

REGISTRATIONS OF GERMPLASM

Registration of NM-9D11A-AN3 Anthracnose Resistant Alfalfa Germplasm

NM-9D11A-AN3 alfalfa (*Medicago sativa* L.) germplasm (Reg. no. GP-337, NSL 386506) was developed by the New Mexico Agricultural Experiment Station and released 5 Oct. 1998. NM-9D11A-AN3 has demonstrated high yield potential under deficit irrigated field conditions in southern New Mexico. It is highly resistant to anthracnose (caused by *Colletotrichum trifolii* Bain) race 1.

NM-9D11A-AN3 is intended as a source population for use in alfalfa breeding and research to stabilize forage yield under variable soil moisture conditions. NM-9D11A-AN3 is a 50 clone synthetic population selected from 'Wilson' (1), which was previously developed for improved performance under deficit levels of irrigation. NM-9D11A-AN3 was developed to improve the production of Wilson under heavily irrigated conditions, where Wilson's persistence was poor due in part to its susceptibility to anthracnose. Parentage of NM-9D11A-AN3 consists of 'Zia' (80%), 'Mesilla' (11%), 'Turkis-

tan' (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-AN3 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 *C. trifolii*. The number of plants selected and the number evaluated for each cycle were 47 of 451, 57 of 284, and 49 of 173 in cycles 1, 2, and 3, respectively. Plants were interpollinated with honey bees (*Aphis mellifera* L.) in cages to produce seed for each cycle.

NM-9D11A-AN3 has demonstrated high forage yield potential under variable soil moisture conditions in southern New Mexico, particularly under deficit levels of irrigation.

NM-9D11A-AN3 was characterized with 35 other experimental lines and cultivars for forage yield under limited irrigation (30 d irrigation interval) during 1992–1994 at Las Cruces, NM. Forage production of NM-9D11A-AN3 significantly exceeded that of all other populations and was 24% higher than the best commercial cultivar and 47% greater than that of Wilson. When evaluated with 24 experimental lines and cultivars under 14 d irrigation intervals during 1996–1998, forage yield of NM-9D11A-AN3 was significantly less than that of the best commercial cultivar, but compared favorably with most other cultivars and significantly exceeded that of Wilson by 11%.

Fall-dormancy of NM-9D11A-AN3 is similar to that of Mesilla (fall dormancy class = 6). In standardized tests NM-9D11A-AN3 was rated as highly resistant (66%; resistant check, 'Arc' = 65%) to anthracnose race 1. Although NM-9D11A-AN3 was not tested for resistance to other pests and pathogens, its parent population, Wilson, is resistant to bacterial wilt [caused by *Clavibacter michiganense* subsp. *insidiosum* (McColloch)], Fusarium wilt [caused by *Fusarium oxysporum* Schlechtend.:Fr. f.sp. *medicaginis* (J.L. Weimer) W.C. Snyder and H.N. Hans.], and the pea aphid [*Acyrtosiphon pisum* (Harris)]; moderately resistant to stem nematode [*Ditylenchus dipsaci* (Kuhn) Filipjev], and spotted alfalfa aphid [*Therioaphis maculata* (Buckton)] and is susceptible to anthracnose (caused by *Colletotrichum trifolii* Bain & Essary), phytophthora root rot [caused by *Phytophthora megasperma* Drechs., f.sp. *medicaginis* T. Kuan and D.C. Erwin)], and the blue alfalfa aphid [*A. kondoi* (Shinji)].

Two grams of seed from NM-9D11A-AN3 will be provided upon written request to the corresponding author and agreement to make appropriate recognition of its source when this germplasm contributes to the development of new germplasm, cultivar, hybrid, or strain cross. Requests for seed from outside the USA should be accompanied by the appropriate customs and control documents.

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References and Notes

1. Melton, B., M. Wilson, and C. Currier. 1989. Registration of 'Wilson' alfalfa. *Crop Sci.* 29:485–486.
2. Ray, I.M., and B.A. Melton (Emeritus), Dep. of Agronomy and Horticulture, New Mexico State University, Las Cruces, NM 88003. M.S. Townsend and J.A. Henning, USDA-ARS, Corvallis, OR 97331; and C.G. Currier, Currier Abstract Co., P.O. Box 540 Artesia, NM 88211. Research supported by the New Mexico Agr. Exp. Stn. Registration by CSSA. Accepted 30 Sept. 1999. *Corresponding author (iaray@nmsu.edu).

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