REGISTRATION OF 'SWAN VALLEY' AND 'NEPTUNE' NAVY BEANS

'Swan Valley' and 'Neptune' navy beans (Phaseolus vulgaris L.) (Reg. no. 69, 70) were developed and released cooperatively by the Michigan Agricultural Experiment Station and USDA-ARS in 1981, as upright, full season navy bean cultivars.

Swan Valley, formerly known and tested as MSU Breeding Line no. 61618, was derived from a single F₂ generation plant selection from the cross 'NEP-2'/'Black Turtle Soup'. Neptune, formerly designated as MSU breeding line number 790053, was a single F₁ generation plant selection from the three-way cross MSU #31906/'San Fernando'/'Seafarer'. Swan Valley and Neptune are among the first dry bean cultivars selected for high yield based on the ideotype breeding concept proposed by Adams (1). The concept features a distinctively modified plant architecture, coupled with greater agronomic performance, than Kamiak or Boyer. Swan Valley and Neptune are tolerant to the beta, gamma, and delta races of anthracnose caused by Colletotrichum lindemuthianum (Sacc. & Magn.) Scrib. Both cultivars are tolerant to the air pollution oxidant ozone, present in Michigan and to which all standard cultivars are susceptible. Swan Valley and Neptune are tolerant to Michigan isolates of halo blight incited by Pseudomonas phaseolicola (Burk.) Dows., and angular leaf spot caused by Isariopsis griseola Sor. Both cultivars exhibit field tolerance to root rot incited by Fusarium solani (Mart.) Appel and W. f. sp. phaseoli (Burk.) Snyd. and Hans.

Swan Valley and Neptune carry the single dominant I gene form of resistance to all strains of bean common mosaic virus (BCMV), and are essentially immune to the indigenous rust [incited by Uromyces appendiculatus (Pers. ex Pers.) Unger var. appendiculatus] races prevalent in Michigan, Nebraska, North Dakota, and Colorado (4). Swan Valley is resistant to the beta, gamma, and delta races of anthracnose caused by Colletotrichum lindemuthianum (Sacc. & Magn.) Scrib. Both cultivars are tolerant to the air pollution oxidant ozone, present in Michigan and to which all standard cultivars are susceptible. Swan Valley and Neptune are tolerant to Michigan isolates of halo blight incited by Pseudomonas phaseolicola (Burk.) Dows., and angular leaf spot caused by Isariopsis griseola Sor. Both cultivars exhibit field tolerance to root rot incited by Fusarium solani (Mart.) Appel and W. f. sp. phaseoli (Burk.) Snyd. and Hans.

Swan Valley and Neptune have ovoid white seed averaging 17.5 and 20.0 g/100 seeds, respectively. These sizes are within the range of 17.5 to 20.5 g/100 seeds characteristic of commercially acceptable navy bean cultivars. The dry seed surface color of Swan Valley and Neptune is slightly off-white and significantly darker than Seafarer. Surface color testing was accomplished using the L-scale of a Hunter Lab Color and Color Difference Meter (5). The L-values from several tests were 59.0, 59.8, and 62.4 for Swan Valley, Neptune, and Seafarer, respectively. The acceptance range of L-scale values for dry seeds of navy beans has been set at 61.0 to 64.0. The seed color differences noted in the dry state were not obvious in the cooked product. Cooked Swan Valley, Neptune, and Seafarer beans had average L-values of 50.0, 50.8, and 50.1, respectively. These values are all within the range of 49.0 to 51.0 that are considered acceptable for cooked navy beans.

Swan Valley and Neptune had washed bean drain weight of 5000 to 5050 kg ha⁻¹, similar in performance to both Kamiak and Boyer. Swine feeding trials indicated Swan was higher in nutritional value than these two cultivars (3).

Breeders seed stock is maintained by the Washington State Univ. Agricultural Research Center at Pullman, WA 99164, and foundation seed is available through the Washington State Crop Improvement Association, Yakima, WA 98901. Seed production under certification will proceed from breeder through foundation, registered, and certified seed classes.

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References and Notes

2. Appreciation is expressed to D.M. Wessenberg, USDA-ARS at Aberdeen, ID, as coordinator of the Western Regional Winter Barley Nursery.
3. Appreciation is expressed to C.N. Coon, formerly Dep. of Animal Sciences, Washington State Univ., currently Dep. of Animal Sciences, Univ. of Minnesota, and J.A. Frooth, Dep. of Animal Sciences, Washington State Univ., for conducting the chick and swine feeding trials, respectively.

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