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/po =ulation 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/po =ulation), 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.) Sacc.] 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 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 (Weimer) Synd. and Hans.] and to the pea aphid [Acyrthosiphon pisum (Harris)]. 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 [Therio phis 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 Verticil-