REGISTRATION OF GERMPLASM

Registration of Indehiscent *Euphorbia lagascae* L.
Germplasm: idm24, idm76, and idm77

*Euphorbia lagascae* L. (vernin spurge) elite lines idm24 (Reg. no. GP-23, PI 606467), idm76 (Reg. no. GP-24, PI 606468), and idm77 (Reg. no. GP-25, PI 606469) with the indehiscent character were developed cooperatively by Centro de Investigación y Desarrollo Agroalimentario at Murcia, Spain, and Institut für Pflanzenbau und Pflanzenzüchtung at the University of Göttingen, Germany. The development of this germplasm was conducted through the SONCA (Seed Oils New Chemical Applications) project (AGRECT/90-0039) of the ECLAIR (European Collaborative Linkage of Agriculture and Industry through Research) program of the European Economic Community, with joint release in 1997.

Mutagenic treatments were applied to a wild population of *E. lagascae* from southeastern Spain. Unergminated seeds were pre-soaked for 12 h at room temperature (20–22°C) in a thin layer on wet filter paper. Seed lots were submerged in solutions of ethyl methanesulfonate (EMS) (CH$_3$SO$_2$CH$_2$) for 2 to 6 h, using a concentration between 0.4 and 1% EMS at pH 7. Seeds were then thoroughly washed in running tap water for 12 h and surface-dried prior to sowing. A second mutagenic treatment was applied in the same way to seed from the M$_2$ generation of unselected plants.

Indehiscent mutants were selected in M$_2$ and M$_3$ generations and improved by pedigree selection for the non-seed shattering trait. The indehiscent character prevents seed shattering at ripening time. Since the indehiscent phenotype is not found in wild accessions, the discovery of indehiscent mutants was a key step in the domestication of vernin spurge (1,2,3).

Germplasm idm24 is a bulk of four lines obtained by pedigree selection (M24-3-7-101a, M24-3-7-101b, M24-3-7-107, and M24-3-7-121) from the single mutant plant M24 obtained in the M$_2$ generation. In some cases, plants of this germplasm showed weaker growth than wild accessions, but the reasons are unclear. Vernolic acid content of seed oil ranged from 570 to 620 g kg$^{-1}$ similar to the wild type.

Germplasms idm76 and idm77 are a bulk of seven lines (M76-89-101-1, M76-89-103-1, M76-89-104-2, M76-89-119-1, M76-96-104-2, M76-96-106-4, and M76-96-108-2) and 12 lines (M77-3-113-3, M77-3-113-6, M77-3-118-5, M77-3-119-5, M77-3-119-7, M77-3-119-8, M77-3-135-1, M77-3-135-2, M77-3-135-3, M77-3-144-2, M77-3-150-5, and M77-3-152-3), respectively, obtained by pedigree selection from the mutant plants M76 and M77. These were selected in the M$_3$ generation. Plants of both germplasms showed vigorous growth compared with wild accessions. Vernolic acid content of seed oil ranged from 570 to 650 g kg$^{-1}$, similar to the wild type.

The F$_2$ segregation ratios for crosses between indehiscent and nonindehiscent genotypes indicate a recessive monogenic control (4) although a partial indehiscence has been reported for some seasons and locations. Research is underway to develop and register a completely indehiscent commercial variety.

Small quantities of seed will be available through the USDA National Plant Germplasm System (www.ars-grin.gov/ngps). It is asked that appropriate recognition of the germplasm source be made when these germplasm contribute to the development of *E. lagascae* as a new industrial oilseed crop for vernolic acid production.

M. J. Pascual-Villalobos* (5)

References and Notes
5. Consejería de Medio Ambiente, Agricultura y Agua, Centro de Investigación y Desarrollo Agroalimentario, Estación Serricola, 30150 La Alberca, Murcia, Spain. Registration by CSSA. Accepted 31 Oct. 1998. *Corresponding author (mipascual@readysoft.es).

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Registration of NM-9D11A-PRR3
Phythophthora Resistant Alfalfa Germplasm with Increased Yield Potential for Irrigated and Water-Limited Environments

NM-9D11A-PRR3 alfalfa (*Medicago sativa* L.) germplasm (Reg. no. GP-334, PI 606541) was developed by the New Mexico Agricultural Experiment Station and was released 5 Oct. 1998. NM-9D11A-PRR3 has demonstrated high yield potential under normal and deficit irrigated conditions in southern New Mexico. It is also resistant to phytophthora root rot (caused by *Phytophthora megasperma* Drechs. f. sp. medicaginis T. Kuan & D.C. Erwin).

NM-9D11A-PRR3 is intended as a source population for use in alfalfa breeding and research to stabilize forage yield under variable soil moisture conditions. NM-9D11A-PRR3 is a 50-clone synthetic population selected from the cultivar Wilson (1), which was previously developed for improved performance under deficit levels of irrigation. NM-9D11A-PRR3 was developed to improve the production of Wilson under heavily irrigated conditions, where Wilson's persistence was poor, due in part to susceptibility to phytophthora root rot. Parentage of NM-9D11A-PRR3 consists of 'Zia' (80%), 'Mesilla' (11%), 'Turkistan' (3%), 'Baker' (3%), and 'NC-83-2' (3%), with estimated contribution from *M. falcata* (1%), *M. varia* (1%), Turkistan (72%), Flemish (1%), Chilean (22%), African (1%), and unknown (2%) genetic sources.

NM-9D11A-PRR3 was developed by three cycles of phenotypic recurrent selection for individual plant yield, general adaptation to southern New Mexico, and resistance to local isolates of *P. megasperma*. The number of plants selected and the number evaluated for each cycle were 100 of 500, 73 of 252, and 50 of 195 in Cycles 1, 2, and 3, respectively. Plants were interpollinated with honey bees (*Apis mellifera* L.) in cages to produce seed for each cycle.

NM-9D11A-PRR3 has demonstrated high forage yield potential under variable soil moisture conditions in southern New Mexico. NM-9D11A-PRR3 was characterized with 35 other experimental lines and cultivars for forage yield under limited irrigation (30-d irrigation interval) during 1992 to 1994 at Las Cruces, NM. Forage production of NM-9D11A-PRR3 was comparable to the best cultivars, including Wilson. When evaluated with 24 experimental