing areas of faba bean population in Syria, showed that Bruchus dentipes is the dominant storage pest of faba bean and decreases the selling price of dry seeds. Four findings from the bionomic studies were important for the varietal resistance studies: (a) feeding on pollen and nectar by both sexes is necessary before and during the oviposition period; (b) the start and peak of oviposition were both affected by crop phenology (mainly flowering and pod setting) and temperature; (c) gravid females were easily maintained in the winter during the quiescent period under controlled conditions; (d) adults were shown to fly well and for at least 600 m. A seed bulk division method was evaluated and used for screening. A series of screening experiments involving 1184 accessions indicated that phenological resistance was present. The accessions (BPI. 33 and ILB 1814) were tested under four levels of infestation, with three sowing dates and at two different times of adult release compared with natural infestation. BPI. 33 maintained its comparative resistance (c. 50%) under these different conditions except when adults were released, when both accessions carried pods simultaneously. This confirmed that the resistance of BPI. 33 was phenological, related to late flowering and late pod setting. *vicia faba; bruchus; ecology; varieties; biological development; surveys; pest control; selection*

89-059624 Allelopathic effects of Silybum marianum Gaertn. (En). Inam, B. (Pakistan Museum of Natural History, Islamabad); Hussain, F. (University of Peshawar (Pakistan). Dept. of Botany). *Sarhad Journal of Agriculture (Pakistan)* (Aug. 1988). v. 4(4). p. 481-494. 6 ills., 4 tables, 13 ref., Summary (En).
medicago sativa; compositae; allelopathy; polygonaceae; cynodon dactylon; vicia faba; cannabis sativa; germination; growth

89-064008 Selectivity of the interaction of Rhizobium leguminosarum polysaccharides with host-plant lectins. (En, Ru). Kosenko, L.V.; Kovalevskaya, E.M.; Zakharova, E.Ya. *Microbiology (USA).* ISSN 0026-2617. (Jan 1988). v. 56(4). p. 555-559. references. Translated from: Mikrobiologiya, v. 56 (4), 1987, p. 698-702. (448.3 M582). *US (DNAL 448.3 M582AE).
vicia faba; pisum sativum; vicia sativa; lens culinaris; rhizobium; polysaccharides; lectins

89-064193 Influence of climatic factors on the phenology of faba bean (Vicia faba (L.)). (Fr). Influence des facteurs climatiques sur la phenologie de la feverole (Vicia faba (L.)). Poulain, D. (Laboratoire d'Agronomie annexe a la Chaire de Phytotechnie INRA, Rennes (France)); Keller, S.; Guen, J. Le; Berthelem, P. *Agricultural and Forest Meteorology (Netherlands)* ISSN 0168-1923. (1989). v. 45(3). p. 195-214. 17 refs.; Summary (En, Fr).
vicia faba; phenology

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legumes; nectar; flowers; plant production; egypt; vicia faba; phaseolus vulgaris; lupinus termis; nectaries

89-068364 Effect of kinetin cycocel and some micronutrients on the accumulation of some micronutrients in Vicia faba [Egypt]. (En). Ibrahim, A.A. (Cairo Univ., Fayoum (Egypt). Faculty of Agriculture); El-Labban, A.T. *Annals of Agricultural Science, Zagazig Univ. (Egypt).* (Jun 1986). v. 24(2). p. 815-828. 4 ill., 3 tables; 15 ref. Summaries (Ar, En). Issued 1989.
vicia faba; trace elements; chlormequat; egypt; seeds; weight; crop yield

89-068365 Effect of using some chemicals as biostimulants on the growth and yield of faba bean [Egypt]. (En). Abd-El-Salam, S.A. (Ministry of Agriculture, Cairo (Egypt). Field Crops Research Inst.); El-Hyatemy, Y.Y. *Agricultural Research Review (Egypt).* (1985). v. 63(7). p. 3-15. 5 tables, 25 ref. Summaries (Ar, En). Issued 1989.
vicia faba; plant growth substances; growth; crop yield; composition; egypt

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vicia faba; spacing; fertilizers; orobanche; crop yield; egypt; application methods; parasitic plants; weed control

89-068367 Occurrence of castasterone, brassinolide and methyl 4-chloroindole-3-acetate in immature Vicia faba seeds. (Ko). Park, K.H. (Chonnam National Univ., Kwangju (Korea R.). Dept. of Food Science and Technology). *Journal of the Korean Agricultural Chemical Society (Korea R.)* ISSN 0368-2897. (Mar 1988). v. 31(1). p. 106-113. 10 illus.; 32 ref. Summaries (En, Ko).
The rice lamina inclination test indicated the presence of brassinosteroid-like active substances in immature Vicia faba seeds. Two of these were identified as castasterone and brassinolide by GC/MS and GC/SIM, respectively. Another active principle was identified as methyl 4-chloroindole-3-acetate by GC/MS and HPLC. *vicia faba; plant growth substances; identification*

89-069082 Effect of rhizobium inocula combined with nitrogen on grain yield of faba bean (Vicia faba)in Noba region, Egypt. (En) Maatouk, M.A. (Minia Univ (Egypt) Faculty of Agriculture), Abd El-Maksoud, H.K., Elneklawy, A.S. *Annals of Agricultural Science, Moshtohor (Egypt)* (1985) v. 23(2) p. 923-930. 3 tables, 13 ref. Summaries (Ar, En). Issued 1989
vicia faba, nitrogen fertilizers, rhizobium, seeds, egypt, crop yield, nitrogen, phosphorus

89-069083 The effect of spraying with some micronutrient elements on growth and yield of broad bean (Vicia faba, L.) [Egypt]. (En) Gomaa, M.A., Zied, H.A. (Helwan Univ, Alexandria (Egypt) Faculty of Cotton Sciences), El-Araby, E.I. *Annals of Agricultural Science, Zagazig Univ. (Egypt)* (Jun 1986) v. 24(2) p. 657-666. 5 tables, 14 ref. Summaries (Ar, En). Issued 1989
vicia faba, micronutrient fertilizers, growth, egypt, crop yield, foliar application

89-069084 Effect of high levels of phosphorus and zinc application on broad bean (Vicia faba) grown on calcareous soil [Egypt]. (En) Abdel-Aziz, I.M. (Ministry of Agriculture, Cairo (Egypt) Soils and Water Research Inst.), Awad, S.G., Mahmoud, M.H., Osman, A.O. *Annals of Agricultural Science, Ain Shams Univ. (Egypt)* (1987) v. 32(2) p. 1149-1160. 2 tables, 14 ref. Summaries (Ar, En). Issued 1989
vicia faba, application methods, yield components, calcareous soils, egypt, zinc, phosphate fertilizers, carbohydrate content, protein content

89-069387 Feasibility of intercropping wheat (Triticum durum Dest.) with field bean (Vicia faba L.) under different culture practices [Egypt]. (En) Ali, A.S., Mosaad, A.M., Khalifa, N.I. (Ministry of Agriculture, Cairo (Egypt) Field Crops Research Inst.). *Annals of Agricultural Science, Zagazig Univ. (Egypt)* (Jun 1986) v. 24(2) p. 727-747. 8 tables, 19 ref. Summaries (Ar, En). Issued 1989
triticum durum, vicia faba, intercropping, egypt, crop yield, sowing

89-069828 Size and number of nucleoli in nuclei of broad bean (Vicia faba) cells after colchicine treatment. (En) Sekerka, V.; Kubica, S. (Komenskeho Univ., Bratislava (Czechoslovakia) Prirodovedecka Fakulta). *Biologia (Czechoslovakia)* ISSN 0006-3088 (Mar 1988) v. 43(3) p. 191-200. 5 ill., 1 table, 22 ref. Summaries (En, Ru, Sk)
vicia faba, roots, meristems, nucleus, dna, chromatin, colchicine

89-069829 Heterosis and combining ability in some top crosses of field beans (Vicia faba, L.) [Egypt]. (En) El-Hosary, A.A. (Zagazig Univ., Moshtohor (Egypt) Faculty of Agriculture), Dawwam, H.A.; Nawar, A.A. *Annals of Agricultural Science, Zagazig Univ. (Egypt)* (Jun 1986) v. 24(2) p. 775-786. 4 tables, 11 ref. Summaries (Ar, En). Issued 1989
vicia faba, hybrid vigour, egypt, combining ability, crop yield, seeds, husking

89-069830 Heterotic performance and combining ability in diallel cross among broad bean Vicia faba L. [Egypt]. (En) Mahmoud, S.A. (Ministry of Agriculture, Cairo (Egypt) Field Crops Research Inst.), Al-Ayobi, D.Y. *Annals of Agricultural Science, Ain Shams Univ. (Egypt)* (1987) v. 32(2) p. 1401-1410. 4tables, 11 ref. Summaries (Ar, En). Issued 1989
vicia faba, hybrid vigour, combining ability, crop yield, egypt, agronomic characters

89-069831 Evaluation of 167 cultivars of Faba beans (Vicia faba L.). (Gr) Axiologisi 167 poikilion koukion (Vicia faba L.). Roupacias, G.D., Tsaftaris, S.A. (Aristotelion Univ., Thessaloniki (Greece) Dept. of Genetics and Plant Breeding), Podematas, K. (Ministry of Agriculture, Larissa (Greece) Forage Crops Research Inst.). *Georgiki Erevna (Greece)* ISSN 0253-9489 (Nov-Dec 1986) v. 10(2-3) p. 161-170. 3 tables, 10 ref., Summaries (En, Gr)
One hundred and sixty seven faba bean (Vicia faba L.) cultivars were evaluated for plant height, 50% flowering period, number of seeds per pod, 1000 seeds weight, position of the first pod, number of seeds per pod, 1000 seeds weight, position of the first pod, pod set (in percent) and yield (in percent of the contiguous control) for two years in one location (University farm) by the contigous control method. The best nine of these cultivars were further tested for two years in a randomized complete-block design. During the last year evalaation was extended in two locations (University farm and FCRI of Larissa). The results showed that faba bean varieties selected by the contiguous control method maintained their superiority when tested in a replicated design. The best variety (A151) outyielded the control variety Polycarpe by 59% in Thessaloniki and by 64% in Larissa. *vicia faba, varieties, evaluation, greece*

89-070635 The effect of red and far-red light on proton secretion from mesopyhll-cell protoplasts of Vicia faba L. (En) Piwowarczyk, W. (Jagiellonian Univ., Krakow (Poland) Lab. of Physiology and Biochemistry of Plants). *Planta (Germany, F.R.)* ISSN 0032-0935 (1988) v. 173(1) p. 42-45. 3 ill., 15 tables. Summary (En)
vicia faba, protoplasm, ions, secretion, artificial light, pigments

89-070636 Biochemical changes in faba bean plants inoculated with chocolate spot disease [Egypt]. (En) El-Hyatemy, Y.Y. (Ministry of Agriculture, Cairo (Egypt) Field Crops Research Inst.), Farrag, A.M., Khalil, S.A. *Agricultural Research Review (Egypt)* (1985) v. 63(7) p. 17-28. 4 tables, 23 ref. Summaries (Ar, En). Issued 1989
vicia faba, inoculation, spots, biochemistry, egypt, infection, composition

89-070637 Plasma membrane H(+)-ATPase in guard-cell protoplasts from Vicia faba L. (En) Shimazaki, K. (National Inst. of Agro-Environmental Sciences, Tsukuba, Ibaraki (Japan)), Kondo, N. *Plant and Cell Physiology (Japan)* ISSN 0032-0781 (Jul 1987) v. 28(5) p. 893-900. 4 tables, 4 plates, 27 ref., Summary (En)
vicia faba, adenosine triphosphatase, protoplasm, cell structure, cells

89-070638 Isolation and purification of 11S globulins from the seeds of broad beans and peas. (En, Ru) Popello, I.A., Suchkov, V.V., Grinberg, V.Ya., Tolstoguzov, V.B. *Applied biochemistry and microbiology (USA)* ISSN 0003-6838 (Jul 1988) v. 24(1) p. 42-47. ill. ref. Translated from Prikladnaia biokhimiia i mikrobiologiia, v. 24 (1), 1988, p. 50-55 (385 P93). *US (DNAL QH345.A1P73)
vicia faba, pisum sativum, seeds, globulins, purification

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vicia faba, leaves, transferases, isolation, methods

89-070640 Preparation of D-ribulose 5-phosphate catalyzed by extract from broad-bean leaves. (En, Ru) Belyaeva, E.V., Naryshkina, E.M., Doman, N.G. *Applied biochemistry and microbiology (USA)* ISSN 0003-6838 (Sep 1988) v. 24(2) p. 229-233. references. Translated from Prikladnaia biokhimiia i mikrobiologiia, v. 24 (2), 1988, p. 275-279 (385 P93). *US (DNAL QH345.A1P73)
vicia faba, leaves; phosphates, plant extracts, catalytic activity

89-070641 Enzyme assays at the single-cell level: real-time, quantitative, and using natural substrate in solution. (En) Outlaw, W.H. Jr., Springer, S.A., Tarczynski, M.C.
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vicia faba, analysis; physiological functions; cells; enzymic activity; lyases

89-071042 The karyological study of broad bean root tips treated with 9-(RS)-(2,3-dihydroxypropyl) adenine (DHPA). (En) Tomaskova, D. (Vyzkumny Ustav Rostlinne Vyroby, Prague-Ruzyne (Czechoslovakia)); Benes, K.; Holy, A. *Biologia Plantarum (Czechoslovakia)*. ISSN 0006-3134. (Jul 1988) v. 30(4) p. 300-304. 2 graphs, 1 table; 14 ref. Summary (En)
vicia faba, roots, mitosis; cell structure, seedlings; microscopy

89-072106 Ecological studies on Bruchidius incarnatus Boh and its control [Egypt]. (En). El-Gendy, H.O.M. Azhar Univ., Cairo (Egypt). Faculty of Agriculture. Thesis (M.Sc. in Economic Entomology). Cairo (Egypt). 1984. 81 p. 2 ill. 16 tables; ref. p. 68-74; Summaries (Ar, En). *Library, Faculty of Agriculture, Azhar Univ., Egypt.
vicia faba, bruchus; pest insects, egypt, chemical control; photoperiodicity, seeds; ecology; biology

89-072579 In situ detection of MLOs for Solanaceae stolbur and faba bean phyllody by indirect immunofluorescence. (En) Cousin, M.-T.; Dafalla, G.; Demazeau, E.; Theveu, E.; Grosclaude, J. *Journal of Phytopathology (Germany, F.R.)* ISSN 0931-1785. (1989). v. 124(1-4) p. 71-79. 6 ill., 1 table; 18 ref. Summaries (De, En).
MLOs of faba bean phyllody and stolbur diseases were detected by a simple sensitive indirect immunofluorescence technique. Antisera prepared against membrane fractions of diseased plants were used with both 40 mu-thick sections with a freezing microtome and with 7 mum-thick sections prepared from aldehyde-fixed paraffin-embedded plant materials. The technique is highly sensitive, simple to practice and utilizes small quantities of reagants. Specific MLO labelling was obtained using antisera with low titers and containing high proportions of anti-plant antibodies. The ease of using sections from fresh plant material suggests the potential use of the technique for routine indexing and screening of MLO infections. Immunofluorescence on sections from paraffin-embedded plant tissues improved the visualization of labeled MLOs, facilitated the accessibility of antigens, reduced non-specific labelling and allowed more precise localization and interpretation of immunofluorescent reactions.
vicia faba; solanaceae; mycoplasma; identification; immunofluorescence

89-072580 Studies on Ascochyta leaf and pod spot of broad bean in Ninevah province of Iraq. (En) Farhan, M.A. (Hammam Al-Alil Univ., Mosul (Iraq) Faculty of Agriculture); Husain, S.S.; Michail, S.H. *Alexandria Journal of Agricultural Research (Egypt)* (Dec 1985) v. 30(3) p. 1439-1448. 3 ill. 3 tables, 19 ref. Summaries (Ar, En). Issued 1989
vicia faba, mycoses, ascochyta; spots, iraq

89-072825 Effect of the insecticide cypermethrin on the meiosis of Vicia faba [Egypt]. (En) Amer, S.M. (National Research Centre, Cairo (Egypt)), Farah, O.R., Mohamed, F.I. *Annals of Agricultural Science, Ain Shams Univ. (Egypt)* (1987) v. 32(2) p. 1411-1418. 1 ill. fig. 2 tables; 7 ref. Summaries (Ar, En). Issued 1989
vicia faba, meiosis, synthetic pyrethrins, genetic disorders; egypt, chromosomes, cell division, seedlings, flowering

89-073026 Effect of some herbicides on yield of field bean and associated weeds [Egypt]. (En) Okaz, A.M. (Azhar Univ., Cairo (Egypt) Faculty of Agriculture), El-Gharbia, E.A., Awad, S.M. *Al-Azhar Journal of Agricultural Research (Egypt)* (1985) v. 4 p. 375-385. 3 tables, 13 ref. Summaries (Ar, En). Issued 1989
vicia faba, herbicides, weed control, egypt, crop yield, weight, seed

89-073027 Effect of pronamide application and varieties on Orobanche infection and faba bean (Vicia faba L.) yield [Egypt]. (En) Nassib, A.M. (Ministry of Agriculture, Cairo (Egypt) Field Crops Research Inst.), Hussein, A.H., Hassanein, E.E., Saber, H.A. *Agricultural Research Review (Egypt)* (1985) v. 63(7) p.37-44. 2 tables; 12 ref. Summaries (Ar, En). Issued 1989
vicia faba, orobanche, weed control, application methods, crop yield,

egypt varieties, infection

89-073028 Effect of some cultural treatment (herbicides) on broomrape control in field bean (Vicia faba L.) [Egypt]. (En) Saber, H.A. Azhar Univ. Cairo (Egypt) Faculty of Agriculture Thesis (Ph.D. in Agronomy) Cairo (Egypt) 1984 108 p. 26 tables ref. p. 95-99 Summaries (Ar, En). *Library, Faculty of Agriculture, Azhar Univ., Egypt
vicia faba, herbicides, cultural control, egypt weight, crop yield, seeds, quality, straw

89-074445 [Evaluation of different pig fattening procedures]. (De) Beurteilung verschiedener Schweinemastverfahren. Wagner, H. *Schweineproduzent (Germany, F.R.)* (1986) v. (7-8) p.102-105 6 tables
swine fattening, profitability animal husbandry methods, costs, feeding systems, feed cereals, mixing, energy, corn cob mix, skim milk, whey, vicia faba

89-074524 Pollen grains as a food acquisition and orientation pheromone to the honey bee workers [Egypt]. (En) El-Zoghby, F. (Alexandria Univ. (Egypt) Faculty of Agriculture), El-Ansary, O. *Journal of Agricultural Research (Egypt)* (1986) v. 12(1) p. 278-285 1 table, 10 ref. Summaries (Ar, En) Issued 1989
worker bees, pollen, feeds, egypt, orientation vicia faba, citrus, seasons

89-079472 Effects of certain insecticides on dehydrogenase activities of soils [Egypt]. (En) Komeil, A.A. (Alexandria Univ. (Egypt) Faculty of Agriculture) *Journal of Agricultural Research (Egypt)* (1986) v. 12(1) p. 286-295 4 tables, 7 ref. Summaries (Ar, En) Issued 1989
vicia faba, soil biology, insecticides, soil, oxidoreductases, egypt

89-079890 Effect of heat and processing on the nutritive value of broad beans and lentils [Egypt]. (En) Abdella, H.A., El-Samra, S.H., Labib, A.E. (Ministry of Agriculture, Cairo (Egypt) Animal Production Research Inst.) *Annals of Agricultural Science, Zagazig Univ. (Egypt)* (Jan 1986) v. 24(2) p. 805-814 3 tables, 15 ref. Summaries (Ar, En) Issued 1989
vicia faba, lens culinaris, cooking, nutritive value, heat

89-079927 Improving the nutritional value of Patti Beans (Egypt). (En) Rizk, S.S. (Ministry of Agriculture, Cairo (Egypt) Food Technology Research Branch), El-Sherbiny, G.A., El-Shiaty, M.A. *Egyptian Journal of Food Science (Egypt)* (1986) v. 14(1) p. 111-120 7 tables, 12 ref. Summaries (Ar, En) Issued 1989
foods, vicia faba, nutritive value, soybeans, cicer arietinum, egypt

89-079928 A better recipe to upgrade the nutritional value of bisara (Egypt). (En) El-Sherbiny, G.A. (Ministry of Agriculture, Cairo (Egypt) Food Technology Research Branch), Rizk, S.S., El-Shiaty, M.A. *Egyptian Journal of Food Science (Egypt)* (1986) v. 14(1) p. 121-129 5 tables, 11 ref. Summaries (Ar, En) Issued 1989
foods, vicia faba, nutritive value, soybeans, cicer arietinum, egypt

89-080431 Fatty acid composition and lipoxygenase activities of common Egyptian legume species [Egypt]. (En) Hussein, M.F. (Ain Shams Univ., Cairo (Egypt) Faculty of Agriculture), Mahmoud, R.M., Refat, N., Rasmy, N.M., Mohamed, M.A. *Annals of Agricultural Science, Ain Shams Univ. (Egypt)* (1985) v. 30(2) p. 1333-1344 2 fig 3 tables, 14 ref. Summaries (Ar, En) Issued 1989
legumes, fatty acids, composition, oxidoreductases, enzymic activity, egypt analysis, soybeans, vicia faba

89-080436 Nutritional and biochemical studies on faba bean diets differing in their vicine, convicine and polyphenol contents [Egypt]. (En) Mottawi, H.E.A. Cairo Univ. (Egypt) Faculty of Agriculture Thesis (M.Sc. in Biochemistry) Cairo (Egypt) 1988 227 p. 19 ill. 37 tables, references p. 177-213, Summaries (Ar, En). *Library, Faculty of Agriculture, Cairo Univ., Egypt
vicia faba, seeds, diet, composition, glucosides, nutritive value, egypt

89-081179 Favism and malaria: a model of nutrition and biocultural evolution. (En) Katz, S.H., Schall, J.I. Etkin, N.L. (ed.) Plants in indigenous medicine and diet : biobehavioral approaches ISBN 09-131-78020 Bedford Hills, N.Y. (USA) Redgrave 1986 p. 211-228 maps references *US (DNAL GR880.P6)
vicia faba, health, poisoning, protozoal infections; plasmodium

89-083158 [Profitability of grain legume production]. (De) Lohnen sich Koernerleguminosen noch? Pahl, H. (Technische Univ. Muenchen, Freising (Germany, F.R.) Lehrstuhl fuer Wirtschaftslehre des Landbaues) *DLG-Mitteilungen (Germany, F.R.)* ISSN 0341-0412 (1989) v. 104(3) p. 128-130 3 ill., 3 tables Summary (De)
pisum sativum, vicia faba, plant production, profitability yields, markets

89-084605 Ammonium sulphate application with Reglone to rape dessication. (Pl) Zastosowanie siarczanu amonu z Reglone w desykacji rzepaku. Skolimowski, W. (Kombinat Rolny Powisle, Czernin (Poland)), Biernacki, S. *Ochrona Roslin (Poland)* ISSN 0029-8239 (1987) v. 31(8) p. 11
The studies showed that application of ammonium sulphate at a corresponding rate as an addition in the mixture with Reglone was effective and that this method should be tested further on under different conditions of desiccation of rape or eventually horse bean. *rape, herbicides, defoliants, poland application rates, ammonium sulphate, production costs, vicia faba*

89-084985 [Drilling winter horsebean]. (Fr) Le semis de la feverole d'hiver. Le Menaheze, J. (Federation Nationale des Agriculteurs Multiplicateurs de Semences Graines et Plants, Lavaur (France)), Laconde, J.P., Girard, C. *Bulletin de la Federation Nationale des Agriculteurs Multiplicateurs de Semences (France)* ISSN 0396-8936 (Jul 1986) (no. 96) p. 36-39
vicia faba, seed crops, sowing, drills, france winter crops, sowing date

89-084986 Preliminary study on harvest situation of 'Faba Bean' (Vicia faba L.) in the department of Chimaltenango, Guatemala. (Es) Estudio preliminar de la situacion del cultivo del haba (Vicia faba L.) en el departamento de Chimaltenango, Guatemala. Salguero Garcia, M.E. San Carlos Univ., Guatemala (Guatemala) Facultad de Agronomia. Tesis (Ing. Agr.) Guatemala (Guatemala) 1987 80 p. 34 tab 4 graphs, 20 ref. Summaries (En, Es) *San Carlos Univ. CEDIA
vicia faba, cultivation, guatemala profitability

89-084987 Growing beans under large-scale conditions. (Cs) Pestovani bobu ve velkovyrobnich podminkach. Hochman, M. (Vyzkumny Ustav Technickych Plodin a Luskovin, Sumperk-Temenice (Czechoslovakia)) Prague (Czechoslovakia) UVTIZ 1988 26 p. Metodiky pro Zavadeni Vysledku Vyzkumu do Zemedelske Praxe (Czechoslovakia) ISSN 0231-9470 no. 7. 3 tables Summaries (En, Ru).
vicia faba, plantations, soil chemicophysical properties; harvesting varieties, rotational cropping, pest control methods; pests of plants; weeds, herbicides, harvesters, harvesting losses, drying; silage; processing; large scale farming

89-084996 [Survey on the Danish field experiments, C: Legume varieties and legume cultivation]. (Da) Oversigt over landsforsoegene, C. Baelgsaedsorter og baelgsaeddyrkning. Ullerup, B. Landsudvalget for Planteavl, Viby Jylland (Denmark). *Planteavlsarbejdet i De Landoekonomiske Foreninger (Denmark)* ISSN 0106-8113. (1988). (no.1988) p. 57-62 12 tables.
pisum sativum, vicia faba, varieties denmark agronomic characters; crop yield

89-085610 [How to operate a basic seed production network in the Andean Sub-region]. (Es) Operatividad de una red en la Subregion Andina para la produccion de semillas basicas. Mendoza O., A., Victoria L., F.
Hernandez-Bravo, G.; Ramakrishna, B.; Hernandez Cajiao, G. (eds.). IICA, Quito (Ecuador) Programa Cooperativo de Investigacion Agricola para la Subregion Andina - PROCIANDINO. [Report of the 1st seminar on seed production and multiplication of grain legumes in small farms]. Memoria del I seminario sobre produccion y multiplicacion de semillas de leguminosas comestibles en campos de agricultores. Quito (Ecuador). 1987 p. 97-114 2 ill., 2 tables; 10 ref. *IICA, San Jose (Costa Rica).
grain legumes; seed production; andean zone quality controls; high yielding varieties, kidney beans; pisum sativum; vicia faba; lens culinaris; international cooperation

89-085617 [Relative humidity-seed moisture equilibria of Vicia faba]. (De). Relative Luftfeuchte-Samenfeuchtigkeitsgehaltsgleichgewichte bei Ackerbohne (Vicia faba L.). Steiner, A.M. (Hohenheim Univ., Stuttgart (Germany, F.R.) Inst. fuer Pflanzenzuechtung, Saatgutforschung und Populationsgenetik), Lamprecht, H. *VDLUFA-Schriftenreihe (Germany, F.R.)* ISSN 0173-8712 (1987) (no. 20) p. 703-711. 1 ill.; 22 ref. Summaries (De, En)
vicia faba, seed, germination, water balance air moisture; seed storage

89-085959 Effect of nitrogen nutrition on the production and quality of two cultivars of Vicia faba L. var major in a Mediterranean area (Spain). (En) Bergareche, C.; Vidal, D.; Simon, E. (Barcelona Univ. (Spain) Dept. de Fisiologia Vegetal) *FABIS Newsletter (ICARDA)*. Faba Bean Information Service ISSN 0255-6448. (Apr 1988). (no.20) p. 30-33. 2 tables, 5 ref. Summaries (Ar, En)
The yield of two cultivars of Vicia faba var major (Reina Mora and Reina Blanca) were studied for two consecutive seasons. The effects of two levels of nitrogen fertilizer applied as ammonium nitrate or ammonium sulfate and the date of fertilizer application on yield and protein content was also determined. Treatment with either source of N resulted in an increased yield of cv Reina Blanca, whereas it reduced the yield of cv Reina Mora. In contrast with yield, the protein content was decreased in R. Blanca and increased in R. Mora seeds. *vicia faba; nitrogen fertilizers; yield increase; spain plant production; quality; application rates; timing*

89-086251 Predicting spray loss from fixed-grid sprinkler irrigation systems. (En) Hisab d*a:i3a:t Al-ras min nuz*m Al-sabakat> Al-ta:bitat>. Dawood, S.A.; Hamed, S.N. (Baghdad Univ., Baghdad (Iraq). Coll. of Engineering). *Journal of Agriculture and Water Resources Research. Soil and Water Resources (Iraq)*. Majalat> Al-buhu:t Al-zira:3iyyat> wa-Al-mawa:rid Al-ma:'iyyat>. Al-turbat> wa-mas*a:dir Al-miya:h (Iraq) ISSN 1012-3482 (1987). v. 6(1) p. 75-88. 2 Tables, 1 fig. 11 refs. Summaries (Ar, En)
vicia faba; sprinkler irrigation; iraq mathematics; models; nozzles; site factors; water conservation; water loss; spraying; clay soils; loam soils; relative humidity; winds; evaporation; meteorology; pressure

89-086399 [Leguminous plants in green feed mixtures are actual in the Northern Norway as well]. (No) Belgvekstar i groenforblandingar ogsaa aktuelt i Nord-Norge. Karlsen, Aa. (Tjoetta Forskingsstasjon, Tjoetta (Norway)); Oestgarrd, O. (Holt Forskingsstasjon, Tromsoe (Norway)); Lunnan, T. (Norges Landbrukshoegskole, Aas (Norway) Inst. for Plantekultur). *Norden (Norway)*. ISSN 0029-1226. (1989) v. 93(5) p. 8-11. 8 tables, 1 figure.
barley, oats; lupinus luteus; vicia faba; pisum; green feed; mixed cropping; north polar region; norway lodging; crude protein; botanical composition; dry matter content

89-086407 Yield, its components and pest incidence in mixed intercropping of oats (Avena sativa) and field beans (Vicia faba). (En) Helenius, J.; Ronni, P. (Helsinki Univ. (Finland). Dept. of Agricultural and Forest Zoology) *Journal of Agricultural Science in*

Finland (Finland). Maatalustieteellinen Aikakauskirja. ISSN 0782-4386 (1989). v. 61(1) p. 15-31. 8 graphs, 4 tables, 56 ref. Summaries (Fin, En).
avena sativa; vicia faba; intercropping; crop yield; pests of plants; rhopalosiphum

89-086453 [Growing grain legumes without nitrate problems]. (De). Koernerlegumnosen ohne Nitratprobleme anbauen. Luetke Entrup, N. (Universitaet-Gesamthochschule Paderborn, Bad Sassendorf-Lohne (Germany, F.R.) Versuchsgut Hohe Rott); Blome, K.H.; Stemann, G. *DLG-Mitteilungen (Germany, F.R.)*. ISSN 0341-0412. (1989). v. 104(4) p. 182, 191. 1 ill., 2 tables. Summary (De).
vicia faba; nitrates; leaching; catch crops; sowing; feed grasses; soil pollution

89-087119 [Fodder seeds. Some data on the varietal behaviour of winter horsebeans]. (Fr). Semences fourrageres. Quelques donnees sur le comportement varietal des feveroles d'hiver. Laconde, J.P. (Institut Technique des Cereales et des Fourrages, Paris (France)); Girard, C. *Bulletin de la Federation Nationale des Agriculteurs Multiplicateurs de Semences (France)*. ISSN 0396-8936. (Jul 1986). (no. 96) p. 31-35. 6 tables.
vicia faba; agronomic characters; france; spacing; sowing date; temperature resistance; cold; winter hardiness; winter crops

89-087120 Cytological localization of highly repeated DNA sequences, the FokI sequence family and BamHI sequence families, in Vicia faba chromosomes. (En). Yakura, K. (Kanazawa Univ. (Japan). Coll. of Education); Kato, A.; Tamfuji, S. *Japanese Journal of Genetics (Japan)*. ISSN 0021-504X. (Aug 1987). v. 62(4) p. 325-332. 19 ref.; Summary (En).
vicia faba; dna; chromosomes

89-087121 Pattern analysis and genotypic x environment interactions in faba bean (Vicia faba L.) populations. (En). Polignano, G.B. (Germplasm Inst. CNR, Bari (Italy)); Uggenti, P.; Perrino, P. *Euphytica (Netherlands)*. ISSN 0014-2336. (1989). v. 40(1) p. 31-41. 34 refs.; Summary (En).
vicia faba; genotype environment interaction; genetic variation; phenotypes

89-087122 Prospects for commercialisation of F1 hybrid field beans Vicia faba L. (En). Bond, D.A. (Plant Breeding International, Cambridge (UK)). *Euphytica (Netherlands)*. ISSN 0014-2336. (1989). v. 41(1) p. 81-86. 15 refs.; Summary (En).
vicia faba; f1 hybrids; hybrid vigour; crop yield; male infertility

89-087123 A short review of research on male sterility and prospects for F1 hybrid varieties in field beans (Vicia faba L.). (En). Bond, D.A. (Plant Breeding International, Cambridge (UK)). *Euphytica (Netherlands)*. ISSN 0014-2336. (1989). v. 41(1) p. 87-90. 28 refs.; Summary (En).
vicia faba; f1 hybrids; male infertility; varieties

89-087124 Selection for seed yield in faba bean [Vicia faba L.]. (En). Bakheit, B.R.; Mahdy, E.E. (Assiut Univ. (Egypt). Faculty of Agriculture). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20) p. 3-8. 7 tables, 18 ref. Summaries (Ar, En).
Effectiveness of family selection for seed yield was assessed in two generations of faba bean variety Giza 2. Some of the means of the selected families exceeded those of the base population (Giza 2) and the check variety (Giza 402). The C1 families possessed considerable genotypic and phenotypic variability for all the studied traits, and consequently, estimates of heritability were high. However, the variability between C2 families was lower for all traits except plant height, thus reflected in low estimates of heritability. Genotypic and phenotypic correlations for various traits showed that pods/plant and plant height were the traits mainly determining seed yield plant. The realized gain in seed yield after two generations was 24% and 7% over the base population and check variety, respectively. *vicia faba; selection; yield increase; egypt; crop yield; genetic variation; heritability; plant response; phenotypes; genotypes; fruit; height; plant breeding*

89-087125 Variation, correlations, and path-coefficient analysis for some characters in collections of faba bean (Vicia faba L.). (En). Bakheit, B.R.; Mahdy, E.E. (Assiut Univ. (Egypt). Faculty of Agriculture). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20) p. 9-14. 5 tables; 28 ref. Summaries (Ar, En).
Nineteen accessions collected from farmers' fields and two commercial cultivars (Giza 2 and Giza 402) of faba beans Vicia faba L. were evaluated during the 1986 and 1987 seasons. Some of the collected accessions were superior than both commercial cultivars in all the characters studied. The environmental variance exceeded the genetic variance for all traits. Heritability reached 16.87, 33.33, 44.90, 44.70, and 39.36% for plant height, number of branches, number of pods/plant, seed yield plant, and 100-seed weight, respectively. Both phenotypic and genotypic correlations among traits showed positive relationship for seed yield plant with number of branches and number pods/plant, and also between plant height and number of pods/plant. However, seed yield plant was negatively correlated with plant height. Path coefficient analysis revealed that number of pods/plant had the highest positive direct effect on seed yield plant, followed by 100-seed weight and number of seeds/pods. *vicia faba; egypt; evaluation; varieties; agronomic characters; genetic variation; phenotypes; genotypes; environment; heritability; crop yield; seed*

89-087126 Inheritance of dwarf growth habit, induced in Vicia faba L. var major by ethyl methane sulphonate (EMS). (En). Filippetti, A. (Bari Univ. (Italy). Inst. of Plant Breeding). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20) p. 15-18. 2 tables, 1 fig.; 20 ref. Summaries (Ar, En).
The inheritance of dwarf growth habit was studied in a Vicia faba L. cross. The original variety (Aquadulce, major type, 100 seed weight = 200 g), the dwarf mutant and their F1 and F2 generations were grown at Valenzano, Bari, Italy in the 1984-86 seasons. The F1 plants were normal and the F2 segregated into three normal phenotypes to one dwarf, indicating that the dwarfness is controlled by a single recessive gene. Dark green leaf character seemed to be associated with reduced plant height. *vicia faba; inheritance (genetics); plant habit; dwarfs; ems; italy; plant breeding; genes; varieties; mutants; progeny; forms*

89-087127 [Breeding value of pigeon bean samples for fodder use in the Lithuanian SSR]. (Ru). Selektsionnaya tsennost' obraztsov kollektsii kormovykh bobov dlya zernofurazhnogo ispol'zovaniya v Litovskoj SSR. Budvitene, V.P.; Budvitite, A.A.
[Pulse crop breeding and seed production]. Selektsiya i semenovodstvo zernobobovykh kul'tur. Orel (USSR). 1987. p. 50-52. *SU.
vicia faba; breeding value; lithuanian ssr; genetic resources; varieties; seed production; proteins; resistance to injurious factors; breeding aims

89-087964 Inhibition of light-induced stomatal opening and of guard-cell-protoplast swelling in Vicia faba L. by tentoxin, an inhibitor of photophosphorylation. (En). Dahse, I. (Jena Univ. (German D.R.). Wissenschaftsbereich Biophysik); Schnabl, H.; Hampp, R.; Ziegler, H.; Mueller, E.; Liebermann, B. *Planta (Germany, F.R.)*. ISSN 0032-0935. (1988). v. 173(3) p. 391-396. 3 ill., 3 tables; 31 ref. Summary (En).
vicia faba; stomata; toxins; phosphorylation

89-087965 The sources of free proline and asparagine in field bean plants, Vicia faba L., during and after a short period of water withholding. (En). Venekamp, J.H. (Centre for Agrobiological Research, Wageningen (Netherlands)); Koot, J.T.M. *Journal of Plant Physiology (Germany, F.R.)*. ISSN 0176-1617. (1988). v. 132(1) p. 102-109. 4 ill., 5 tables; 32 ref. Summary (En).
vicia faba; proline; asparagine; water deprivation; nitrogen metabolism

89-087966 Abscisic-acid contents and concentration in protoplasts from guard cells and mesophyll cells of Vicia faba L. (En). Lahr, W. (Goettingen Univ. (Germany, F.R.). Pflanzenphysiologisches Inst.); Raschke, K. *Planta (Germany, F.R.)*. ISSN 0032-0935. (1988). v. 173(4) p. 528-531. 1 ill., 2 tables; 14 ref. Summary (En).
vicia faba; stomata; mesophyll; aba; protoplasm

89-087967 Characterization and localization of fusicoccin-binding sites in leaf tissues of Vicia faba L. probed with a novel ligand. (En). Feyerabend, M. (Osnabrueck Univ. (Germany, F.R.). Pflanzenphysiologie); Weiler, E.W. *Planta (Germany, F.R.)*. ISSN 0032-0935. (1988). v. 174(1) p. 115-122. 7 ill., 4 tables; 21 ref. Summary (En).
vicia faba; leaves; adsorption; mycotoxins; radiography

89-087968 Mechanisms of fusicoccin action: A dominant role for secondary transport in a higher-plant cell [Vicia faba]. (En). Blatt, M.R. (Cambridge Univ. (UK). Botany School). *Planta (Germany, F.R.)*. ISSN 0032-0935. (1988). v. 174(2) p. 187-200. 7 ill., 2 tables. Bibliography 57 ref. Summary (En).
vicia faba; translocation; stomata; mycotoxins; ions

89-087969 Monoclonal antibodies identify common and differentiation-specific antigens on the plasma membrane of guard cells of Vicia faba L. (En). Key, G. (Osnabrueck Univ. (Germany, F.R.). Inst. fuer Pflanzenphysiologie); Weiler, E.W. *Planta (Germany, F.R.)*. ISSN 0032-0935. (1988). v. 176(4) p. 472-481. 8 ill., 2 tables; 20 ref. Summary (En).
vicia faba; stomata; differentiation; monoclonal antibodies; immunofluorescence

89-087970 Effect of time of harvest on physical and chemical compositions, cookability, and yield of faba bean [Vicia faba]. (En). El Mubarak, A.A.; Abdel Galiel, N.E. (Food Research Center, Khartoum North (Sudan)); Salih, F.A. (Shambat Research Station, Khartoum North (Sudan)); Ghorashi, A.M. (New Halfa Research Station (Sudan)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20) p. 33-36. 3 tables; 9 ref. Summaries (Ar, En).
Studies were carried out at Shambat and New Halfa locations in Sudan. The effect of time of harvest on seed yield and its components was highly significant. Seed yield increased as the harvesting was delayed. The seed size increased progressively till it reached the maximum at 110-120 days and started to decrease gradually till 140 days. At Shambat locality plants at 120 days gave seeds of larger size, higher hydration coefficient, good cookability, and lower percentage of non-soakers. The same results were obtained at New Halfa from plants at 110 days. The most convenient and practical method for reducing non-soakers is to soak the faba beans in hot water, or to immerse them in boiling water for 5 min. or to steam the beans for 5 min. before soaking. The chemical composition did not offer an explanation for the difference in the percentage of non-soakers at the different plant ages. *vicia faba; sudan; harvesting; timing; chemicophysical properties; quality; seeds; size; hydration; soaking; cooking; proteins; phytic acid; tannic acid; ashes; crude fibre*

89-087975 [Nitrogen and minerals in peas, horsebeans and lupins. Evolution of the composition of various organs]. (Fr). Azote et mineraux des pois, feveroles et lupins. Evolution de la composition des differents organes. Poulain, D. (Institut National de la Recherche Agronomique, Rennes (France). Centre de Rennes, Laboratoire de Recherches Associe a la Chaire de Phytotechnie); Simon, J.C. *Perspectives Agricoles (France)*. ISSN 0399-8533. (Oct 1988). (no. 129) p. 68-81. Tables, graphs.
pisum sativum; lupinus; vicia faba; mineral content; fertilizer application; plant developmental stages; stems; leaves; flowers; seeds; nitrogen; phosphorus; potassium; calcium; magnesium; sodium; copper; manganese;

zinc

89-087976 [Nitrogen and minerals in peas, horsebeans and lupins. Factors of variation in grain composition [pedoclimatic conditions; loss of nutritive elements, nitrogen value of grain]. (Fr). Azote et minéraux des pois, féveroles et lupins. Facteurs de variation de la composition des grains [conditions pédoclimatiques, exportation d'éléments nutritifs, valeur azotée du grain]. Simon, J.C. (Institut National de la Recherche Agronomique, Quimper (France). Centre de Rennes, Station d'Agronomie). Poulain, D. *Perspectives Agricoles (France)*. ISSN 0399-8533. (Oct 1988). (no. 129). p. 82-86. 12 tables.
pisum sativum; lupinus; vicia faba; mineral content; seeds; varieties; winter crops; spring crops

89-088287 Comparison of net assimilation rates for some winter crops: rapeseed, wheat, pea and field bean. (Fr). Comparaison de l'assimilation nette de quelques cultures d'hiver: colza, blé, pois, féverole. Gelfi, N. (Institut National de la Recherche Agronomique, Castanet-Tolosan (France). Centre de Toulouse, Station d'Agronomie); Hilaire, A.; Rozelle, P.; Martinez, F.; Bounols, A.; Blanchet, R.
Centre Technique Interprofessionnel des Oleagineux Metropolitains, Paris (France). Crop physiology and yield elaboration for rapeseed. Physiologie et élaboration du rendement du colza d'hiver. 1. Le fonctionnement de la plante. 2. Le fonctionnement du peuplement. Paris (France). CETIOM. 1988. p. 121-123. 5 ref. Summaries (Fr, En).
brassica napus; triticum aestivum; pisum sativum; vicia faba; leaf area; photosynthesis; lyases; winter crops; enzymic activity

89-088331 Natural abundance of 15N in root nodules of pea and broad bean. (En). Yoneyama, T. (National Agricultural Research Center, Tsukuba, Ibaraki (Japan). Dept. of Soils and Fertilizers). *Journal of Plant Physiology (Germany, F.R.)*. ISSN 0176-1617. (1988). v. 132(1). p. 59-62. 5 tables; 13 ref. Summary (En).
pisum sativum; vicia faba; root nodulation; nitrogen content; isotope labelling

89-088332 Protection by the epidermis of photosynthesis against UV-C radiation estimated by chlorophyll a fluorescence [induction, UV absorbing substances]. (En). Shimazaki, K.; Igarashi, T.; Kondo, N. (National Inst. for Environmental Studies, Tsukuba, Ibaraki (Japan)). *Physiologia Plantarum (Denmark)*. ISSN 0031-9317. (Sep 1988). v. 74(1). p. 34-38. 4 ill., 27 ref. Summary (En).
pisum sativum; vicia faba; photosynthesis; ultraviolet radiation; chlorophylls; epidermis

89-088492 The structure and function of grana-free thylakoid membranes in gerontoplasts of senescent leaves of Vicia faba L. (En). Schmidt, H.O. (Akademie der Wissenschaften der DDR, Gatersleben (German D.R.). Zentralinst. fuer Genetik und Kulturpflanzenforschung). *Zeitschrift fuer Naturforschung, Section C, Biosciences (Germany, F.R.)*. ISSN 0341-0382. (1988). v. 43c(1-2). p. 149-154. 3 ill., 1 table; 31 ref. Summary (En).
vicia faba; plastids; cell structure; leaves; aging; proteins; peptides; photosynthesis

89-088493 Effect of stem termination on some metric traits in faba bean [Vicia faba]. (En). Singh, V.P.; Schroeder, G. (Institute of Crop Science and Plant Breeding, Braunschweig (Germany, F.R.)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20). p. 19-21. 1 table; 12 ref. Summaries (Ar, En).
One hundred and twenty single plant F3 families originating from 51 crosses between topless and semitopless or indeterminate genotypes were evaluated in field for their yield and yield attributes. Topless plants yielded lowest because of large number of reproductive branches, lower number of podded nodes, poor podding, empty poddedness and lower number of seeds pod when compared to semitopless and indeterminate plants. There is a need for further improvement in productivity of the topless types before they can be of commercial interest. *vicia faba; german federal republic; stems; genotypes; evaluation; branching; fruit; seeds; nodes*

89-088494 Effect of ethyl methane sulphonate (EMS) and diethyl sulphate (DES) on germination, growth, fertility, and yield of Vicia faba L. (En). Vandana; Dubey, D.K. (Janata Mahavidyalaya, Ajitmal (India). Dept. of Botany). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20). p. 25-29. 2 tables; 15 ref. Summaries (Ar, En).
Seeds of Vicia faba var. minor were treated with the solutions of ethyl methane sulphonate (EMS) at 0.05%, 0.125%, and 0.25% and diethyl sulphate (DES) at 0.25%, 0.50%, and 0.75%. Germination, seedling growth, pollen fertility, time to maturity, and survival were adversely affected by both mutagens. Plant height, branching, number of leaves, pods and seeds as well as yield per plant showed varying responses to different concentrations of the mutagens. However, DES at all doses and EMS only at the highest dose had adversely affected these traits. Whereas, the lower doses of EMS had either no effect or a slight promoting effect. *vicia faba; ems; plant developmental stages; india; crop yield; germination; seedlings; pollen; fertility; mutagens; growth; laboratory experiments; fields; flowering; leaves; fruit*

89-089753 [Broad bean beetle on winter horse-bean [Bruchus rufimanus]. (Fr). Bruche de la fève sur féverole d'hiver [Bruchus rufimanus]. Berne, J.J.
Ministère de l'Agriculture, Paris (France). Service de la Protection des Végétaux. [Plant Protection Service. Results of experiments in 1987]. Service de la Protection des Végétaux. Résultats de l'expérimentation réalisée en 1987. Paris (France). SPV. 1987. p. 73-74.
vicia faba; bruchus; insect control; insecticides; winter crops; chemical control; trials

89-089757 [Insect pests of protein crops [pea, bean, lupin]. (Fr). Les insectes ravageurs des protéagineux [pois, féverole, lupin]. Bournoville, R. (Institut National de la Recherche Agronomique, Lusignan (France). Centre de Poitou-Charentes, Laboratoire de Recherches de Zoologie). *Perspectives Agricoles (France)*. ISSN 0399-8533. (Oct 1988). (no. 129). p. 63-66. 6 tables.
pisum sativum; lupinus; vicia faba; pest insects; france; population dynamics

89-089765 [Guidance in plant protection in beetroot, rape and legumes]. (Da). Vejledning i plantebeskyttelse i bederoer, raps og baelgplanter. Nielsen, G.C. (ed.). Plantevaernscentret. Lyngby (Denmark). Lyngby (Denmark). Plantevaernscentret. 1986. 76 p. 7 ill.; 17 tables.
beta vulgaris; brassica napus; pisum sativum; vicia faba; pyrethrins; spraying; denmark; fungicides; herbicides; plant protection; weed control; insect control; pests of plants; disease control; classification; plant diseases

89-090484 Mycoflora of broad bean, chick pea and lentil seeds in Egypt [seed-borne fungi, glucophilic fungi, cellulose-decomposing fungi]. (En). Abdel-Halez, A.I.F. (Assiut University (Egypt). Faculty of Science, Botany Department). *Cryptogamie Mycologie (France)*. ISSN 0181-1584. (Dec 1988). v. 9(4). p. 335-343. 34 ref., Summaries (Fr, En).
vicia faba; cicer arietinum; lens culinaris; seed; fungi; egypt; identification; degradation; celluloses

89-090485 [Broad bean rot [Ascochyta fabae]. (Fr). Anthracnose de la fève [Ascochyta fabae]. L'Hostis, A.
Ministère de l'Agriculture, Paris (France). Service de la Protection des Végétaux. [Plant Protection Service. Results of experiments in 1987]. Service de la Protection des Végétaux. Résultats de l'expérimentation réalisée en 1987. Paris (France). SPV. 1987. p. 75.
vicia faba; ascochyta; fungus control; fungicides; chemical control; trials

89-090486 Mycoflora of seeds of field bean grown in Poland. (Pl). Mikoflora materialu siewnego bobiku uprawianego w Polsce. Filipowicz, A. (Akademia Rolnicza, Lublin (Poland). Katedra Fitopatologii i Techniki Ochrony Roslin). *Ochrona Roslin (Poland)*. ISSN 0029-8239. (1987). v. 31(11). p. 5-7.
It has been tried to determine specific composition and intensity of the occurrence of fungi transmitted with seeds of horse bean grown in Poland. On the basis of seed infection and meteorological conditions during the vegetation season it is possible to predict the occurrence of diseases on plantations. *vicia faba; mycoses; poland; seed; natural distribution; alternaria; ascochyta; aspergillus; botrytis; fusarium; penicillium; sclerotinia; disease transmission*

89-090487 Effect of growth regulator 6-benzylamino purine and diathane M-45 on chocolate spot disease and growth of faba bean plants [Vicia faba]. (En). Omar, S.A.M.; Salem, D.E.; El-Gantiry, S.M.M. (Agricultural Research Center, Giza (Egypt). Plant Pathology Inst.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20). p. 37-39. 2 tables, 1 fig., 19 ref. Summaries (Ar, En).
The effects of the growth regulator 6-benzylamino purine (6-BAP) and Dithane M-45 on the development of chocolate spot disease (Botrytis fabae Sard.) and also on the growth parameters of faba bean were studied. Four treatments were employed, of which one was kept as control and the other three were sprayed four times, at 10-day intervals, with 6-BAP (20 mg/l), Dithane M-45 (2.5 g/l), and mixed application of 6-BAP and Dithane M-45, respectively. A significant reduction was observed in the severity of B. fabae, judged by lower lesion grade, slower lesion spread and fewer spore formations, compared with the control. Of the plant traits studied, shoot weight/plant was most affected by 6-BAP application. Among all treatments the differences for nodes/plant, shoot length, root length and weight were not significant. *vicia faba; plant growth substances; botrytis; disease control; fungicides; egypt; growth; stems; weight*

89-090488 Changes in amino acid and sugar content of broad bean leaves following infection with Botrytis fabae. (En). El Beih, F.M.; Abu Shady, M.R.; Youssef, K.A.; Abdel Kader, A.I. *Phytologia (USA)*. ISSN 0031-9430. (May 1988). v. 64(5). p. 367-378. references. *US (DNAL 450 P563).
vicia faba; botrytis; infection; amino acids; sugars; leaves

89-090489 Lipids in healthy and Botrytis-infected broad bean leaves and their role in disease development. (En). Abu Shady, M.R.; El Beih, F.M.; Youssef, K.A.; Abdel Kader, A.I. *Phytologia (USA)*. ISSN 0031-9430. (May 1988). v. 64(5). p. 379-389. references. *US (DNAL 450 P563).
vicia faba; botrytis; lipid content; leaves; infection; pathogenesis

89-090781 Influence of pre-hardening duration and dehardening temperatures on varietal freezing resistance in faba beans (Vicia faba L.) [differential leaf response]. (En). Herzog, H. (University of Kiel (Germany, F.R.). Institute of Crop Science and Plant Breeding). *Agronomie (France)*. ISSN 0249-5627. (1989). v. 9(1). p. 55-61. 12 ref., Summaries (En, Fr).
vicia faba; hardening; temperature resistance; winter crops; varieties; leaves; temperature; cold

89-090782 Leaf water potential and stomatal resistance variations in Vicia faba L. (En). Ricciardi, L. (Bari Univ. (Italy). Plant Breeding Inst.); Steduto, P. (CIHEAM, Valenzano (Italy). Mediterranean Agronomic Inst.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988). (no.20). p. 21-24. 2 tables, 1 fig.; 12 ref. Summaries (Ar, En).
In a breeding program for improving drought resistance in Vicia faba the water status of four highly homozygous genotypes of faba bean was

studied in field in southern Italy, throughout the growing period of the crop. One of the genotypes was of major type (Aguadulce) and the other three (Manfredini, Vesuvio and Maris Bead) were of minor type. Leaf water potential and diurnal pattern of stomatal resistance were studied together with stomatal and trichome anatomic and physiological features. No significant differences in any of the characters were observed among the varieties and therefore no inferences on the relationships between water status of plant and drought tolerance could be drawn. *vicia faba; drought resistance, genotypes, selection, evapotranspiration, leaves; italy, stomata, varieties, sandy soils, clay soils, homozygotes, temperature*

89-090854 [Few alternatives to herbicides]. (De). Wenig Alternativen zu Herbiziden. Meinert, G. (Landesanstalt fuer Pflanzenschutz, Stuttgart (Germany, F.R.)). *DLG-Mitteilungen (Germany, F.R.)*. ISSN 0341-0412. (1989). v. 104(4) p. 178-179. 1 ill.
cereals, weed control, implements; hoeing, zea mays, vicia faba, pisum sativum

89-091072 Evaluation for tolerance to broomrape in a germplasm collection of Vicia faba L. (En). Perrino, P.; Pace, M.S.; Polignano, G.B. (CNR, Bari (Italy) Germplasm Inst.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Apr 1988) (no.20) p. 40-44. 3 tables; 14 ref. Summaries (Ar, En).
Populations of faba bean (Vicia faba L.) of different origin were tested for their tolerance to broomrape (Orobanche crenata Forsk.). Evaluation was carried out at Valenzano (Bari) for two years in naturally infested field plots. During growth, traits concerning host plant and parasite were recorded. Tolerant accessions and highly tolerant plants within accessions were identified. *vicia faba; orobanche; italy, evaluation; germplasm; agronomic characters*

89-091075 Chemical weed control in pulse crops. (Pl). Chemiczne zwalczanie chwastow w roslinach straczkowych. Franek, M. (Instytut Uprawy, Nawozenia i Gleboznawstwa, Wroclaw (Poland). Zaklad Ekologii i Zwalczania Chwastow). Radziszewski, J. *Ochrona Roslin (Poland)*. ISSN 0029-8239. (1987). v. 31(5) p. 6-8.
The suitability of a number of herbicides for weeding pulse crops with a special reference to pea and field bean is given. Taking into account diversity of weed species it is necessary to choose properly herbicides for their control. *pisum sativum; vicia faba, weeds; herbicides, poland, grain legumes, chemical control*

89-091076 Topogard – a combination herbicide for use in peas, potatoes and horsebeans [terbutryne, terbuthylazine]. (En). Madsen, K. (Ciba-Geigy A/S, Koebenhavn (Denmark)). *Svenska Vaextskyddskonferensen (Sweden)*. (1989). (v. 2) p. 180. Summary only. [30. Svenska Vaextskyddskonferensen. Ograes och Ograesbekaempning. Uppsala (Sweden). 1-2 Feb 1989.] *SE
pisum sativum; potatoes, vicia faba; herbicides, chemical control; denmark; sweden, weeds, weed control, pesticide actions; toxicity; crop yield

89-092817 Feeding grains of various legumes (field bean, pea and lupin) and low and double low rapeseed meal to fattening bulls, 1: Substitution of soybean meal [for other protein components]. (De). Verfuetterung von Samen verschiedener Leguminosen (Ackerbohne, Erbse, Lupine) und Rapsextraktionsschrot aus 0- und 00-Sorten in der Bullenmast. 1: Zum Austausch von Sojaextraktionsschrot gegen alternative Eiweisskomponenten. Schwarz, F.J. (Technische Univ. Muenchen, Freising (Germany, F.R.). Inst. fuer Ernaehrungsphysiologie). Kirchgessner, M. *Zuechtungskunde (Germany, F.R.)*. ISSN 0044-5401. (1989). v. 61(1) p. 71-82. 7 tables, 33 ref. Summaries (De, En, Fr, Ru).
bulls, fattening, feed legumes, meat animals; vicia faba; pisum sativum; lupinus, rapeseed meal, glucosinolates, weight gain, carcasses; quality

89-093002 [Main raw materials used in sow feeding: cereals and protein crops]. (Fr). Principales matieres premieres utilisables dans l'alimentation de la truie: cereales et proteagineux. Gatel, F. (Institut Technique des Cereales et des Fourrages, Paris (France)); Castaing, J.; Leuillet, M. Institut Technique des Cereales et des Fourrages, Paris (France); Association Francaise de Zootechnie, Paris (France). [Sow feeding, round table organized by the Cereals and Forage Technical Institute, under the patronage of the French Zootechnical Association, 2 December 1987.] L'alimentation de la truie, table ronde organisee par l'Institut Technique des Cereales et des Fourrages, sous le patronage de l'Association Francaise de Zootechnie, 2 decembre 1987. ISBN 2-86492-059-X. Paris (France). ITCF. 1987. p. 71-79. 9 tables, 22 ref.; Summary (Fr).
sows, cereals, pisum sativum, digestibility, reproductivity, rations; vicia faba, pregnancy, lactation, feed conversion efficiency, raw materials

89-093016 Experiments on the evaluation of field beans (Vicia faba), peas (Pisum sativum) and sweet lupins (Lupinus luteus) as an alternative protein source for piglets. (De). Untersuchungen ueber die Eignung von Ackerbohnen (Vicia faba), Felderbsen (Pisum sativum) und Suesslupinen (Lupinus luteus) als Eiweisstuttermittel in der Ferkelaufzucht. Boehme, H. (Bundesforschungsanstalt fuer Landwirtschaft, Braunschweig (Germany, F.R.). Inst. fuer Tierernaehrung). *Landbauforschung Voelkenrode (Germany, F.R.)*. ISSN 0458-6859. (1988). v. 38(4) p. 353-358. 7 tables, 11 ref. Summaries (De, En).
Three feeding experiments (10 kg – 25 kg LW) with a total of 228 German landrace piglets were designed to test the replacement of soy bean meal by legume seeds, when these are included in piglet diets by up to 30 %. The diets were formulated to be equivalent in protein and energy (ME) and to contain the same amounts of lysine and methionine + cystine. The latter was accomplished by supplementation with synthetical amino acids. In the control groups with soy cereal diets feed intake was in the range of 720 g and 750 g per day. Including legume seeds increased feed intake up to 2 % with peas, 6 % with beans and 7 % with lupins ($P < 0.01$). Average daily weight gain of all experimental groups was in the range of 475 and 530 g and was not significantly affected by the inclusion of legume seeds in the diets. The legume-diets slightly decreased feed and energy (ME) conversion ratio as compared to control animals with mean feed efficiency rate of 1.53 kg or 20.1 MJME respectively. *piglets, pisum sativum, vicia faba; lupinus luteus; protein content; animal feeding, amino acids; experiments, piggeries; floor husbandry, nutrient content, testing*

89-093072 Feed composition and the praecaecal and postileal digestibility of organic matter. (De). Rationsgestaltung und praecaecale b/w. postileale Verdaulichkeit der organischen Substanz. Meyer, H. (Tieraerztliche Hochschule Hannover (Germany, F.R.). Inst. fuer Tierernaehrung). Schuenemann, C. Meyer, H. (ed.). Contributions to digestive physiology of dogs. Beitraege zur Verdauungsphysiologie des Hundes. ISBN 3-490-41915-4. Hamburg (Germany, F.R.). Parey. 1989. p. 14-23. Advances in Animal Physiology and Animal Nutrition (Germany, F.R.). no. 19. 6 tables; 24 ref. Summaries (De, En).
dogs, digestibility; nutrients; energy, rations; starch; lactose; intestines; vicia faba; soybean meal; fistulation

89-093104 [Poultry fattening with wheat and horse beans]. (De). Geflueeelmast mit Weizen und Ackerbohnen. Fuhrken, E. (Landwirtschaftskammer Schleswig-Holstein, Kiel (Germany, F.R.). Lehr- und Versuchsanstalt fuer Kleintierzucht). *Deutsche Geflueegelwirtschaft und Schweineproduktion (Germany, F.R.)*. ISSN 0340-3858. (1987). v. 39(18) p. 508-509. 2 tables.
broiler chickens; fattening; wheats; vicia faba

89-093135 Reproductive performance of hens fed field beans and potential relationships to vicine metabolism. (En). Naber, E.C.; Vogt, H.; Harnish, S.; Krieg, R.; Ueberschaer, K.H.; Rauch, H.W. *Poultry science (USA)*. ISSN 0032-5791. (Mar 1988). v. 67(3) p. 455-462. references. *US (DNAL 47.8 AM33P).
chickens; animal feeding, vicia faba; glucosides; metabolism; reproductivity; quality; eggs; egg hatchability

89-102064 [The protein producing plants and provender sectors. The present situation and future prospects [Portugal]]. (Pt). Os sectores das proteaginosas e forragens secas: situacao e perspectivas. Salgueiro, I. (Ministerio da Agricultura, Pescas e Alimentacao, Lisbon (Portugal). Secretariado Agricola para as Relacoes Europeias). Ministerio da Agricultura, Pescas e Alimentacao, Lisbon (Portugal). Direccao Geral de Planeamento e Agricultura, Lisboa (Portugal). DGPA. Sep 1988. 17 p. 3 tables. *PT
pisum sativum; vicia faba; lupinus; common markets; portugal, feeds; prices; subsidies; protein concentrates

89-102453 A summary on production of faba bean in China [Vicia faba]. (En). Li-juan, L. (Zhejiang Academy of Agricultural Sciences, Hangzhou (China). Crop Research Inst.). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1988). (no. 21) p. 3-6. 4 tables; 2 fig.; 4 ref. Summaries (Ar, En).
vicia faba; china, plant production; sowing date

89-102454 The problems and importance of faba bean in Guatemala [Vicia faba]. (En). Vasquez, H.O. (Agriculture Production Center, Quetzaltenango (Guatemala). Labor Ovalle). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1988). (no. 21) p. 7-8. Summaries (Ar, En).
vicia faba, plant production; constraints; guatemala, pest insects; plant diseases

89-102455 Effect of water stress on dry matter production, harvest index, seed yield, and its components in faba bean (Vicia faba L.). (En). Nanda, H.C.; Yasin, M.; Singh, C.B.; Rao, S.K. (Jawaharlal Nehru Agricultural Univ., Jabalpur (India). Department of Plant Breeding and Genetics). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Aug 1988). (no. 21) p. 26-30. 6 tables; 11 ref. Summaries (Ar, En).
25 genotypes of faba bean were grown during rabi season 1984/85 under water stress (rainfed) and non-stress (irrigated) conditions with the objective to study the effect of water stress on dry matter production, harvest index, and seed yield and its components. Significant differences were observed among the genotypes for seed yield, harvest index, number of seeds/plant, 100-seed weight, and protein content under both environments, whereas dry matter production, days to maturity, and number of branches/plant were significantly different under water stress only. The variation due to environments was significant for seed yield and harvest index. Heritability estimates were observed to be moderate to low for all characters, except for protein content and 100-seed weight. *vicia faba; stress; plant water relations; genotypes; india, plant production; rain fed farming; irrigated farming*

89-102456 Comparison of machinery arrangement for narrow planting of faba bean [Vicia faba]. (En). Dawelbeit, M.I. (Rahad Research Station, El-Fau (Sudan)). *FABIS Newsletter (ICARDA)*. Faba Bean Information Service. ISSN 0255-6448. (Dec 1988). (no. 22) p. 29-31. 1 table; 2 fig. Summaries (Ar, En).
Different planter arrangements were compared in this experiment, i.e., two rows ridge and three rows ridge at the ridge widths of 60 and 80 cm. There were no significant differences ($P < 0.05$) in yield and yield components among all treatments. However, planting two rows on 80 cm wide ridges proved the best choice, especially because of its ease of operation and conformity with the current system of machinery use in Rahad Agricultural Project. *vicia faba; planters, planting; sudan, sowing*

89-102457 Performance of faba bean and other food legumes in northern Madhya Pradesh, India [Vicia faba]. (En). Shrivastava, M.P.; Bansal, K.N. (J.N. Krishi Vishwa Vidyalaya, Gwalior (India). Coll. of

Agriculture). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 31-32. 1 table. Summaries (Ar, En)
The yield, days to flowering, days to maturity of five faba bean (Vicia faba L.) genotypes along with one variety of each of conventional rabi legumes (chickpea, lentil, and pea) were studied on fields. All the faba bean genotypes yielded significantly higher than the other three crops and matured 17 days earlier. Thus, faba bean appears to be a good alternate crop to the other rabi legumes in northern Madhya Pradesh. *vicia faba; lens culinaris; cicer arietinum; pisum sativum; crop yield; madhya pradesh; cropping systems; flowering; maturation; economic analysis; genotypes*

89-102458 Effect of sowing date on Orobanche crenata infestation in vicia faba in Egypt. (En). Raamakers, D.; Raamakers, J.; Borg, S. ter (Agricultural Univ., Wageningen (Netherlands). Department of Vegetation Science); Nassib, A.M. (Agricultural Research Center, Giza (Egypt)). Pieterse, A.H. (Royal Tropical Inst., Amsterdam (Netherlands)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 33-39. 1 table; 4 fig.; 15 ref. Summaries (Ar, En)
Attachment and early development of Orobanche crenata Forsk. on two Egyptian cultivars of Vicia faba (Giza 2 and Giza 402) was studied in the field following six different sowing dates during the period Oct.-Dec. 1985. Observations were recorded on plants dug up with an intact root system at weekly intervals, beginning 4 - 6 weeks after sowing (WAS) until 10 WAS. New parasite attachments developed during the whole winter period, minimum air temperatures never being below 5 deg C, the seed germination of the parasite must have continued in the soil. Attachments were less on host plants of later sowing date, with the exception of the last sowing date when the number seemed to increase again. Cultivar 'Giza 2' flowered slightly earlier than 'Giza 402'. Parallel to that, Orobanche attachments and stalk emergence occurred earlier in Giza 2 than in Giza 402. The mechanism behind this correlation deserves further study. The number of spikes attachment ranged from 1-8 indicating that there was more than one spike tubercle, unlike what is usually mentioned in the literature. *vicia faba; sowing date; orobanche; egypt; infestation; plant developmental stages; temperature*

89-102459 Effect of sowing date and plant population per hill on faba bean (Vicia faba) yield. (En). Salih, F.A. (Shambat Research Station, Khartoum North (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 15-19. 4 tables; 12 ref. Summaries (Ar, En)
The effects of three plant densities (16.6, 33.3 and 49.9 plants/m2 corresponding to one, two, and three seeds/hill, respectively) and three sowing dates (20 Oct., 30 Oct., and 10 Nov) on faba bean (cv. BF 2.2) yield and its components were investigated for two seasons (1982 and 1983) at Shambat Research Station. In both seasons, sowing date and plant density had a significant effect on seed yield/ha; the highest yields were obtained from the crop sown on 30 Oct. and yield increased linearly with increasing number of plants/hill. The highest seed yield was obtained from a population density of three seeds/hill which is recommended for growing faba bean at Shambat locality in Sudan. *vicia faba; seeding rates; plant population; sowing date; sudan; crop yield*

89-102691 A protocol for faba bean (Vicia faba L.) micropropagation from seedlings. (En). Sayegh, A.J. (University College, Dublin (Ireland). Department of Horticulture). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1988) (no. 21) p. 12-13. 5 ref. Summaries (Ar, En)
A protocol for the micropropagation of faba bean from such explants as apical tips, nodal segments, epicotyls, hypocotyls, roots, cotyledons and epicotyl-hypocotyl junction has been developed. Using this protocol high success was achieved in getting the shoots to root to a stage that could be transferred to autotrophic medium. *vicia faba; tissue culture; seedlings; varieties; ireland; plant propagation; apical meristems; epicotyls; hypocotyls; roots; cotyledons; genotypes*

89-103028 Effect of moisture stress at different stages of plant growth on faba bean seed yields [Vicia faba]. (En). Mohamed, G.E. (Shendi Research Station (Sudan)). Salih, F.A. (Shambat Research Station (Sudan)). Ageeb, A.A. (Gezira Research Station, Wad Medani (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 17-19. 3 tables; 5 ref. Summaries (Ar, En)
The response of faba bean to water stress at different stages of plant growth (viz. early vegetative, early pod development, and late grain filling stages) was studied at three different sites in the Sudan. The results showed that omission of one irrigation during the vegetative phase produced no significant effect on yield as compared to the continuous 10-day irrigation regime. In contrast, water stress during the reproductive phase resulted in considerable reduction in seed yield, and early pod development was the most sensitive stage of plant growth to water stress. The present study showed that a saving of three irrigations can be achieved by adopting a countinuous 15-day regime which was less damaging than missing only two irrigations during the reproductive stage of growth. *vicia faba; stress; water deprivation; plant developmental stages; sudan; seeds; crop yield; irrigation; meteorological observations*

89-103546 Characteristics and variation of Cyprus faba bean germplasm [Vicia faba]. (En). Della, A. (Agricultural Research Inst., Nicosia (Cyprus)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1988) (no. 21) p. 9-12. 4 tables; 7 ref. Summaries (Ar, En)
101 accessions of the local faba bean cultivar were collected in 1980. These were characterized and preliminary evaluated during the seasons 1980-82 under irrigated and rainfed conditions, respectively. A total of 38 descriptors were studied. The local cultivar was not uniform for a number of characters such as grain size and shape, earliness, grain yield, plant height, protein content, etc. A number of accessions were selected for further testing. *vicia faba; genetic variation; germplasm; evaluation; cyprus; irrigation; selection; varieties; plant breeding; rain fed farming*

89-103547 Inheritance of flower color in Vicia faba L. (En). Cabrera, A. (Escuela Tecnica Superior de Ingenieros Agronomos, Cordoba (Spain). Departamento de Genetica). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 3-7. 4 tables; 6 ref. Summaries (Ar, En)
The inheritance of flower color in Vicia faba L. was studied. Four loci have been found to affect flower color. Two of these are complementary genes (w1 and w2) responsible for a white-flower. Brown and yellow colors were regulated by the Yl/yl locus, yellow being recessive. The locus Sdp/sdp controls the distribution of pigment, spotted being dominant to solid. *vicia faba; inheritance (genetics); flowers; colour; genetic maps; genetic markers; loci*

89-103548 Influence of flower color on seed yield and yield components in faba bean [Vicia faba]. (En). Singh, V.P.; Tomer, Y.S. (Haryana Agricultural Univ., Hisar (India). Department of Plant Breeding). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 7-9. 1 table; 5 ref. Summaries (Ar, En)
Observations were recorded for plant height, seed yield, number of tillers, number of pods/plant, seeds/pod, and 100-seed weight on the F2 plants of two crosses namely WF x Dholi-8 and WF x WH-51, segregating for flower color. Plants with white flower significantly yielded lower than those with colored ones. This was accompanied by a significant reduction in the number of pods/plant, tillers/plant, and 100-seed weight. Exploitation of variability within white flowered genotypes may improve the yielding ability of white-flowered faba bean. *vicia faba; flowers; colour; genetic variation; yield components; segregation; crop yield; seeds*

89-103549 Genetic studies on salt tolerance in faba bean (Vicia faba L.). (En). Abd El-Aal, S.A.; Waly, E.A. (Assiut Univ. (Egypt). Horticultural Dept.). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988). (no. 22) p. 9-10. 2 tables; 4 ref. Summaries (Ar, En).
The 5 x 5 diallel cross analysis was used to study the genetics of salt tolerance at germination in faba bean. The studies conducted under laboratory conditions revealed that additive and non-additive gene effects with a preponderance of additive gene effects govern the inheritance of salt tolerance at germination. Two parents, namely Somaly adn Kobrosy, were reported as good general combiners for salt tolerance. *vicia faba; inheritance (genetics); salt tolerance; germination; egypt*

89-103550 Some important phenological correlations of Wollo faba bean (Vicia faba L.) germplasm. (En). Telaye, A. (Institute of Agricultural Research, Addis Ababa (Ethiopia)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988). (no. 22) p. 10-16. 4 tables; 6 fig.; 7 ref. Summaries (Ar, En).
In an endeavour to assemble a working population of Vicia faba L. for the improvement of grain yield and quality, collection of germplasm was done in six Wollo administrative regions in Nov and Dec 1981 under the auspices of the Ethiopian Plant Genetic Resources Center. During the field collection, seed color, seed size, and hilum color were recorded on samples. Observations on damage by pod borer, frost, chocolate spot, rust, and lodging were also recorded. In the subsequent evaluation of 60 accessions at Debre Ziet Research station, eight important phenological characters were evaluated besides the evaluation of yield. Highest variability was exhibited in plant height followed by number of flowers/plant, grain yield, and pods/plant. Plant height did not correlate with grain yield. Evaluation of 44 accessions for eight phenological traits at Bekoji Research Station showed that highest variability was in grain yield followed by plant height. Here plant height and days to flowering were correlated and had significant bearing on grain yield. Plants with 100 and 105 cm in height gave the best grain yield. Expression of variability in the yield components was better at Debre Zeit than at Bekoji. *vicia faba; phenology; germplasm; ethiopia; evaluation; crop yield; plant ecology*

89-103551 Early screening of faba bean (Vicia faba L.) for dought resistance. (En). Soja, G. (Austrian Research Center Seibersdorf (Austria). Department of Agriculture); Soja, A.; Zarghami, R. (Universitaet fuer Bodenkultur Wien (Austria). Agronomy and Plant Breeding Inst.). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 20-24. 3 tables; 20 ref. Summaries (Ar, En)
In a nutrient solution test 10 cultivars of faba bean were exposed to increasing levels of osmotic stress obtained by addition of polyethylene glycol (PEG) 6000. Seedling behaviour was analysed at -4.8, -7.8, and -12.7 x 10^{**} (5) Pa, corresponding to mild, moderate, and severe stress, respectively. Treated and control plants were analysed for growth, gas exchange, abscisic acid (ABA) content, and leaf water and osmotic potential. Cultivars differed significantly in their sensitivity to drought stress. To compare the results of hydroponic tests with field reaction, six cultivars were further tested in the field by growing them with and without irrigation. Significant correlation was found between grain yield in the moisture stress situation in field and specific parameters measured on plants grown in nutrient solution (r = 0.61 to 0.91 for gas exchange and ABA concentrations). Correlation was even better (r = 0.71 to 0.93) when a large seeded cultivar (Optica) that escaped natural drought stress in the field because of early maturity was excluded from the computation. The results indicate that screening of faba bean with PEG in nutrient solution can be done quickly and provides sufficiently reliable results for characterizing the drought tolerance in faba bean. *vicia faba; selection; drought resistance; austria; methods; seedlings; stress; nutrient solutions; plant habit; seeds; crop yield*

89-103552 Yield response to mass honeycomb selection in faba bean (Vicia faba L.). (En). Alais, M.H. (Technological Education Inst., Thessaloniki (Greece) Agricultural Technological School). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 3-5. 2 tables, 1 fig., 11 ref. Summaries (Ar, En)
Two cycles of mass honeycomb selection for yield within the faba bean cv 'Polycarpe' were investigated. The total gain was 12.1 % for testing in the absence of competition, and 5 % year for testing under solid stand. This indicates that, in faba bean, genotypes selected without competition maintain their superiority when tested under solid stand. *vicia faba; selection; genotypes; greece; honeycombs; crop yield*

89-103553 Genetic mapping using trisomics in Vicia faba L. (En). Cabrera, A.; Cubero, J.I. (Escuela Tecnica Superior de Ingenieros Agronomos, Cordoba (Spain) Dept. de Genetica); Martin, A. (Consejo Superior de Investigaciones Cientificas, Cordoba (Spain)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 5-7. 1 table, 8 ref. Summaries (Ar, En)
Trisomic plants for all the subtelocentric chromosomes of Vicia faba were used in mapping nine mendelian traits. The red seed coat color locus (R/r) is located on chromosome IV. The terminal inflorescence locus (Tr/tr) is placed on chromosome V. The possible chromosome location of the sdp, yl, n, sc, dw, wl, and un-al(1) loci are discussed. *vicia faba; genetic maps; chromosomes; genes; colour; flowers; testa; growth; internodes; leaves; plant anatomy*

89-103554 A new faba bean cultivar for the northern province of the Sudan. (En). Salih, S.H. (Hudeiba Research Station, El-Damer (Sudan)); Ali, A.E. (Food Research Centre, Shambat (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 8-10. 2 tables, 7 ref. Summaries (Ar, En)
Out of eight lines evaluated for yield and yield components during the four seasons (1982-1985) in the Sifaim area, northern Sudan, the faba bean line SM-1 proved the best. It gave the highest average yield and outyielded the standard checks, Hudeiba 72 and the local genotype, by 17.6 % and 27.6 %, respectively. SM-1 also gave good quality seed as measured by the 100-seed weight, percent non-soaking seeds, percent protein content, and cooking time. Therefore, the line was released, under the name 'Sifaim improved', and recommended for the Northern province of Sudan. *vicia faba; evaluation; high yielding varieties; yield components; sudan; genotypes; seed; quality*

89-103555 Evaluation of faba bean (Vicia faba) varieties in the heavy clay soils of central Sudan (Sennar area). (En). Khashmelmous, A.E. (Sennar Research Station (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 10-12. 1 table, 10 ref. Summaries (Ar, En)
Several small seeded faba bean genotypes were tested for their adaptability to the heavy clay soil (pH 7-8) areas of Central Sudan at the Sennar Research Station during the seasons 1984/85 – 1986/87. Plant growth, yield, and seed quality were encouraging and indicated the possibility of introducing the crop into this area. Faba bean lines RB/30 x G1, 353 x 348, IW x Selaim, 133 S x G2 and Baladi x Selaim showed the best performance. *vicia faba; seed testing; evaluation; varieties; clay soils; adaptation; plant introduction; sudan; trials; plant habit; crop yield; seeds; quality; performance*

89-104599 Flavonoid constituents of seed coats of Vicia faba L. (Fabaceae) in relation to seed colour. (En). Nozzolillo, C. (University of Ottawa (Canada) Department of Biology); Riccardi, L.; Lattanzio, V.
Groupe Polyphenols. Narbonne (France). 14. International Conference of Groupe Polyphenols. Brock University, Sainte-Catharines, Ontario, Canada. August 16-19, 1988. Proceedings. 14. Congres International du Groupe Polyphenols (JIP 88). Universite Brock, Sainte-Catharines, Ontario, Canada. 16-19 aout 1988. Compte Rendu. ISBN 2-7380-0086-X. Narbonne (France). Groupe Polyphenols. 1988. p. 357-358. Groupe Polyphenols. Bulletin de Liaison (France). ISSN 0242-8466. no. 14. 8 ref. Summary (En)
vicia faba; testa; flavonoids; colour; composition

89-104600 The rhythm of flower opening in Vicia faba L. (En). Pearyman, J.C.; Marcellos, H. (New South Wales Dept. of Agriculture, Tamworth (Australia) Agricultural Research Centre). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1988) (no. 21) p. 17-18. 1 fig., 2 ref. Summaries (Ar, En)
The opening and closing rhythms of flowers of two faba bean genotypes, Ford and IF157, were monitored using time lapse video recording. Flowers opened and closed in several cycles for seven days. The first opening cycle was similar for both genotypes, starting between 14.00 and 15.00 h and closing at 19.30 h. On the second day, flowers of Ford began to open at 10.00 h and IF157 at 10.30 h, with both closing between 19.00 h and 21.00 h. There were two major peaks of flower opening in Ford starting at 6.00 h and 4.00 h on days three and four, respectively, but most IF157 flowers tended to remain open from 5.30 h on the third day to about 12.00 h on the fifth. Thereafter, IF157 flowers exhibited two more periods of flower opening. *vicia faba; flowering; genotypes*

89-104601 Electron spin resonance characterization of the radicals produced by enzymatic or chemical cleavage of vicine. (En). Pedersen, J.Z.; Muser, G.; Rotilio, G. *Biochemistry (USA)* ISSN 0006-2960. (15 Nov 1988) v. 27(23) p. 8834-8836. references. *US (DNAL 381 B523)
vicia faba; glucosides; enzyme activity; cell division

89-104602 Photosystem II in guard cells of Vicia faba: immunological detection. (En). Zemel, E.; Leizerovich, I.; Gepstein, S. *Plant physiology (USA)* ISSN 0032-0889. (Nov 1988) v. 88(3) p. 518-521. ill. references. *US (DNAL 450 P692)
vicia faba; cells; photosynthesis; plastids; immunology; chemistry; pertales; protein content

89-104603 Light quality and osmoregulation in Vicia guard cells. Evidence for involvement of three metabolic pathways. (En). Lallman, G.; Zeiger, E. *Plant physiology (USA)* ISSN 0032-0889. (Nov 1988) v. 88(3) p. 887-895. ill. references. *US (DNAL 450 P692)
vicia faba; cells; epidermis; stomata; osmosis; ions; photosynthesis; sugars; metabolism; biochemical pathways

89-104636 Chalcone synthase forms from spinach: in situ localization by immunofluorescence and immunogold labelling. (En). Beerhues, L. (Westfalische Wilhelms Universitaet, Muenster (Germany, F.R.) Botanisches Institut); Robenek, H.; Wiermann, R.
Groupe Polyphenols. Narbonne (France). 14. International Conference of Groupe Polyphenols. Brock University, Sainte-Catharines, Ontario, Canada. August 16-19, 1988. Proceedings. 14. Congres International du Groupe Polyphenols (JIP 88). Universite Brock, Sainte-Catharines, Ontario, Canada. 16-19 aout 1988. Compte Rendu. ISBN 2-7380-0086-X. Narbonne (France). Groupe Polyphenols. 1988. p. 57-60. Groupe Polyphenols. Bulletin de Liaison (France). ISSN 0242-8466. no. 14. 5 ref. Summaries (En, Fr)
spinacia oleracea; vicia faba; ligases; immunofluorescence; labelling; tissues; leaves

89-104965 Effect of phosphorus and potassium nutrition on Vicia faba parazitized by Orobanche crenata. (En). Kirollos, M.A. (Ministry of Agriculture (Egypt) Agriculture Research Centre); Abdel-Hafeez, S.; Higazy, M.A.; El-Chamrawy, N.K.
Association Internationale pour l'Optimisation de la Nutrition des Plantes (France); Groupement d'Etudes et de Recherches pour le Developpement de l'Agronomie Tropicale, Montpellier (France). 6. International colloquium for the optimization of plant nutrition. Proceedings. Montpellier, 2-8 September 1984. 6. Colloque international pour l'optimisation de la nutrition des plantes. Actes. Montpellier, 2-8 septembre 1984. ISBN 2-907718-02-9. ISBN 2-907718-00-2. Montpellier (France) GERDAT 1984. v. 1. p. 319-322. 6 ref. Summaries (En, Fr)
vicia faba; orobanche; potash fertilizers; phosphate fertilizers; growth; crop yield; plant nutrition

89-104966 Yield and nutrient uptake in different faba bean genotypes in northern Madhya Pradesh [Vicia faba]. (En). Shrivastava, M.P.; Bansal, K.N.; Dixit, S.S. (J.N. Krishi Vishwa Vidyalaya, Gwalior (India) Coll. of Agriculture). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 13-14. 1 table, 5 ref. Summaries (Ar, En)
Sixteen genotypes of faba bean were grown on an alluvial soil in Madhya Pradesh for studying their numeral nutrient uptake and yield performance. The highest grain yield of 1990 kg/ha was obtained in genotype JV-7. The maximum uptake of N and K was in variety JV-2 while that of P and S was in JV-10 and JV-7, respectively. *vicia faba; genotypes; nutrient uptake; alluvial soils; performance; madhya pradesh; india; crop yield*

89-105048 Growth analysis in faba bean (Vicia faba L.). (En). Singh, S.P.; Singh, N.P.; Pandey, R.K. (G.B. Pant Univ. of Agriculture and Technology, Pantnagar (India). Department of Agriculture). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988) (no. 22) p. 25-28. 3 tables; 6 ref. Summaries (Ar, En)
An experiment was conducted during the winter seasons of 1980/81 and 1982/83 at the Crop Research Centre of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, to study the growth behaviour of faba bean under different plant densities. The treatments included two genotypes (UPS 1 and BS 1) and five plant densities (12.5, 25, 50, 100, and 200 plants/m2). Significantly higher LAR was recorded at both the growth stages (35-70 and 70-105 days after sowing) with 100 plants/m2 during 1980/81 and with 25 and 50 plants/m2 during 1982/83. LAI and CGR increased whereas RGR, NAR, and RLGR declined with increase in density at both stages of crop growth. *vicia faba; plant habit; leaves; plant population; growth rate; genotypes; india*

89-106230 The susceptibility of faba bean and other seed legumes to infestation by Bruchidius incarnatus (BOH.) and Callosobruchus maculatus (F.) (Coleoptera: Bruchidae) [Vicia faba]. (En). Shazali, M.I.H. (Agricultural Research Corporation, Khartoum North (Sudan) Shambat Research Station). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989) (no. 23) p. 20-24. 2 tables, 14 ref. Summaries (Ar, En)
Oviposition and development of Bruchidius incarnatus (Boh.) and Callosobruchus maculatus (F.) on eight seed legumes were studied in a thermostatically controlled Ketterman cooled incubator at 30 deg C and 70% relative humidity. The number of eggs laid on the different seeds varied significantly ($P < 0.01$), although the same B. incarnatus oviposited its highest number of eggs on faba bean (Vicia faba L.), whereas C. maculatus laid its maximum number of eggs on pigeon pea (Cajanus cajan L.). The percentage eggs hatched was significantly ($P < 0.05$) affected by host seeds. Percentage of adult emergence was not significantly different between the two species of insects. However, the effect of host and the interaction between host and insect species were highly significant ($P < 0.001$). Chickpea (Cicer arietinum L.) was the most susceptible host to both insects, whereas cowpea (Vigna unguiculata L.) and garden pea (Pisum sativum L.) were the most resistant to B. incarnatus and C. maculatus, respectively. The insects completely failed to develop in either lupin (Lupinus termis L.) or in haricot bean (Phaseolus vulgaris L.). There was evidence that this reaction may be related to seed coat hardness in haricot bean and to the seed chemical composition in lupin. *vicia faba; cicer arietinum; pisum sativum; cowpeas; cajanus cajan; lupinus termis; phaseolus vulgaris; bruchus; callosobruchus; pest resistance; sudan; seeds; infestation*

89-106825 Effectiveness of soil solarization in furrow-irrigated Egyptian soils. (En) Abdel-Rahim, M.F., Satour, M.M., Mickail, K.Y., El-Eraki, S.A., Grinstein, A., Chen, Y., Katan, J. *Plant disease (USA)* ISSN 0191-2917 (Feb 1988) v. 72(2) p. 143-146 references *US (DNAL 1.9 P69P)
vicia faba, egypt, allium, lycopersicon esculentum, trifolium, pests of plants, soil biology, soil treatment, solar energy, heating, growth, crop yield, soil chemicophysical properties, salinity, weed control, furrow irrigation, dry matter

89-106826 Isolation and identification of some broadbean mosaic viruses in Jordan. (En) Abu Shirbi, A.S.M. Jordan Univ., Amman (Jordan) Dept. of Plant Protection. Thesis (M.Sc. in plant protection) Amman (Jordan) Apr 1989 61 leaves 7 ill., 1 fig., 11 tables, 54 ref. Summaries (Ar, En) *JO
93 virus isolates were recovered from diseased faba bean plants showing mosaic symptoms collected through 1987. 4 isolates were chosen to represent the remaining isolates on the bases of their reaction on preliminary selected host plant species. The study extended information on their host range, physical properties, electron microscopy, inclusion bodies, serological behavior and the response of different bean and faba bean cultivars to infection by these isolates. One isolate was identified as BYMV. The other 3 isolates were identified as three different strains of BCMV on the basis of their serological and biological behavior. The three strains differ from all 22 BCMV strains. Incidence of the mosaic disease affecting faba bean in the Jordan Valley reached up 100% at the end of the season. The incidence survey indicated that the BYMV is the most prevalent virus in the Jordan Valley. BCMV did not play an important role in the mosaic disease complex compared to BYMV. *vicia faba, plant viruses, aphids, disease transmission, disease resistance, microscopy, immunological techniques, jordan, disease surveillance*

89-106827 Comparison between mechanical and aphid inoculation of bean yellow mosaic virus to faba bean [Vicia faba]. (En) Skaf, J.S. (Damascus Univ. (Syria) Plant Protection Dept.), Makkouk, K.M. (ICARDA, Aleppo (Syria)) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Aug 1988) (no. 21) p. 34-36 1 table, 4 ref. Summaries (Ar, En)
In a comparison between mechanical and aphid inoculation as techniques for screening faba bean for resistance to bean yellow mosaic virus (BYMV), aphid inoculation was found to be better. A higher percentage of infection was obtained with faba bean genotypes inoculated with aphids (Aphis craccivora Koch) as compared to mechanical inoculation. *vicia faba, disease resistance, plant viruses, inoculation, aphids, selection, genotypes*

89-106828 A study of the performance of certain faba bean genotypes in relation to Botrytis fabae and Ascochyta fabae in France [Vicia faba]. (En) Tivoli, B., Berthelem, P., Leguen, J., Onfroy, C. (Institut National de la Recherche Agronomique, Le Rheu (France)) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Aug 1988) (no. 21) p. 36-40 4 tables, 11 ref. Summaries (Ar, En)
The reaction of two different sets of 20 genotypes of faba bean to Botrytis fabae and Ascochyta fabae was studied using detached leaf technique and artificial infection in a polythene tunnel and in the field. Genotypes varied considerably in their reaction to the diseases, and based on their performance they can be classified to genotypes with good, intermediate, and weak performance. The resistance of ILB 938 and BPL 710 to B. fabae and Asco 16 and 17 to A. fabae was confirmed under the French conditions. *vicia faba, botrytis, ascochyta, genotypes, performance, france, disease resistance*

89-106829 Reaction of faba bean genotypes to various diseases in Pakistan [Vicia faba]. (En) Iqbal, S.M., Ghafoor, A., Bashir, M., Baksh, A. (National Agricultural Research Center, Islamabad (Pakistan) Pulses Program) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Aug 1988) (no. 21) p. 40-42 1 table, 9 ref. Summaries (Ar, En)
The disease reactions of 23 accessions of faba bean (Vicia fabae L.) provided by ICARDA, Syria and one local cultivar were studied under field conditions at the National Agricultural Research Center (NARC), Islamabad. Of these 23 accessions, one proved resistant to ascochyta blight (Ascochyta fabae), 12 to rust (Uromyces viciae fabae), 15 to powdery mildew (Erysiphe polygoni), and 1 to chocolate spot (Botrytis fabae). The local check was rated tolerant to A. fabae, resistant to Uromyces fabae, and susceptible to E. polygoni and B. fabae. As the infection with various diseases occurred late in the season, the effect of the diseases on yield was minor. *vicia faba, genotypes, mycoses, pakistan, ascochyta, uromyces, erysiphe, botrytis*

89-106830 Some factors affecting rhizosphere fungi populations of faba bean roots [Vicia faba]. (En) Omar, S.A.M., Salem, D.E., El-Gantiry, S.M.M. (Agricultural Research Center, Giza (Egypt) Plant Pathology Inst.) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Dec 1988) (no. 22) p. 39-43 3 fig., 13 ref. Summaries (Ar, En)
In a series of pot experiments in a glasshouse, rhizosphere fungi of faba bean cultivars at different stages of growth were studied, and their effects with the root-rot fungus Rhizoctonia solani, cultivar, crop residue, and fungicidal seed dressing were also determined. Inoculation with R. solani increased the fungi populations, where the highest counts were found at the vegetative and flowering stages. Cultivar Rebaya 40 seemed to stimulate rhizosphere fungi. Soil previously sown with soybean contained a higher number of rhizosphere fungi than that previously sown with maize or rice. Seed treatment with vitavax 200 and or topsin 70 reduced the number of fungal colonies, but only during the first month of plant growth. *vicia faba, rhizosphere, fungi, roots, crop residues, seed treatment, egypt, plant developmental stages, rhizoctonia, fungicides, infestation*

89-106831 A simple method for mass spore production of Botrytis fabae, the causal fungus of chocolate spot of faba bean [Vicia faba]. (En) Beniwal, S.P.S., Gorfu, D. (Holetta Agricultural Research Center, Addis Ababa (Ethiopia) Inst. of Agricultural Research) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Apr 1989) (no. 23) p. 30-32 1 table, 7 ref. Summaries (Ar, En)
Simple methods for spore production of Botrytis fabae Sardina were investigated by comparing two media containing Chrysanthemum (Chrysanthemum sinense Sabine) flowers (CHSF) or marigold (Tagetes signata) flowers (MGF) supplemented with 3% dextrose (w/w) with the commonly used faba bean dextrose agar (FDA) medium. The UV light irradiation was a prerequisite for mass sporulation of B. fabae on MGF and FDA media while on the CHSF medium a high level of sporulation occurred even under the normal laboratory conditions (18-25 deg C) without UV irradiation. The use of the CHSF medium for mass spore production of B. fabae is, therefore, simple and efficient, and is recommended for use elsewhere especially in the developing world. *vicia faba, botrytis, culture media, laboratory experiments, methods, spores, production, temperature, artificial light, chrysanthemum, tagetes, glucose*

89-106899 Novel virus-like particles containing circular single-stranded DNAs associated with subterranean clover stunt disease. (En) Chu, P.W.G., Helms, K. *Virology (USA)* ISSN 0042-6822 (Nov 1988) v. 167(1) p. 38-49 references *US (DNAL 448.8 V81)
trifolium subterraneum, plant viruses, dna, pisum sativum, phaseolus vulgaris, vicia faba, peptides

89-107050 Winter hardiness in Mediterranean populations of faba bean [Vicia faba]. (En) Herzog, H. (Institute for Crop Science and Plant Breeding, Kiel (Germany, F.R.)), Saxena, M.C. (ICARDA, Aleppo (Syria)) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Aug 1988) (no. 21) p. 19-25 1 table, 3 fig.; 1 plate; 14 ref. Summaries (Ar, En)
10 populations of faba bean of Spanish, French, Egyptian, Sudanese, Lebanese and Chinese origin were hardened in a growth chamber at 8/2 deg C (day/night) after plant emergence. Freezing resistance (FR) and several plant and leaf traits supposed to be associated with winter hardiness, were examined after a saturating hardening treatment. Cote d'Or, an old French landrace displayed the most favorable performance comprising a slow development, a short growth habit, small leaves, a low water/dry matter ratio and a high FR (about -16 deg C). However, some other populations such as ILB 3187 and 3188, which were not particularly selected for FR, and in part Aquadulce, developed a considerable FR and showed a reasonable performance for most traits examined. Between these traits and FR, phenotypical and genotypical correlations were established and a multiple regression analysis suggested that they might be used as indirect selection criteria for winter hardiness. *vicia faba, winter hardiness, mediterranean climate, plant population, hardening, temperature resistance*

89-107249 Performance of some pesticides in controlling Orobanche [Vicia faba]. (En) Zahran, M.K., Hassanein, E.E.; Saber, H.A. (ARC, Giza (Egypt)), Saxena, M.C. (ICARDA, Aleppo (Syria)) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Aug 1988) (no. 21) p. 31-34 2 tables, 11 ref. Summaries (Ar, En)
The effect of pre-emergence and post-emergence applications of the chemicals Basamid (dazomet) at 25 and 50 kg a.i./ha, Furadan (carbofuran) at 2.5 and 5.0 kg a.i./ha, and Fusilade (fluazifop-butyl) at 0.58 and 0.89 kg a.i./ha, was compared with late post-emergence foliar spray of Lancer (glyphosate, applied twice at 0.064 kg a.i./ha each) and Scepter (imazaquin) at 0.09 kg a.i./ha in controlling Orobanche crenata Forsk. in a naturally infested faba bean field at Giza, Egypt. Lancer proved most effective in significantly controlling the Orobanche infestation and increasing the dry weight of faba bean measured 18 weeks after sowing. The effect on Orobanche control was maintained till the end of the growing period of faba bean. When compared with Lancer, Scepter was only slightly less effective in controlling Orobanche but it did not cause a commensurate increase in the faba bean dry matter yield because of phytotoxicity. Other chemicals tested proved ineffective in controlling Orobanche. *vicia faba, pesticides, orobanche, egypt, weed control*

89-107250 Use of Dazomet for broomrape control in faba bean [Vicia faba]. (En) Zahran, M.K., Rabeia, B.M.B., Khattab, A.M.A.M. (Agricultural Research Center, Giza (Egypt)), Saxena, M.C. (ICARDA, Aleppo (Syria)) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Apr 1989) (no. 23) p. 26-29 4 tables, 1 fig., 10 ref. Summaries (Ar, En)
Two pot-culture experiments and two field trials were conducted at Giza, Egypt to study the potential of Dazomet to control broomrape (Orobanche crenata Forsk.) in faba bean (Vicia faba L.) during 1982-1986. Faba bean genotypes Rebaya 40, Giza 402, and Giza 2 could tolerate Dazomet upto 50 kg/ha. Pre-plant incorporation of Dazomet at 25 kg/ha gave excellent control of Orobanche crenata while post-emergence and post-sowing applications gave relatively lesser control. Seed yield of faba bean increased with the application of Dazomet, the increase being particularly conspicuous with pre-planting incorporation of the chemical. *vicia faba, orobanche, chemical control, varieties, egypt, infestation, seeds, crop yield, height*

89-108716 Effect of the raw legume faba bean (Vicia faba L.) on the rate of muscle and liver protein metabolism in rats. (En) Goena, M., Santidrian, S., Fernando, F.C., Larralde, J. (Navarra Univ., Pamplona (Spain) Dept. of Physiology) *FABIS Newsletter (ICARDA)* Faba Bean Information Service ISSN 0255-6448 (Apr 1989) (no. 23) p. 33-37 4 tables, 33 ref. Summaries (Ar, En)
Body weight gain (BWG), food efficiency rate (FER), protein efficiency rate (PER), gastrocnemius muscle and liver weight, protein content, and RNA/DNA ratio as well as protein synthesis capacity (PSC) along with other metabolic parameters, of both gastrocnemius muscle and liver were

measured in rats (80-90 g initial body weight) fed ad libitum for 12 days on 18% protein diets containing either casein (5% of methionine added, control) or the raw faba bean (Vicia faba L.) as the sole sources of protein. It was found that, as compared to casein-fed rats, those fed the legume diet exhibited a significant reduction (P<0.05) in BWG, FER, PER, liver RNA/DNA, and muscle and liver PSC. These results indicated that feeding growing rats a raw faba diet brings about a significant reduction in the rate of protein synthesis both in muscle and liver. *rats; diet; vicia faba; protein metabolism; muscles; liver; protein synthesis*

89-111665 Effect of cooking temperature and time on the hydration and texture of cooked faba bean Medammis [Vicia faba]. (En)
Shehata, A.M.E.; Zeinab, H.M.; Yousef, M.M. (University of Alexandria (Egypt). Department of Food Science and Technology). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Dec 1988). (no. 22) p. 44-47. 3 tables. 10 ref. Summaries (Ar, En)
Six samples, three soft- (S) and three hard-to-cook (H), of freshly harvested faba bean seeds were simmered at 100 deg C for 8, 10, or 12 h or autoclaved at 110, 115, 120, or 125 deg C for 1, 2, or 3 h. Variation among samples of each group was mostly nonsignificant. Hydration coefficient (HC) of cooked beans was higher for 'S' than for 'H' samples. However, HC and moisture content were not appreciably affected by the different cooking temperatures and times, except that cooking at 120 deg C for 1 h gave values less than those for other treatments. On the other hand, texture was highly affected by temperature and time of cooking. Beans with maximum shear force up to 100 kg/100 g were acceptable to consumers. Texture of 'H' samples became acceptable by cooking at 115 deg C for 3 h or at 120 deg C for 2 h. Cooking 'S' samples at 120 deg C reduced the time of 12.5% of that required when cooking by simmering (1 h at 120 deg C against 8 h at 100 deg C) to achieve the same texture (about 86 kg/100g). *vicia faba; hydration; cooking; temperature; egypt; boiling point; chemicophysical properties; seeds*

89-111666 Binding of vanillin by fababean proteins. (En). Ng, P.K.W.; Hoehn, E.; Bushuk, W. *Journal of food science : an official publication of the Institute of Food Technologists (USA)* ISSN 0022-1147. (Jan-Feb 1989). v. 54(1) p. 105-107. references. *US (DNAL 389.8 F7322).
Binding of vanillin by fababean protein micellar mass (PMM) in water suspensions was investigated. Free vanillin was determined by HPLC and data were evaluated by the Klotz equation. Increasing vanillin and PMM concentrations increased the percentage of total vanillin bound to protein. Binding capacities of heat-treated (denatured) PMM were higher than that of untreated (native) PMM. Binding forces between vanillin and PMM were weak, and the number of binding sites increased when PMM was denatured. *vicia faba; proteins; phenolic compounds; in vitro experiment; ion*

89-112074 Effect of time of harvest and cooking on the in vitro digestability of faba bean proteins [Vicia faba]. (En). Ahmed, A.H.R.; Khairi, N.E.A.; Ali, A.E. (Food Research Centre, Khartoum North (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989). (no. 23) p. 38-40. 2 tables, 14 ref. Summaries (Ar, En)
The in vitro protein digestibility of faba bean cultivar BF 2/2 harvested from New Halfa and Shambat locations was investigated with respect to plant age at harvest and cooking process. At both localities, the protein content decreased significantly as the harvest was delayed. However, there was an increase in the water soluble proteins (albumin). Cooked Shambat and New Halfa beans gave the highest values of protein digestibility, 93% and 91%, when harvested was at 110 and 120 days after sowing, respectively. Although delayed harvest reduced the protein content, it improved the nutritive value. *vicia faba; in vitro experimentation; digestibility; proteins; harvesting; timing; cooking; sudan; protein content; nutritive value; plant developmental stages*

89-115067 [The effect of stand density, growth regulators and irrigation on yield and yield stability of field beans (Vicia faba L.)]. (De). Der Einfluss von Bestandesdichte, Wachstumsregulatoren und Bewaesserung auf den Ertrag und die Ertragssicherheit von Ackerbohnen (Vicia faba L.). Huegi, K. (ETH, Zurich (Switzerland) Doktor der Technischen Wissenschaften (Diss. ETH no. 8750). Zurich (Switzerland). Zentralstelle der Studentenschaft. 1989. 157 p. 11 tables, 50 graphs, 94 ref. Summaries (De, En, Fr)
vicia faba; spacing; irrigation rates; plant growth substances; switzerland; plant population; trials; plant developmental stages; water balance; environmental effects; crop yield

89-115068 Feeding grain legumes on the farm. (De). Eigenverwertung von Koernerleguminosen. Wehren, W. (Landwirtschaftsschule und Bildungs- und Beratungsstelle, Geldern (Germany, F.R.). Fachbereich Tierproduktion und Landtechnik). *Landtechnik (Germany, F.R.)* ISSN 0023-8082. (1988). v. 43(6) p. 177-179. 4 ill., 9 tables, 3 ref. Summary (De)
The cropping of grain legumes, especially of field beans, has expanded considerably. Community organizations for cropping receive the EC subsidy for grain legumes too, which are used on the farm for direct feeding. By feeding to fattening pigs, an advantage up to 8.60 DM per 100 kg can be attained. Preservation methods are drying, adding propionic acid, adding propionic acid mixed with carrier substances and ensiling milled beans. These methods, gathered from experiences in the region of Geldern in 1987, are described, appraised and the costs compared. The preservation costs decrease in the sequence of the presented methods. Specific care is necessary for ensiling the beans and unloading them from the silo. *vicia faba; grain legumes; farms; preservation; methods; silage making; lactic acid*

89-115069 [Is it profitable for the future to crop field beans and peas?]. (De). Lohnt in Zukunft der Anbau von Ackerbohnen und Erbsen? Redelberger, H. (Hessisches Landesamt fuer Ernaehrung, Landwirtschaft und Landentwicklung, Kassel (Germany, F.R.)); Voelkel, G. *Alle, die landtechnische zeitschrift (Germany, F.R.)* ISSN 0011-5010. (1988). v. 39(1) p. 30-33. 7 ill., 2 tables.
vicia faba; pisum sativum; planting; drilling; crop yield; cropping patterns

89-115070 Effect of different inter-row spacings on faba beans of different forms. (En). Pillream, C.J. (Nottingham Univ., Loughborough (UK). Dept. of Agriculture and Horticulture); Hebblethwaite, P.D.; Clark, A.S. *Field Crops Research (Netherlands)* ISSN 0378-4290. (1989). v. 21(3) p. 203-214. 20 refs.; Summary (En).
vicia faba; spacing; growth

89-115166 [Harvesting: a little complicated operation [protein producing plants]]. (Pt). Colheita: operacao um pouco complexa [proteaginosas]. Aguiar, J. *Agricultura Nova (Portugal)* (Mar-Apr 1989). (no.15) p. 41-42. ill.; table.
lupinus albus; pisum sativum; vicia faba; harvesting; harvesters

89-115203 [New production forms: b. Niche cultures in agriculture. New crops [Oenothera biennis, Papaver bracteatum, Borago officinalis, Datura stramonium]]. (Da). Nye produktionsformer: b. Nichekulturer i jordbruget. Nye afgroeder. Hengmark, P. Statens Planteavlsforsoeg, Copenhagen (Denmark). *Statens Planteavlsmoede (Denmark)* ISSN 0106-8601. (1985). (v.1985) p. 23-26. 3 tables. [Statens Planteavlsmoede, Copenhagen (Denmark). 22 Nov 1985.]
datura; amaranthus caudatus; glycine max; lupinus albus; linum usitatissimum; vicia faba; helianthus annuus; denmark; onagraceae; boraginaceae; papaver; trigonella foenum-graecum; plant breeding

89-115406 In vitro regeneration of Vicia faba L. (En). Gebre-Medhin, G.; Traenkner, A.; Weltzien, H.C. (Bonn Univ. (Germany, F.R.). Institut fuer Pflanzenkrankheiten). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Aug 1988). (no. 21) p. 14-16. 1 table; 3 fig.; 6 ref. Summaries (Ar, En).
Primary explants derived from seedlings and secondary explants derived from regenerated sprouts, mainly shoot tips, nodes and hypocotyl were used to regenerate three Vicia faba accessions. Two relatively resistant accessions and one susceptible to Botrytis fabae Sard. were regenerated by tissue culture. Regeneration was successful in B5 medium containing 0.1 mg/l of IAA (indole-3-acetic acid) and 0.5 mg/l BAP (6-benzylamino purine). None or very few regenerations were achieved in the medium with 0.2 mg/l of IAA and 0.4 mg/l of BAP. *vicia faba; tissue culture; botrytis; ethiopia; plant propagation; growing media; iaa; disease resistance*

89-115883 [Gene banks for plants in Switzerland]. (De). Genbanken fuer Pflanzenmaterial in der Schweiz. Kleijer, G. Station federale de recherches agronomiques de Changins, Nyon (Switzerland). *Landwirtschaft Schweiz (Switzerland)* (Jul 1989). v. 2(7) p. 389-391. 9 ill.
gene pools; plant collections; research institutions; switzerland; trials; experiments; triticum aestivum; triticum spelta; triticales; zea mays; hordeum vulgare; gramineae; glycine max; vicia faba; vitis; malus; pyrus; prunus; vegetable crops

89-116229 Structural variations in Vicia faba mitochondrial genome. (En). Negruk, V.I. (USSR Academy of Sciences, Moscow (USSR). Inst. of Plant Physiology); Kaushik, N.K. *Theoretical and Applied Genetics (Germany, F.R.)* ISSN 0040-5752. (1988). v. 76(4) p. 587-592. 6 ill., 2 tables; 20 ref. Summary (En).
vicia faba; mitochondria; genomes; cytology; taxonomy

89-116230 Heterosis and genetic variances and their implications for breeding improved varieties of spring beans (Vicia faba L.). (En). Ebmeyer, E. (Univ. Goettingen (Germany, F.R.) Inst. fuer Pflanzenbau und Pflanzenzuechtung). *Plant Breeding (Germany, F.R.)* ISSN 0179-9541. (1988). v. 101(3) p. 200-207. 1 ill., 4 tables; 19 ref. Summaries (De, En).
vicia faba; plant breeding; biometry; hybrid vigour; genetic variation

89-116231 Variation in reaction of faba bean lines to different accessions of Orobanche crenata Forsk. (En). Radwan, M.S. (Cairo Univ., Giza (Egypt). Faculty of Agriculture. Agronomy Dept.); Abdalla, M.M.F.; Fischbeck, G.; Metwally, A.A.; Darwish, D.S. *Plant Breeding (Germany, F.R.)* ISSN 0179-9541. (1988). v. 101(3) p. 208-216. 1 ill., 5 tables; 11 ref. Summaries (De, En).
vicia faba; orobanche; growth; genetic variation; taxonomy; biometry

89-116232 Winter hardiness in faba beans: varietal differences and interrelations among selection criteria. (En). Herzog, H. (Kiel Univ. (Germany, F.R.) Institut fuer Pflanzenbau und Pflanzenzuechtung). *Plant Breeding (Germany, F.R.)* ISSN 0179-9541. (1988). v. 101(4) p. 269-276. 5 ill., 3 tables; 15 ref. Summaries (De, En).
vicia faba; winter hardiness; taxonomy; plant breeding; biometry; selection

89-116233 The nutritive value of the inbred lines of faba beans (Vicia faba L.) in relation to their content of antinutritional constituents and protein quality. (En). Bjerg, B. (Royal Veterinary and Agricultural Univ., Frederiksberg C. (Denmark). Chemistry Dept.); Ebmeyer, E.; Eggum, B.O.; Larsen, E.; Roebbelen, G.; Soerensen, H. *Plant Breeding (Germany, F.R.)* ISSN 0179-9541. (1988). v. 101(4) p. 277-291. 1 ill., 8 tables. Bibliography 52 ref. Summaries (De, En).
vicia faba; inbred lines; nutritive value; toxic substances; proteins; quality

89-116602 Immunofluorescent staining of microtubules in plant tissues: Improved embedding and sectioning techniques using polyethylene glycol (PEG) and Steedman's wax. (En). Brown, R.C. (University of South Western Louisiana, Lafayette (USA). Dept. of Biology); Lemmon, B.E.; Mullinax, J.B. *Botanica Acta (Germany, F.R.)* ISSN 0932-8629. (1989). v. 102(1) p. 54-61. 15 ill.; 25 ref. Summary (En).
cell structure; mitosis; immunofluorescence; vicia faba; allium cepa;

glycine max; saccharum

89-116635 A quantitative cytochemical evidence for the origin of endodermis in the roots of Pisum sativum and Vicia faba. (En) Rana, M.A. (Bahauddin Zakariya Univ., Multan (Pakistan) Inst. of Pure and Applied Biology); Bokhari, M.H. (University Port Hart Coert (Nigeria) Botany Dept.); Rana, B.N.A. *Biologia (Pakistan)* ISSN 0006-3096. (Jun 1988) v. 34(1) p. 107-111. 1 ill., 2 tables, 10 ref.; Summary (En)
pisum sativum; vicia faba; roots; tissues

89-117114 Effect of salinity stress on ribonucleolytic activities in glycophytic and halophytic plant species. (En) Rouxel, M.-F. (Caen Univ. (France) Lab. de Physiologie et Biochemie Vegetales); Singh, J.P.; Bscpoulos, N.; Billard, J.-P.; Esnault, R. *Journal of Plant Physiology (Germany, F.R.)* ISSN 0176-1617. (1988) v. 133(6) p. 738-742. 1 ill., 4 tables, 32 ref. Summary (En)
phaseolus vulgaris; chenopodiaceae; vicia faba; salinity; growth; salt tolerance; nucleic compounds; enzymic activity

89-117124 Identification of GTP-binding proteins in the plasma membrane of higher plants. (En) Blum, W.; Hinsch, K.D.; Schultz, G.; Weiler, E.W. *Biochemical and biophysical research communications (USA)* ISSN 0006-291X. (31 Oct 1988) v. 156(2) p. 954-959. references. *US (DNAL 442.8 B523o)
vicia faba; cruciferae; monocotyledons; proteins; cell structure; amino acids; nucleotides

89-117125 Preparation of crystalline isouramil from convicine by acid hydrolysis and isolation of two decomposition products of isouramil. (En) Marquardt, R.R.; Arbid, M.S.S.; Frohlich, A.A. *Journal of agricultural and food chemistry (USA)* ISSN 0021-8561. (Mar-Apr 1989) v. 37(2) p. 448-454. ill. references. *US (DNAL 381 J8223)
vicia faba; glucosides; intestinal diseases; hydrolysis; degradation; metabolic diseases

89-117126 Stimulation of sugar exit from leaf tissues of Vicia faba L. (En) M'Batchi, B. (Poitiers Univ. (France) Station Biologique de Beau-Site); Delrot, S. *Planta (Germany, F.R.)* ISSN 0032-0935. (1988) v. 174(3) p. 340-348. 3 ill., 3 tables; 35 ref. Summary (En)
vicia faba; leaves; sucrose; translocation; secretion

89-117127 Chloroplast messenger RNAs of free and thylakoid-bound polysomes from Vicia faba L. (En) Friemann, A. (Bonn Univ. (Germany, F.R.) Botanisches Inst.); Hachtel, W. *Planta (Germany, F.R.)* ISSN 0032-0935. (1988) v. 175(1) p. 50-59. 4 ill., 3 tables; 46 ref. Summary (En)
vicia faba; plastids; messenger rna; cell membranes; protein synthesis

89-117128 A new method of measurement of changes in turgor pressure in the mesophyll cells of leaves. (En) Piwowarczyk, W. (Jagiellonian Univ., Krakow (Poland). Lab. of Physiology and Biochemistry of Plants) *Journal of Plant Physiology (Germany, F.R.)* ISSN 0176-1617. (1988) v. 132(6) p. 653-657. 3 ill.; 18 ref. Summary (En)
vicia faba; mesophyll; cells; turgor; methods

89-117129 Organic acids as sources for drought-induced proline synthesis in field bean plants, Vicia faba L. (En) Venekamp, J.H. (Centre for Agrobiological Research, Wageningen (Netherlands)); Lampe, J.E.M.; Koot, J.T.M. *Journal of Plant Physiology (Germany, F.R.)* ISSN 0176-1617. (1988) v. 133(6) p. 654-659. 3 ill., 4 tables, 26 ref. Summary (En)
vicia faba; proline; biosynthesis; drought; organic acids; enzymic activity

89-117130 Quantitative analysis of outward rectifying K+ channel currents in guard cell protoplasts from Vicia faba. (En) Schroeder, J.I. *The Journal of membrane biology (USA)* ISSN 0022-2631. (Mar 1989) v. 107(3) p. 229-235. references. *US (DNAL QH573.J6)
vicia faba; protoplasts; potassium; ions; cells

89-117131 Directed movement of latex particles in the gynoecia of three species of flowering plants. (En) Sanders, L.C.; Lord, E.M. *Science (USA)* ISSN 0036-8075. (24 Mar 1989) v. 243(4898) p. 1606-1608. ill. references. *US (DNAL 470 SC12)
The secretory matrix of the stylar-transmitting tract of angiosperms has been characterized as a nutrient medium for the growth of pollen tubes, acting to guide tubes to the ovules. When nonliving particles (latex beads) were artificially introduced onto the transmitting tracts of styles of Hemerocallis flava, Raphanus raphanistrum, and Vicia faba, they were translocated to the ovary at rates similar to those of pollen tubes. Direct observations were made on the movement of individual beads along the secretory epidermis in the style and ovary of Vicia faba. The transmitting tract may play an active role in extending tube tips to their destination in the ovary. *vicia faba; hemerocallis; raphanus; gynoecium; latex; movement; pollination*

89-117242 Homoglutathione: isolation, quantification and occurrence in legumes. (En) Klapheck, S. (Koeln Univ. (Germany, F.R.) Botanisches Inst.) *Physiologia Plantarum (Denmark)* ISSN 0031-9317. (Dec 1988) v. 74(4) p. 727-732. Summary (En)
trifolium pratense; trigonella coerulea; melilotus alba; phaseolus coccineus; pisum sativum; lathyrus; vicia faba; phaseolus vulgaris; glycine max; vigna radiata; cicer arietinum; lens culinaris; trifolium incarnatum; peptides; leaves; roots; seed; chemical analysis

89-117522 Acridine orange-induced vacuolar uptake of cytoplasmic organelles in plant cells: An ultrastructural study [Vicia faba]. (En) Gupta, H.S. (Indian Inst. of Technology, Kharagpur (India) Dept. of Agricultural Engineering); De, D.N. *Journal of Plant Physiology (Germany, F.R.)* ISSN 0176-1617. (1988) v. 132(2) p. 254-256. 3 ill., 17 ref. Summary (En)
vicia faba; cytoplasm; cell structure; vacuoles; protoplasm

89-117523 ATPase activity in plasmalemma-rich vesicles isolated by aqueous two-phase partitioning from Vicia faba mesophyll and epidermis: Characterization and influence of abscisic acid fusicoccin [plasma membrane, cytochrome c reductase, guard cells]. (En) Blum, W.; Key, G.; Weiler, E.W. (Osnabrueck Univ., (Germany, F.R.) D. pt. of Plant Physiology). *Physiologia Plantarum (Denmark)* ISSN 003, 9317. (Feb 1988) v. 72(2) p. 279-287. 5 ill., 5 tables; 34 ref. Summary (En).
vicia faba; aba; adenosine triphosphatase; enzymic activity; glucans; ligases; malates; oxidoreductases

89-117711 [Proposal for a methodology for analysing germination tests [Portugal]. (Pt) Proposta de uma metodologia de analise de ensaios de germinacao. Coelho, J.C. Sociedade de Ciencias Agrarias de Portugal, Lisbon (Portugal). *Revista de Ciencias Agrarias (Portugal)* ISSN 0871-018X. (1988) v. 11(1) p. 19-25. 2 tables, 3 graphs; 12 refs.
vicia faba; germination; trials; methods; portugal

89-118203 [Plant diseases and pests in agriculture]. (De) Pflanzenkrankheiten und Schaedlinge im Ackerbau. 2. ed. Heitefuss, R.; Koenig, K.; Obst, A.; Reschke, M. ISBN 3-7690-0442-6. Frankfurt (Germany, F.R.). DLG. 1987. 132 p. 205 ill.; 14 ref.
beta vulgaris; cereals; brassica napus; solanum tuberosum; vicia faba; pisum sativum; plant diseases; plant viruses; pests of plants; biological properties; plant disease manifestations; control

89-118674 Efficiency of aphid predators (coccinellid and chrysopid larvae) and of an insect growth regulator (JHA) against Aphis fabae Scop. (Homoptera, Aphididae) on resistant and susceptible varieties of Vicia faba. (De) Effizienz von Blattlauspraedatoren (Coccinelliden- und Chrysopiden-Larven) und einem Insektenwachstumsregulator (JHA) gegenueber Aphis fabae Scop. (Homoptera, Aphididae) an resistenten und anfaelligen Sorten von Vicia faba (L.). Yakti, R. (Hannover Univ. (Germany, F.R.). Inst. fuer Pflanzenkrankheiten); Poehling, H.M. *Mitteilungen der Deutschen Gesellschaft fuer Allgemeine und Angewandte Entomologie (Germany, F.R.)* ISSN 0344-9084. (1988). v. 6(1-3) p. 37-43. 4 ill., 1 table; 8 ref. Summary (En).
The predation of Aphis fabae (killed aphids/predator) by Coccinella septempunctata L. (Coleoptera, Coccinellidae) and Chrysopa carnea Steph. (Neuroptera, Chrysopidae) larvae was higher on the resistent Vicia faba variety Bolero compared to the more susceptible Diana. After treatment of aphids and host plants with the insect growth regulator (DSC 24 300 I) only a very low initial mortality of A. fabae but a slow acting inhibition of aphid fecundity could be measured if young larval stages were contaminated. The effects of plant resistance and predator activity on the population growth of A. fabae could be strongly increased by a combination of both factors with this 'soft' insecticide. *vicia faba; aphis; biological control; arthropods; juvenile hormones; integrated control; varieties*

89-118675 Methods for detection of Ditylenchus dipsaci infections in the seeds of grain legumes. (De) Zur Methodik des Nachweises von Ditylenchus dipsaci in Koernerleguminosen-Saatgut. Augustin, B. (Landespflanzenschutzamt Mainz (Germany, F.R.)); Sikora, R.A. *Gesunde Pflanzen (Germany, F.R.)* ISSN 0367-4223. (1989) v. 41(5) p. 189-192. 2 ill.; 8 ref. Summaries (De, En).
Incubation techniques for quick and dependable detection of the normal and giant races of Ditylenchus dipsaci in Vicia faba seed were compared and modified. A minimum of 300 seeds/sample should be examined. The seed is submerged for 24 hours in 500-1000 ml of water insuring sufficient oxygen for the nematode mobility and survival. An extraction temperature of 10 degree C was optimum for nematode extraction and simultaneously reduces turbidity of the solution. The nematodes in the solution are concentrated by decantation through a 25 mum sieve and the nematodes are counted. *vicia faba; seed; ditylenchus; identification; isolation; methods*

89-118676 Dura antad (Agonoscelis pubescens) (Pentatomidae) as a pest on faba bean in El-Rahad, Sudan [Vicia faba]. (En). Kannan, H.O. (Rahad Research Station, El-Fau (Sudan)). *FABIS Newsletter (ICARDA)* Faba Bean Information Service. ISSN 0255-6448. (Apr 1989). (no. 23) p. 24-25. 1 table. Summaries (Ar, En).
Dura antad (Agonoscelis pubescens), a primary pest of sorghum, was recorded on faba bean plants late in Jan 1987 at El-Rahad (14 deg N, 34 deg E) which is one of the new areas for expansion of faba bean production in the Sudan. The relative abundance of this pest on four faba bean lines grown at the Rahad Research Station Farm varied: faba bean lines 0075 (H 72 x G1) and 00634 (RB 30 x G1) attracted higher numbers of the insect than lines 0071 (G2 x G1) and BF 2/2. Further studies are needed to determine the extent and magnitude of damage and the economic losses inflicted by this pest. *vicia faba; pest insects; varieties; sudan; crop yield*

89-119191 Low concentrations of phytoalexins correlate with resistance in regenerated plants from meristem cultures of Vicia faba L. (En) Thynn, M. (Marburg Univ. (Germany, F.R.). Fachbereich Biologie); Wolff, A.; Goerge, E.; Werner, D. *Zeitschrift fuer Naturforschung, Section C, Biosciences (Germany, F.R.)* ISSN 0341-0382. (1989). v. 44c(3-4) p. 237-242. 3 ill., 2 tables; 20 ref. Summary (En)
vicia faba; tissue culture; phytoalexins; mycoses; disease resistance; botrytis; phytophthora; rhizoctonia

89-119192 Effects of bean leaf age on pathogenicity by Botrytis fabae. (En) Heilbronn, J. (Scottish Crop Protection Research Institute, Dundee (UK)); Harrison, J.G. *Journal of Phytopathology (Germany, F.R.)* ISSN 0931-1785. (1989) v. 126(3) p. 272-278. 1 ill., 4 tables; 14 ref. Summaries (De, En)
Leaves from field bean plants grown out of doors were inoculated with

conidia of Botrytis fabae immediately after detaching from stems. The oldest leaves developed more lesions than youngest ones, although they were not chlorotic. On intact plants at high humidities, established lesions on young leaves increased in size at only half the rate of those on old, but still green leaves. Seven days after inoculation a higher proportion of lesions on old leaves bore conidia than those on young leaves, but leaf age had no significant effect on numbers of conidia per square mm of lesion area. Young leaflets from bean plants grown in a controlled environment or in the field challenged with B. cinerea accumulated more phytoalexins than did old ones. *vicia faba; botrytis; leaves; age; infectivity*

89-119193 [Host resistance and pathogenic aggressiveness – system Vicia faba L. – Botrytis fabae Sard.: contribution to the methodical improvement of resistance breeding]. (De). Wirtsresistenz und Erregeraggressivitaet am Wirt – Pathogen System Vicia faba L. – Botrytis fabae Sard.: Beitrag zur methodischen Verbesserung der Resistenzzuechtung. Medhin, G.G. Rheinische Friedrich Wilhelms Univ., Bonn (Germany, F.R.). Hohe Landwirtschaftliche Fakultaet. Inaugural Diss. (Dr. agr.). Bonn (Germany, F.R.). 1988. 85 p. 34 ill., 15 tables. Bibliography: 58 ref. Summary (De). *Bonn Univ. (Germany, F.R.). Universitaetsbibliothek.
vicia faba; botrytis; disease resistance; virulence; plant breeding

89-119492 Cytogenetic effects of electron-beam radiation on dry seed storage. (En). Baojiang, G.; Qishen, P. (Zhongkai Agriculture and Technology Coll., Guangzhou (China)). Kohlman, A. *Hereditas (Sweden)*. ISSN 0018-0661. (15 Apr. 1989). v. 110(2). p. 113-117. 9 ref. Summary (En).
vicia faba; seeds; radiations; mutation; chromosomes; irradiation; seed storage; cytogenetics

89-120922 Feeding of high protein silages (whole plant field bean silage, clover-grass silage) to fattening bulls. 2: Substitution of soy bean meal. (De). Verfuetterung von eiweissreichen Silagen (Ackerbohnen-Ganzpflanzensilage, Kleegrassilage) in der Bullenmast. 2. Zum Austausch von Sojaextraktionsschrot gegen alternative Eiweisskomponenten. Schwarz, F.J. (Technische Univ., Muenchen, Freising (Germany, F.R.). Inst. fuer Ernaehrungsphysiologie). Kirchgessner, M. *Zuechtungskunde (Germany, F.R.)*. ISSN 0044-5401. (1989). v. 61(3). p. 236-246. 9 tables; 17 ref. Summaries (De, En, Fr, Ru).
beef cattle; bulls; fattening; silage; protein content; vicia faba; trifolium; feed grasses; weight gain; energy consumption; meat yield; carcasses; quality; feed intake

89-121039 [Use of legume seeds in pig feeding]. (De). Einsatz von Koernerleguminosen in der Schweinfuetterung. Caesar, D. (Landwirtschaftskammer Rheinland, Bonn (Germany, F.R.)). *Deutsche Gefluegelwirtschaft und Schweineproduktion (Germany, F.R.)*. ISSN 0340-3858. (1987). v. 39(40). p. 1201-1202. 2 tables.
swine; fattening; pisum sativum; vicia faba; rations

89-121042 Maximum portion of wheat, rye, oat and field bean [Vicia faba] in rations for fattening pigs. (De). Maximalanteile an Weizen, Roggen, Hafer und Ackerbohnen in Schweinemastrationen. Niess, E. (Bonn Univ. (Germany, F.R.). Inst. fuer Tierernaehrung). Beste, R. Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten, Darmstadt (Germany, F.R.). [100 years agricultural research in VDLUFA. Agricultural production, food quality, environment. Reality and public opinion]. 100 Jahre Agrarforschung im VDLUFA. Landwirtschaftliche Produktion, Nahrungsqualitaet, Umwelt. Wirklichkeit und Meinungsbild. Darmstadt (Germany, F.R.). VDLUFA. 1989. p. 713-723. VDLUFA-Schriftenreihe (Germany, F.R.). Kongressband 1988. ISSN 0173-8712. no. 28(pt.2). 11 tables. Summaries (De, En).
swine; wheats; secale cereale; oats; vicia faba; fattening; weight gain; feed conversion efficiency; nitrogen metabolism

89-121893 [20 pct. broad beans (Alfred) for piglets [Faba bean, Field bean]. (Da). 20 pct. hesteboenner (Alfred) til smaagrise. Landsudvalget for Svin. Copenhagen (Denmark). Copenhagen (Denmark). Landsudvalget for Svin. Sep. 1987. 6 p.
Meddelelse. Landsudvalget for Svin (Denmark). no. 124. 5 tables; 5 ref. Summary (Da).
piglets; vicia faba; nutritive value; denmark; compound feeds; weight gain

89-121898 The mobile nylon bag technique for determining digestibility of nutrients in feedstuffs for pigs. (De). Die Mobile Nylon-Bag Technique zur Bestimmung der Naehrstoffverdaulichkeit beim Schwein. Mosenthin, R. (Kiel Univ. (Germany, F.R.). Inst. fuer Tierernaehrung und Futtermittelkunde). Sauer, W.C.; Hartog, L.A. den; Huisman, J. Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten, Darmstadt (Germany, F.R.). [100 years agricultural research in VDLUFA. Agricultural production, food quality, environment. Reality and public opinion]. 100 Jahre Agrarforschung im VDLUFA. Landwirtschaftliche Produktion, Nahrungsqualitaet, Umwelt. Wirklichkeit und Meinungsbild. Darmstadt (Germany, F.R.). VDLUFA. 1989. p. 689-701. VDLUFA-Schriftenreihe (Germany, F.R.). Kongressband 1988. ISSN 0173-8712. no. 28(pt.2). 1 ill., 3 tables, 10 ref. Summaries (De, En).
swine; crude protein; digestibility; methods; grain crops; oilseed cakes; vicia faba; pisum sativum; milling byproducts; phaseolus vulgaris; fistulation

89-126317 Isolation of crystalline divicine from an acid hydrolysate of vicine and a crystalline decomposition product of divicine and some properties of these compounds. (En). Marquardt, R.R.; Frohlich, A.A.; Arbid, M.S.S. *Journal of agricultural and food chemistry (USA)*. ISSN 0021-8561. (Mar-Apr. 1989). v. 37(2). p. 455-462. ill. references. *US (DNAL: 381 J8223).
vicia faba; glucosides; hydrolyzed proteins; metabolic diseases; degradation

89-128408 Annual legumes in mixture with barley or fodder rape. (No). Ettaarige belgvekster i blanding med bygg eller forraps. Oeyen, J. (Saetheim Forskingsstasjon, Klepp (Norway)). *Norsk Landbruksforsking (Norway)*. Norwegian Agricultural Research. ISSN 0801-5333. (1989). v. 3(1). p. 61-70. 6 tables; 29 ref. Summaries (En, No).
brassica napus; pisum sativum; vicia faba; hordeum vulgare; seed mixtures; mixed cropping; digestibility; nutritive value; varieties; crop yield; lodging; dry matter content; crude protein; ash content; nitrogen fertilizers; harvesting

89-128937 Improving yield and mineral composition of parasitized Vicia faba plants by foliar spray treatments. (En). Higazy, M.A. (Cairo University (Egypt). Faculty of Agriculture). El-Ghamrawy, N.; Aly, A.M.
Association Internationale pour l'Optimisation de la Nutrition des Plantes (France). Groupement d'Etudes et de Recherches pour le Developpement de l'Agronomie Tropicale, Montpellier (France). 6. International colloquium for the optimization of plant nutrition. Proceedings. Montpellier, 2-8 September 1984. 6. Colloque international pour l'optimisation de la nutrition des plantes. Actes. Montpellier, 2-8 septembre 1984. ISBN 2-907718-00-2; ISBN 2-907718-04-5. Montpellier (France). GERDAT. 1985. v. 3. p. 965-968. 6 ref.; Summaries (En, Fr).
vicia faba; orobanche; fertilizers; foliar application; leaves; stems; roots; mineral content

89-129573 Production, insect and weed considerations with dry peas, lentils, chickpeas and faba beans. (En). Muehlbauer, F.J.
Grain legumes as alternative crops : a symposium. [St. Paul, Minn.] (USA). Center for Alternative Crops and Products, University of Minnesota. [1987]. p. 133-150. ill. references. *US (DNAL: SB317.L43G73).
pisum sativum; usa; lens culinaris; cicer arietinum; vicia faba; plant breeding; varieties; cultivation; weed control; insect control

89-129631 Genetic resources of tropical legumes. (En). Maesen, L.J.G. van der (Landbouwhogeschool, Wageningen (Netherlands). Dept. of Plant Taxonomy).
Hedberg, I. (ed.). Systematic botany – a key science for tropical research and documentation. Proceedings of the 1987 'Natur och Kulturs ymposium' held in Stockholm and Uppsala September 14-17, 1987. ISBN 91-554-2348-5. Uppsala (Sweden). Uppsala Univ. 1988. p. 79-91. Symbolae Botanicae Upsalienses (Sweden). ISSN 0082-0644. v. 28(3). 34 ref. Summary (En).
feed legumes; leguminosae; phaseolus; pisum; vicia faba; cicer; genetic resources; tropical zones; taxonomy

89-129882 Repeated measurements of aperture for individual stomates. (En). Gorton, H.L.; Williams, W.E.; Binns, M.E. *Plant physiology (USA)*. ISSN 0032-0889. (Feb. 1989). v. 89(2). p. 387-390. ill. references. *US (DNAL: 450 P692).
Measurements of stomatal aperture in epidermal peels are used in a variety of physiological studies, but variability between stomates often hinders experimentation. We mount epidermal peels of Vicia faba over a microscopic grid that enables us to map the positions of individual stomates and thus measure the same individual stomates repeatedly, using a simple digitizing system. Repeated measurements of the same population of 15 stomates show much lower variability than measurements of different populations either on the same peel or on different peels.
vicia faba; epidermis; stomata; plant anatomy; measurement; laboratory experiments

89-130143 Content of raffinose oligosaccharides and sucrose in various plant seeds. (En). Kuo, T.M.; VanMiddlesworth, J.F.; Wolf, W.J. *Journal of agricultural and food chemistry (USA)*. ISSN 0021-8561. (Jan-Feb. 1988). v. 36(1). p. 32-36. references. *US (DNAL: 381 J8223).
gossypium; zea mays; oryza sativa; secale cereale; sorghum; triticales; vicia faba; sugars; raffinose; sucrose; solubility; seeds

89-130495 Some nutrients uptake, translocation and balance in Vicia faba var. minor. (Es). Absorcion, distribucion y equilibrio de algunos nutrientes en plantas de Vicia faba var. minor. Sanchez, M.J. (Universidad de Granada (Spain). Departamento de Fisiologia Vegetal); Guzman, M.; Romero, L.
Association Internationale pour l'Optimisation de la Nutrition des Plantes (France). Groupement d'Etudes et de Recherches pour le Developpement de l'Agronomie Tropicale, Montpellier (France). 6. International colloquium for the optimization of plant nutrition. Proceedings. Montpellier, 2-8 September 1984. 6. Colloque international pour l'optimisation de la nutrition des plantes. Actes. Montpellier, 2-8 septembre 1984. ISBN 2-907718-00-2; ISBN 2-907718-03-7. Montpellier (France). GERDAT. 1984. v. 2. p. 583-590. 5 tables, 13 ref.; Summaries (Fr, En).
vicia faba; nutrient uptake; mineral content; translocation; plant nutrition

89-130496 Changes in the contents of nitrogen and phosphorus during the ontogenetic development of horse bean. (Cs). Dynamika obsahu dusiku a fosforu v ontogenezi bobu obecneho. Kupka, J.; Fojtik, I.; Grec, L.; Novak, V. (Vysoka Skola Zemedelska, Prague-Suchdol (Czechoslovakia)). *Rostlinna Vyroba – UVTIZ (Czechoslovakia)*. ISSN 0370-663X. (May 1989). v. 35(5). p. 463-476. 6 graphs, 2 tables; 18 ref. Summaries (Cs, De, En, Ru).
vicia faba; biomass; growth; nutrient uptake; nutrient content; nitrogen; phosphorus; plant developmental stages; assimilation; dry matter content; environmental effects; trials

89-130566 Gibberellins in immature seeds of winged bean [Psophocarpus tetragonolobus]: In comparison with some other legumes. (En). Murakami, Y. (National Inst. of Agrobiological Resources, Tsukuba, Ibaraki (Japan)); Koshioka, M.; Mamat, A.S. *JARQ (Japan)*. ISSN 0021-3551. (Mar. 1987). v. 20(4). p. 225-228. 9 ref.; Summary (En).

psophocarpus tetragonolobus, seeds, prematurity, ga chemotaxonomy, lablab purpureus, kidney beans, vicia faba, pisum sativum

89-131685 Technique for staining leafhopper (Homoptera: Cicadellidae) salivary sheaths and eggs within unsectioned plant tissue. (En)
Backus, E.A.; Hunter, W.B.; Arne, C.N. *Journal of economic entomology (USA)* ISSN 0022-0493 (Dec 1988) v. 81(6) p. 1819-1823. ill. references. *US (DNAL 421.18222)
vicia faba, missouri, hemiptera, cercopids, feeding habits, oviposition, salivary glands

89-131686 [Influence of variety resistance, predators and juvenile hormone analogues on population of Aphis fabae Scop. on Vicia faba L.]. (De) Einfluss von Sortenresistenz, Praedatoren und Juvenilhormonanaloga auf die Populationsentwicklung von Aphis fabae Scop. an Vicia faba L. Yaktl, R. Hannover Univ. (Germany, F.R.) Fachbereich Gartenbau. Diss. (Dr. rer. hort.) Hannover (Germany, F.R.) 1989. 131 p. 30 ill., 22 tables. Bibliography. 116 ref. Summary (De). *Hannover Univ. (Germany, F.R.) Universitaetsbibliothek
vicia faba, varieties, pest resistance, juvenile hormones, aphids, coccinella, population dynamics, biological control arthropods, integrated control

89-132423 New sources of resistance in Vicia faba to chocolate spot caused by Botrytis fabae. (En) Hanounik, S.B.; Robertson, L.D. *Plant disease (USA)* ISSN 0191-2917 (Aug 1988) v. 72(8) p. 696-698. ill. references. *US (DNAL 19.P69P)
vicia faba, syria, varieties, botrytis, spots, mycoses, plant diseases, disease resistance, disease control

89-132424 Degree of resistance of Czechoslovak broad beans varieties to some viruses. (Sk) Stupen odolnosti ceskoslovenskych odrod bobu k nektorym virusom. Jurik, M.; Musil, M. (Slovenska Akademia Vied, Bratislava(Czechoslovakia) Virologicky Ustav) *Ochrana Rostlin - UVHZ (Czechoslovakia)* ISSN 0036-5394 (Aug 1989) v. 25(3) p. 161-163. 3 ref. Summaries (De, En, Ru, Sk)
vicia faba, plant viruses, disease resistance, czechoslovakia varieties, trials

89-132431 Disease problems on dry peas, lentils, chickpeas and faba beans. (En) Kaiser, W.J.
Grain legumes as alternative crops : a symposium [St. Paul, Minn.] (USA) Center for Alternative Crops and Products, University of Minnesota [1987] p. 157-174. references. *US (DNAL SB317.I43G73)
pisum sativum, lens culinaris, cicer arietinum, vicia faba, mycoses, bacterioses, plant viruses, disease control

89-132733 Product use, handling and storage considerations. (En) Shinkard, A.F.
Grain legumes as alternative crops : a symposium [St. Paul, Minn.] (USA) Center for Alternative Crops and Products, University of Minnesota [1987] p. 151-156. references. *US (DNAL SB317.I43G73)
pisum sativum, cicer arietinum, vicia faba, lens culinaris, harvesting losses, processing losses, storage losses

89-134034 The influence of citric acid addition on the performance and carcass fatness of fattening pigs fed diets supplemented with lupine or horse bean seeds. (En) Grela, E.R.
Livestock environment III : proceedings of the Third International Livestock Environment Symposium, April 25-27, 1988, Constellation Hotel, Toronto, Ontario, Canada. ISBN 09-161-50925. St. Joseph, Mich. (USA) American Society of Agricultural Engineers. 1988. p. 399-403. references. *US (DNAL SF91.I8 1988)
swine, poland, fattening, vicia faba, lupinus, feed meals, citric acid, fish meal, adipose tissues, palatability, digestibility

89-137829 Chemical composition and nutritional quality of faba bean (Vicia faba L. Minor) based tofu. (En) Zee, J.A.; Boudreau, A.; Bourgeois, M.; Breton, R. *Journal of food science : an official publication of the Institute of Food Technologists (USA)* ISSN 0022-1147 (Nov-Dec 1988) v. 53(6) p. 1772-1774, 1781. references. *US (DNAL 389.8 F732)
Chemical composition and antinutritional factors in soy and faba beans and tofus produced thereof were evaluated. Both bean curds had higher protein contents (55.7 and 82.0% dry basis for soy and faba bean curds, respectively) than the corresponding raw beans. Tofu made from faba bean (FBT) contained only 1.5% total lipids (dry basis) compared to 34.4% in soybean tofu (SBT). Antinutritional and flatulence factors were much lower in FBT. Lavism factors were not examined. In vitro studies showed that SBT and FBT are comparable in terms of digestibility and amino acid availability. *soyfoods, vicia faba; foods, composition; nutritive value*

89-139752 [Does it pay to grow alternative crops?: Market potentials]. (Da) Er det loensomt at dyrke alternative afgroeder? Hvilke markedsmuligheder potentielle og reelle er der for alternative afgroeder? Frandsen, B. *Erhvervsordbruget (Denmark)* (1988) v. 2(5) p. 19-22.
rape, vicia faba, linum, papaver, brassica campestris, denmark market competition

89-140222 In vitro propagation of Vicia faba L. by micro-cutting and multiple shoot induction. (En) Selva, E. (Universite Catholique de Louvain, Louvain-la-Neuve (Belgium) Lab. d'Etude de l'Heredite Cytoplasmique). Stouffs, B.; Briquet, M. *Plant Cell, Tissue and Organ Culture (Netherlands)* ISSN 0167-6857 (1989) v. 18(2) p. 167-179. 28 refs. Summary (En)
vicia faba, micropropagation in vitro culture; temperature, nitrogen

89-140290 Field bean seed growing on state farm of Schwaneberg [German D.R.]. (De) Saatguterzeugung von Ackerbohnen im VEG Schwaneberg. Schwanke, P. (VEG Pflanzenproduktion, Schwaneberg (German D.R.)) *Saat- und Pflanzgut (German D.R.)* ISSN 0323-4436 (1989) v. 30(3) p. 38-37. 1 ill. Summary (De).
vicia faba, seedbed preparation; plant protection, harvesting, german democratic republic weed control, sowing, cultivation

89-140507 Study of the fertilizer response of broad-beans in farm-scale fertilization trials. (Hu) A lobab tragyateakeiojanak vizsgalata nagyuzemi mutragyazasi kiserletekben. Pocsai, K. (Agrartudomanyi Egyetem, Mosonmagyarovar (Hungary) Mezogazdasagtudomanyi Kar). *Novenytermeles (Hungary)* ISSN 0546-8191 (1987) v. 36(6) p. 455-461. 6 tables, 14 ref. Summaries (En, Hu)
Relationship between yields of broad bean Lippot and different levels of applied P and K fertilizers was studied in large scale field trials set up in three locations. The highest yield in each location was found in plots treated with 54kg/ha P2O5 + 120 kg/ha K2O. Results show a considerable stronger response to K than to P. The same tendency appeared in each location in plots treated with different levels of K. Based on former field and pot trials as well as on present result, an attempt was made to determine the specific fertilizer demand of broad bean Lippot. *vicia faba; phosphate fertilizers; potash fertilizers crop yield, plant response*

89-141221 Studies into raw protein level of field bean seed (Vicia faba L.), 2: Measures for selection - their bearings upon raw protein levels in field bean seed. (De) Untersuchungen zum Rohproteingehalt im Samen der Ackerbohne (Vicia faba L.) 2. Mitt.: Einfluss von Selektionsmassnahmen auf den Rohproteingehalt im Ackerbohnensamen. Scheybal, S. (VEG Pflanzenproduktion, Gotha-Friedrichswerth (German D.R.)) *Archiv fuer Zuechtungsforschung (German D.R.)* ISSN 0365-8406 (1989) v. 19(2) p. 147-157. 6 tables, 15 refs. Summaries (De, En, Ru)
vicia faba, seed; protein content, selection heritability; crop yield

89-141237 Varieties of pulse crops and oil seed crops. (Da) Sorter af baelgsaed og olieplanter 1989. Jensen, A. Copenhagen (Denmark) SP. Jun 1989. 20 p.
Groen Viden. Landbrug (Denmark). ISSN 0903-0727. no. 33. 44 tables.
pisum sativum; vicia faba; brassica napus, brassica alba; papaver somniferum, linum usitatissimum, carum carvi, denmark varieties; crop yield, quality; protein content, lipid content; seeds

89-141871 Extrusion of protoplasm and protein bodies through pores in cell walls of pea, bean, and faba bean cotyledons during imbibition. (En) Spaeth, S.C. (Grain Legume Genetics and Physiology Res. Unit, USDA, ARS, Pullman, WA). *Crop science (USA)* ISSN 0011-183X. (Mar-Apr 1989) v. 29(2) p. 452-459. ill. references. *US (DNAL 64.8 C883)
Several processes contribute to leakage of intracellular substances from legume seeds during imbibition. This study was conducted to determine whether protoplasm and protein bodies also leak from cotyledonary cells by a process analogous to pressure-driven extrusion from multicellular blisters. The effects of soaking, and air-drying or fixing excised cotyledons and intact seeds of field-grown bean (Phaseolus vulgaris L.), pea (Pisum sativum L.), and faba bean (Vicia faba L.) were investigated using scanning electron microscopy. When dissolution and dispersion of intracellular substances were minimized by removing cotyledons from water, cells of excised 'OSU 605' pea cotyledons provided direct evidence for cellular pressure-driven extrusion. Streams of intracellular substances from OSU 605 ranged from 0.2 to 1 micrometer in diameter. Similar extrusion streams were not found in situ on cotyledons of other genera, cultivars, or treatments, however, projections from protoplast surfaces, pores through cell walls, and orifices and protein bodies in intercellular spaces were consistent with cellular extrusion. The path for cellular extrusion probably was pores through contact cell walls (regions of cell wall in contact with adjacent cells), and then channels along the middle lamella to orifices at intercellular spaces or cotyledonary surfaces. *phaseolus vulgaris, pisum sativum; vicia faba; cotyledons; cell walls; absorption, microscopy; losses; protoplasm; proteins; pressure*

89-142165 Natural 15N enrichment of amide-exporting legume nodules [ureide export]. (En) Shearer, G.; Kohl, D.H. (Washington Univ., St. Louis (USA). Biology Dept.). *Physiologia Plantarum (Denmark)* ISSN 0031-9317. (Aug 1989) v. 76(4) p. 586-590. 4 tables; 12 ref. Summary (En)
pisum sativum; vicia faba; medicago sativa; trifolium pratense; cyamopsis psoralioides, lupinus; root nodulation; amides; nitrogen symbiosis

89-143409 Differentiation of horse bean and broad bean with regard to the resistance to the fungus [Ascochyta fabae Speg.]. (Pl) Zroznicowanie bobiku pod wzgledem odpornosci na grzyb - Ascochyta fabae Speg. Zakrzewska, E. (Instytut Hodowli i Aklimatyzacji Roslin, Radzikow (Poland))
Wegorek, W. (ed.) Instytut Ochrony Roslin (Poland) [Materials of the 27th Research Session of the Institute for Plant Protection. Pt. 1. Papers]. Materialy 27 Sesji Naukowej Instytutu Ochrony Roslin. Cz. 1. Referaty. Poznan (Poland) Panstwowe Wydawnictwo Rolnicze i Lesne. 1987. p. 209-219. 14 ref. Summaries (En, Ru). Issued 1989.
Plant infestation with the fungus Ascochyta fabae under field conditions was stronger than that in the glasshouse. A high differentiation in the resistance to that pathogen between the studied varieties and breeding forms as well as a large individual variability within different objects has been found. It becomes particularly evident in the field studies. *vicia faba; ascochyta; disease resistance, poland varieties, crop yield; plant disease manifestations*

89-143751 Newly approved herbicides for use in agricultural crops. (Da) Nyanerkendte herbicider til landbrugsafgroeder. Petersen, E.J.; Jensen, P.E.; Joergensen, H.
Statens Planteavlsforsoeg, Lyngby (Denmark) Plantevaernscentret. 6th Danish Plant Protection Conference. Side effect of pesticides: Weeds. 6.

Danske plantevaernskonference. Pesticider og miljoe. Ukrudt. ISBN 87-88976-08-4. Lyngby (Denmark): SPF, 1989. p. 54-61. 5 tables; Summaries (Da, En).
brassica napus; winter crops; triticum; festuca rubra; carum carvi; pisum sativum; vicia faba; solanum tuberosum; herbicides; denmark; defoliation

89-144921 The use of peas in the pig diets. A review. Chemical composition and nutritional effects. A review. Pt. 1. (Fr).
Utilisation du pois proteagineux dans l'alimentation des porcs. Revue bibliographique.Composition chimique et repercussions nutritionnelles. Pt. 1. Leterme, P.; Beckers, Y. (Faculte des Sciences Agronomiques de Gembloux (Belgium). Unite de Zootechnie). *Revue de l'Agriculture – Landbouwtijdschrift (Belgium)*. ISSN 0776-2143. (1989). v. 42(3) p. 469-480. 7 tables; 56 ref.; Summaries (En, Nl).
swine; pisum sativum; protein content; protein quality; feed consumption; breeds; nutritive value; animal feeding; cereals; vicia faba; soybeans

89-146763 Selection of active Rhizobium leguminosarum strains in the symbiosis with faba beans cultivated on acid soil fertilized with nitrogen. (Pl).
Selekcja szczepow Rhizobium leguminosarum aktywnych w symbiozie z bobikiem uprawianym na glebie kwasnej nawozonej azotem. Strzelec, A. (Instytut Uprawy Nawozenia i Gleboznawstwa, Pulawy (Poland)). *Roczniki Gleboznawcze (Poland)*. Soil Science Annual. ISSN 0080-3642. (1987). v. 38(4) p. 55-69. 7 tables; 34 ref.; Summaries (En, Ru).
Soil fertilization with nitrogen led to a decrease of the number of pods and of the yield of faba beans. Plants inoculated with 7 strains under study gave a mean yield 13.5 percent higher than that of plants inoculated with the soil-inhabiting strain. *vicia faba; rhizobium; acid soils; poland; fertilizer application; nitrogen fertilizers; crop yield*

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