

Weeds

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POTENTIAL INFESTATION OF FOOD LEGUMES BY *OROBANCHE* SPP. IN MOROCCAN HIGHLANDS. Kaddour Saffour, Centre Régional de la Recherche Agronomique, BP 578, Meknès, Morocco, E-mail: olea@awamia.inra.org or k.saffour@caramail.com

In Morocco, food legumes cover annually 320 to 400 000 ha, of which 40 to 50% are faba beans. Orobanche infests more than 37% of faba bean cultivated areas. Highland areas, characterized by hard winters and fresh springs are currently slightly infested by this parasite. The absence of infestation could be due to an absence of orobanche inoculum or to the coolness of these zones. This study was carried out to determine the effect of temperature on the legumes infestation by orobanche in the highland areas. Trials were conducted in 1999/2000 and 2000/2001 crop seasons in pots artificially inoculated with *Orobanche crenata* Forsk. The pots were sown with faba bean or lentils every 15 days from October 1st to February 28th in two highland sites: Annoceur (1320 m of altitude) and Azrou (1500 m). Results showed that at Annoceur, broomrape emergence was observed on May 15th for the November 30th planting date. Insignificant emergence was observed until June 10th, for the sowings extended until February 15th, for both faba bean and lentils, without any effect on crop yield. In Azrou, broomrape emergence was observed between the 10th and 20th of April for the October and November sowings, when climate was still moderate. No more emergence was observed in the pots planted after November 30th. Nevertheless, some tubercles developed in the pots planted before the end of January without emergence and without any effect on crop yield. Delayed sowing because of the cool climate, could explain the absence of orobanche in the Moroccan highland regions which produce mainly faba bean for fresh pods use.

W 2

CHEMICAL CONTROL OF *OROBANCHE* SPP IN FABA BEAN (*VICIA FABA*) IN THE MAGHREB. Kaddour Saffour¹, M. Kharrat², T. Souissi³, D. Bouya⁴ and M. Bouhache⁵. (1) Centre Régional de la Recherche Agronomique, BP 578, Meknès, Morocco, E-mail: k.saffour@caramail.com or olea@awamia.inra.org; (2) INRA, Tunisia; (3) INAT- Tunisia; (4) Fac. des Sci. Fès, Morocco. (5) IAV Hassan II, Morocco.

Glyphosate is poorly adopted by Moroccan farmers for orobanche control in faba bean because it requires some expertise for its use. This work was carried out to study the efficacy of sulfosate and imidazolinones herbicides in the control of this parasite in faba bean. The following treatments were used: (i) four pre-emergence (PE) herbicides: imazapyr at 10, 12.5 and 25 g.a.i./ha, imazethapyr at 50, 75 and 100 g/ha, imazaquin at 40 and 80 g/ha and imazapic at 3, 4.5, 10 and 12

g/ha; (ii) one herbicide used at orobanche tubercle attachment (OTA): imazapic at 0.5, 1, 1.5, 10 and 15 g/ha; (iii) five herbicides used twice, at OTA and two weeks later: imazapic at 2 x 5 g/ha and 10 + 5 g/ha, imazapyr at 2x5 g/ha; imazaquin at 2x15 g/ha; sulfosate at 2x60 , 2x100 and 2x 120 g/ha; glyphosate at 2x60 g/ha. (iv) Glyphosate was also used three times at 7-8 faba bean nodes or at early flowering and (v) two and four weeks later and finally imazapic was used PE at 5 g/ha and 8 or 10 g/ha at OTA. These treatments were applied during 1999/2000 and 2000/2001 crop seasons at Douyet research station (Morocco) which is naturally infested by *O. crenata* and Beja research station (Tunisia) which is also naturally infested by *O. foetida*. All herbicides significantly reduced orobanche infestation and increased crop yield in 1999/00, which was a dry season. In PE treatment, except imazapic at 3 g/ha and imazapyr which were phytotoxic, all the other treatments were at least as efficient as glyphosate (2x60). However, these treatments were less efficient in 2000/01, which was a wet season until March, even for the high doses of imazapic. Used at post-emergence (PoE), imazapyr (2x5 g/ha), sulfosate (2x100 g/ha), imazapic (5+5; 10; 10+5 et 15 g/ha) and imazaquin (2x15 g/ha) have efficiently controlled orobanche and ensured a satisfactory equivalent yield to that obtained by the glyphosate treatment when the infestation rate was moderate. However, the yield was relatively low when the infestation rate was high. Imazapic used as PE or PoE efficiently controlled orobanche even at high infestation rate. Three Glyphosate sprays was the most effective treatment and ensured the highest crop yield.

W 3

COMMON WEEDS IN AGRICULTURAL FIELDS OF GMMR PROJECT IN BENGHAZI PLAIN REGION, LIBYA. Faraj Elmogaspi¹, Mohamed Alaib¹ and Issa Ali². (1) Botany Department, University of Garyounis, Libya; (2) Man-Made River Project, Libya.

The aim of this work was to identify the common weeds in GMMR project farms in order to design a suitable programme for weed control in these farms. To fulfill this aim a comprehensive survey was carried out during the period from January to December 2002. During this period 282 species of weeds were collected, identified, and listed. The results showed that the recorded species belongs to over 185 genera, distributed in 43 families of flowering plants.

W 4

SURVEY OF PARASITIC PLANTS THAT PARASITIZE WILD PLANTS IN AL-JABAL AL- AKHDAR REGION. Faraj Elmogaspi¹, Mohamed Alaib¹ and Ali Mohamed². (1) Botany Department, University of Garyounis, Libya; (2) Biology Department, University of Omar AL-Mukhtar, Libya.

The aim of this study was to carryout preliminary survey of plants that parasitize wild plants and the possible transmission of these plants to agricultural fields in Al-Jabal Al-Akhdar region. The survey revealed the presence of 15 species of parasitic plants which belong to five genera (*Cuscuta*, *Oorobanche*, *Cistanche*, *Cytinus* and *Cynomorium*) and four families of flowering plants (Cuscutaceae, Orobanchaceae, Rafflesiaceae, Cynomoriaceae).

W 5

ALLELOPATHIC EFFECT OF SOME WEEDS. Samir Tabbache and Sabah Almaghribi, Plant Protection Department, Faculty of Agriculture, Tishreen University, Lattakia, Syria, E-mail: Tabbache@scs-net.org

The effect of the aqueous extracts of the following dried weeds: yellow melilot (*Melilotus indica*), annual blue grass (*Poa annua*), bind weed (*Convolvulus arvensis*), field marigold (*Calendula arvensis*) and buckhorn plantain (*Plantago lanceolata*) on the germination and root growth of wheat (*Triticum* sp.) and chickling vetch (*Lathyrus sativus*) were evaluated. The 0.2% concentration of the yellow melilot, bind weed and annual blue grass extracts reduced wheat seedlings root growth by 93, 47 and 36%, respectively. Aqueous extract of field marigold at 0.5% increased wheat seedlings root growth by 10% in comparison with the control. In addition the same concentration had an inhibitory effect on chickling vetch root growth by 37%. The extract of buckhorn plantain at 0.5% reduced root growth of wheat by 10% and chickling vetch by 45%. The inhibitory effect of the extracts was proportional to their concentration.

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TAXONOMIC STUDY AND CONTROL STRATEGY OF *SOLANUM ELAEGNIFOLIUM* IN COTTON FIELDS IN SYRIA. B. Al-Rahban¹ and M. Khannas². (1) General Commission of Scientific Agricultural Research (GCSAR), P.O. Box 113, Douma, Damascus, Syria, E-mail: protlib@mail.sy; (2) General Commission of Scientific Agricultural Research, Agricultural Research Center, Aleppo, Syria.

A taxonomic study was carried out during 2000-2002 to study the morphological and karyological characters of the wild eggplant weed, and its control strategy in cotton fields. The morphological study revealed the presence of two types of this weed. White-color flowers type and violet-color flowers type. The

karyological study showed similarity in the chromosomes of both types (2N), which indicated that they belong to the same genetic type. Glyphosate was sprayed after the last summer at the fruiting stage of the wild eggplant weed. The herbicide was very effective in reducing the density (number) of wild eggplant weeds by 58 to 76%, and reduced the dry biological mass by 64 to 81%.

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BIOLOGY OF MEDICINAL WEEDS IN WINTER CEREALS. Adel Nadjib Chaker, Mohamed Fenni and Houcine Laouer. Laboratoire de Valorisation des Ressources Biologiques, Faculté des Sciences, Université Ferhat Abbas, Sétif 19000, Algérie, E-mail : Chakeran@yahoo.fr

The spontaneous vegetation of the cultivated land is a source of selection for genes and the molecules which one can employ in the future. The study of cereal weeds in Constantine high plains (north-east, Algeria) enabled us to record 254 species belonging to 34 plant families. The results indicated that nearly 20% of these weeds are medicinal species. Annuals and broad leaved species were predominant. The knowledge of biology and ecology of these species, already adapted to the lands exploited by the man, would facilitate their exploitation. In fact, they are already collected and employed by farmers. This mechanical control method makes it possible to decrease the use of herbicides and contribute to the protection of biodiversity. Focusing on these traditional forms of exploitation would lead to diversification of resources and to the adoption of an integrated agricultural development system.

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BIOLOGY AND ECOLOGY OF BROMUS SPECIES AND CONTROL METHODS. Mohamed Fenni and Adel Nadjib Chaker, Laboratoire de Valorisation des Ressources Biologiques, Faculté des Sciences, Université Ferhat Abbas, Sétif 19000, Algérie, E-mail : Fennimodz@yahoo.fr

Yield losses caused by *Bromus* sp. in winter cereal in Setif region range from 40 to 80 %. *Bromus rigidus* Roth. and *Bromus rubens* L. are the most important weeds. In order to formulate non-chemical control methods, experimental studies were carried out during the period from 1996 to 1999, to determine the effect of burial depth (0 to 25 cm) on seed germination in three soils, the effect of different plows (disk, molbord, chisel and cover-crop) and the period of tillage (early and late) on the distribution of the two species. The results showed that the germination rate of *B. rigidus* seeds in clay soil and sandy soil was null when the burial depth was more than 15 cm. This rate was less than 20 % for *B. rubens* in the three soils when the burial depth exceeds 5 cm. The species infestations are significantly reduced by early molbord and disk plowing.

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EFFICACY OF THE MOST WIDELY USED HERBICIDES IN SETIF REGION. Mohamed Fenni and Adel Nadjib Chaker, Laboratoire de Valorisation des Ressources Biologiques, Faculté des Sciences, Université Ferhat Abbas, Sétif 19000, Algeria, E-mail: Fennimodz@yahoo.fr

Field chemical control trials of durum wheat (*Triticum durum* Desf.) weeds were conducted in the Sétif region (north-east of Algeria), with the most widely used herbicides in Algeria. The most abundant weeds were *Avena sterilis* L., *Convolvulus arvensis* L. and *Ranunculus arvensis* L. The herbicides applied at the late-tillering stage of wheat were bromoxynil + diclofop-methyl, flamprop-isopropyl + MCPA, 2,4-D ester and diclofop-methyl, compared to the untreated control. The two first herbicides increased grain yield by more than 1200 kg ha⁻¹ at a sub-humid site, and 400 kg ha⁻¹ at a semi-arid site. These results showed the importance of chemical weed control in winter cereals.

W 10

A STUDY ON SOIL CONTAMINATION BY WILD OAT SEEDS IN OLD AND NEW LANDS. Z.R. Yehia, H.R. El-Wekil and M.S. Tewfik. Weed Research Central Laboratory, Agricultural Research Center, Giza, Egypt.

In old and new lands of Egypt forty feddans in ten villages were chosen to determine the relationship between the population of wild oat seeds in soil (seed bank) and preceding winter crops. Assiut governorate represented old land and Sugar beet zone in Alexandria governorate represented new lands; in each old and new lands ten feddans were preceded by berseem and other ten feddans preceded by wheat. Results obtained in old land revealed that the number of wild oat seeds/ft² at the depth of 20 cm varied between 108 and 909 seeds, in fields preceded by wheat; however, in fields preceded by berseem it varied between 11 and 47 seeds and the reduction of wild oat seeds level in the soil was 92.6%. Results in new lands showed that the number of wild oat seeds/ft² at a depth of 20 cm varied between 194 and 406 seeds in fields preceded by wheat; however in fields preceded by berseem it varied between 20 and 73 seeds and the reduction of wild oat seeds level in the soil was 84.9%. It can be concluded from this study that using a suitable rotation, i.e. berseem as preceding winter crop, was an important control component in reducing wild oat seeds population in the soil.