Registration of ‘Shoshone’ Sainfoin

‘Shoshone’ sainfoin (Onobrychis vicifolia Scop.) (Reg. no. CV-258, PI 639688) was developed by the Wyoming Agricultural Experiment Station and jointly released with Montana Agricultural Experiment Station and the United States Department of Agriculture, Natural Resources Conservation Service, Plant Material Center, Bridger, MT. It is a highly heterogeneous seed line derived from the open pollination of 176 plants from six different sources which had survived for 16 mo in the presence of the northern root-knot nematode, Meloidogyne hapla Chitwood (Gray et al., 1986). Sainfoin sources from which selections were made, number of plants selected, and percentage of contribution to the intercross were: ‘Eski’ (33, 19.0%) and ‘Melrose’ (28, 16.0%). A six-entry replicated variety trial from which selections were made was established on 26 Apr. 1981 at the University of Wyoming Agricultural Experiment Station at Torrington, WY (42°44′55″N, 104°13′00″W). Soil type was a sandy loam and plots were sprinkler irrigated, providing ideal conditions for the multiplication and root parasitism of M. hapla.

Sainfoin, in the Fabaceae (Leguminosae) family, is native to regions around the Mediterranean, Black, and Caspian Seas and north to Russia. It is an extremely palatable and nutritious forage crop (Miller and Hoveland, 1995). Sainfoin is preferred by cattle, sheep, deer, and elk. It has earlier spring growth than alfalfa [Medicago sativa ssp. sativa (L.) Lesins & Lesins] and does not cause bloat in ruminant animals. In addition, sainfoin can be used for wildlife habitat restoration, for wildlife enhancement as a component with other forage species in “food plots,” or as a legume component under the Conservation Reserve Program. Beekeepers indicate honey yields with sainfoin are much greater than from alfalfa.

In tests conducted in the greenhouse at Laramie, WY, Shoshone expressed a higher level of tolerance to M. hapla than Remont sainfoin by having higher dry shoot weight (2.02 g for Shoshone vs. 1.57 g for Remont), and root biomass (1.66 g for Shoshone vs. 0.56 g for Remont), as well as lower plant mortality (55.4% for Shoshone vs. 75.9% for Remont [Shigaki et al., 1998]). A search for resistance to M. hapla among cultivars, experimental lines, and the world collection of O. vicifolia (Wofford et al., 1987), as well as other species of Onobrychis (Gray et al., 1990) proved futile, indicating a possible lack of co-evolution.

Forage yield was determined at eight sites in Wyoming and Montana under both dryland and irrigated conditions from 1996 to 2005 over 27 location–years. All plots were cut twice each year except at the dryland site located at Archer, WY, during drought years when only one cut was taken. At four of the eight sites, Shoshone was compared to Remont sainfoin, developed by Montana State University, which had previously performed well in Wyoming and Montana trials. Average annual forage yield, adjusted to 12% moisture, for Shoshone and Remont were 9.79 vs. 9.05 Mg ha⁻¹ under irrigation and 2.13 vs. 2.11 Mg ha⁻¹ respectively, under dryland. Over all test sites, Shoshone had yields equal to or slightly better than Remont while winterhardiness was similar. In an irrigated legume trial at Bozeman, MT, Shoshone had the second highest 4-yr average annual yield (13.79 Mg ha⁻¹ at 12% moisture) of 16 legume entries which included sainfoin, alfalfa, birdsfoot trefoil (Lotus corniculatus L.), and cicer milkvetch (Astragalus cicer L.). At Kalispell, MT, Shoshone out-yielded alfalfa, birdsfoot trefoil, and cicer milkvetch entries, as well as Remont sainfoin over three harvest years. No damaging insects or diseases, other than the northern root-knot nematode, were observed on Shoshone or Remont during the 8 yr of field testing.

Shoshone appears to be well adapted to both dryland (45–50 cm yr⁻¹) and irrigated conditions in Wyoming and Montana. It should be adapted to other areas in the northern Rocky Mountains and possibly in areas of the northern Great Plains.

Foundation seed of Shoshone will be maintained by the Wyoming Seed Certification Service in Powell, WY. Certified seed should be available in the late summer of 2005. Application for Plant Variety Protection will be made. Small quantities of seed may be obtained from the corresponding author for at least 5 yr.


References


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doi:10.2135/cropsci2005.07-0190
Published in Crop Sci. 46:988 (2006).