REGISTRATION OF CROP CULTIVARS

REGISTRATION OF 'NITRO' ALFALFA

‘NITRO’ alfalfa (Medicago sativa L.) (Reg. no. 153) (PI 515954) was developed cooperatively by the USDA-ARS and the Minnesota Agricultural Experiment Station. It was tested as MNUCXSW, MN5887, and Nova. It was released in July 1986.

Nitro is the first alfalfa cultivar selected for specialized N accumulation attributes. Two cycles of recurrent selection were conducted at Rosemount, MN, for fall growth characteristics, root mass, and root N concentration in two alfalfa populations: ‘UC Cargo’, and the germplasm source SW Comp AN4P3 (developed by USDA-ARS at Reno, NV). In both cycles (1977 and 1979) of selection the two populations were seeded in rows (50 seed/m) in early May. About 15,000 plants/population were grown each cycle. They were clipped about 15 July and 30 August. About 20 October all plants were undercut, the plants with large tops and the least leaf disease and frost injury were dug (+ 30% or about 3750 plants/population), and 400 plants with the largest roots were selected from each population. The lower portion of the root from each selected plant was excised and analyzed for percentage N, and the crown and upper root was planted in the greenhouse. The 125 plants in each population with the greatest root N concentration were intercrossed within populations to produce MNSW Comp N2 and MNUC Cargo N2. About 500 to 800 plants from each of these populations were evaluated for rust (caused by Uromyces striatus Schroet.) and common leafspot [caused by Pseudopeziza medicaginis (Lib.)Sac.] at Salinas, CA. The most resistant plants were sent to St. Paul for intercrossing. This included 54 plants from MNSW Comp N2 that produced MNSW COMP N2.CL (Syn 1) seed and 95 plants from MNUC Cargo N2 that produced MNUC Cargo N2.CL (Syn 1) seed. These two populations were intercrossed by hand to produce MNUCXSW (Syn 1). The estimated germplasm constitution(1) of Nitro is: 5% Chilean, 5% Peruvian, 35% Indian, and 55% African.

Nitro has high resistance to Fusarium wilt [caused by Fusarium oxysporum Schlecht f. sp. medicaginis (Weim) Synd. and Huns.] and to the pea aphid [Acyrthosiphon pisum (Harri)]. It has resistance to Phytophthora root rot (caused by Phytophthora megasperma Drechs. f. sp. medicaginis Kuan and Erwin) and to biotypes of the spotted alfalfa aphid [Thrips maculata (Buckton)] collected in Oklahoma. Nitro has improved fall leaf disease resistance in the upper Midwest compared to most other nondormant cultivars. It is susceptible to anthracnose (caused by Colletotrichum trifolii Bain), bacterial wilt (caused by Corynebacterium insidiosum (McCull.) H.L. Jens), Verticillium wilt (caused by Verticillium albo-atrum Reinke and Berth.) and the blue alfalfa aphid (Acyrthosiphon kondoi Shinji).

Nitro is a non-winter-hardy cultivar similar to ‘Moapa 69’ in fall growth. It is intended as a special purpose alfalfa for use as a 1-yr hay source and as a fall low-down green manure crop. In Minnesota, the most economical system for forage and N production consists of planting Nitro in April or early May, harvesting three times at bud by early September with fall herbage regrowth, crowns, and roots produced in October used as a source of residual N for subsequent nonlegume crops. The nondormant characteristic provides 4 to 6 wk of additional fall growth and N fixation as compared to dormant cultivars. Nitro has consistently produced similar or greater summer forage yields in the seedling year as compared to other nondormant and dormant cultivars. When compared over 10 trials in six states, Nitro averaged 140 kg N ha⁻¹ for fall plow down (herbage, crowns, roots) compared to 128 and 106 kg N ha⁻¹ for selected nondormant and dormant cultivars, respectively. Nitro will not reliably survive most upper Midwest winters, but it may survive during winters with snow cover and/or mild temperatures.

Seed increase is limited to one generation each of breeder (Syn 2), foundation (Syn 3), and certified seed (Syn 3 or Syn 4). Certified seed may be grown from breeder or foundation seed. The length of stand in years in the southern area of adaptation is Breeder 2, Foundation 3 (4th optional depending upon breeder approval), and Certified 6. The length of stand will be 1 yr (year of seeding only) for all seed production in the northern area of adaptation. Foundation seed is available from the Minnesota Crop Improvement Association, 1900 Hendon Ave., St. Paul, MN 55108. Certified seed was available in the spring of 1987.

Nitro was favorably reviewed by the National Alfalfa Registration Board at the January 1986 meeting. Plant variety protection was granted under the certification provision in October 1987 (Certificate no. 8700063).

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References and Notes


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REGISTRATION OF 'VENUS' BARLEY

‘VENUS’ barley (Hordeum vulgare L.) (Reg. no. 211) (PI 512252) was developed by the Georgia Agricultural Experiment Station and released in 1987. The original cross, ‘Ba-

sosy’/’Atlas 68’ was made in 1973. In 1974, an F1 plant of this cross was backcrossed to Barsoy, an early, bearded, short strawed cultivar that has a snaky neck and is susceptible to barley yellow dwarf virus (BYDV). The snaky neck character often results in ripe spikes detaching from the stem. The purpose of this cross was to incorporate BYDV resistance from Atlas 68 into a Barsoy type barley without the snaky neck character. The pedigree method of breeding was used to handle F2 through F5 generations, followed by the bulk method for F6 and F7 generations. Venus was increased from a uniform F8 line in 1980 and was evaluated as Ga 80-674.

During the 3-yr period, 1984–1986, Venus outyielded ‘Volbar’, ‘Kline’, and ‘Sussex’ by 6, 10, and 10% respectively, in Georgia performance trials. Venus has been evaluated in the Uniform Winter barley Nursery (semihard-