REGISTRATION OF UC 176, UC 196, UC 226, UC 276, AND UC 296 VERY NONDORMANT ALFALFA GERMPLASMS WITH VARYING LEVELS OF RESISTANCE TO DISEASES AND/OR INSECTS

UC 176 (Reg. no. GP-245, PI 552541), UC 196 (Reg. no. GP-246, PI 552544), UC 226 (Reg. no. GP-247, PI 552546), UC 276 (Reg. no. GP-248, PI 552549), and UC 296 (Reg. no. GP-249, PI 552550) alfalfa very nondormant (Medicago sativa L.) germplasms were released by the Department of Agronomy and Range Science, University of California, Davis, and the USDA-ARS in January 1990, with varying levels of resistance to diseases and/or insects. They were selected over 15 yr to develop resistance to one or more of the following diseases in the low desert of southern California: phytophthora root rot (caused by Phytophthora megasperma Drechs. f. sp. medicaginis T. Kuan & D.C. Erwin); rhizoctonia root canker (caused by Rhizoctonia solani T. Kühn); fusarium wilt [caused by Fusarium oxysporum Schlechtend. f. sp. medicaginis (J.L. Weimer) W.C. Snyder & H.N. Hans.]; and the physiological, low-oxygen-tension problem commonly called scald. UC 176 and UC 196, were also subjected to high populations of the blue alfalfa aphid (Acyrthosiphon kondoi Shinji) during their development.

Parent plants of UC 176 were initially selected from a nursery that was routinely rogued of plants susceptible to several diseases and insects. These plants were transplanted to a holding nursery for root rot resistant germplasm located in an area with soil salinity values of 0.7 to 1.2 S m⁻¹ (7 to 12 mmho cm⁻¹) in the top meter of soil. This nursery was periodically rogued of plants that were diseased, infested with insects, or had poor general appearance. New transplants were added over time, from other experiments conducted in the Imperial Valley, replacing old plants that had died. Care was taken to avoid removing all plants in an area or row, so as not to remove all germplasm from one source. Seed was harvested and plants were added and removed from this holding area over a 6-yr period to establish the following germplasms: UC 176 (1979); UC 196 (1980); UC 226 (1981); UC 276 (1983); and UC 296 (1984).

Approximately 50 to 80% of the parentage of the germplasms trace to ‘UC Salton’ (1), ‘UC Cargo’ (2), and ‘CUF 101’ (3). The remaining parentage can be traced to other UC material maintained at the Imperial Valley Agricultural Center. All seed was open-pollinated by honeybees (Apis mellifera L.).

Seedling tests to evaluate resistance to the blue alfalfa aphid were conducted in a greenhouse at Tucson, AZ. The percentages of resistant plants were 22, 28, 56, and 0.7 for UC 176, UC 196, CUF 101 (R) (4), and ‘Caliverde’ (S), respectively. The percentages of adult plants (grown in a large, walk-in cage) resistant to the blue alfalfa aphid were 40 for UC 196 and 6 for ‘Mesa Sirsa’ (S). UC 226 yielded 107% of CUF 101 in a 2-yr trial at El Centre, CA, and had a 35% stand rating, compared with 54% for CUF 101 (6); UC 276 yielded 106% of CUF 101 in a yield trial at Five Points and had a 61% stand compared with 50% for CUF 101 (7).

Five grams of seed of each germplasm were distributed, until depleted, upon written request and appropriate recognition of its source as a matter of open record when this germplasm contributes to the development of a new cultivar, hybrid, or germplasm. Requests for seed should be directed to Mr. Larry Gibbs, University of California, 1004 E. Holton Rd., El Centro, CA 92243.

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References and Notes

4. R = resistant; S = susceptible.
8. W.F. Lehman (deceased), Univ. of Calif. Depart. of Agronomy & Range Science, Univ. of California, Davis, CA; M.W. Nielson, Brigham Young Univ., Provo, UT 84602; and V.L. Marble (deceased), USDA-ARS, and the Minnesota Agricultural Experiment Station, St. Paul, MN, for disease evaluations.