WYOMING AGRICULTURAL EXPERIMENT STATION

UNIVERSITY OF WYOMING

LARAMIE, WYOMING 82071

RELEASE OF 'SHOSHONE' SAINFOIN

The Wyoming Agricultural Experiment Station announces the release of 'Shoshone' sainfoin (*Onobrychis viciifolia* Scop.). Breeder seed of Shoshone was derived from the intercross of 176 surviving plants from a sainfoin variety trial located at the University of Wyoming, Agricultural Research and Extension Center in Torrington, Wyoming. Plants involved in the intercross persisted in the presence of a high soil population of *Meloidogyne hapla* Scop. for 16 months. The variety trial was established 26 April 1981. Severe stand decline had occurred by the following spring. Roots were found to be heavily parasitized by the Northern root-knot nematode, *M. hapla*. An open-pollinated intercross of the 176 plants was made with native bees in the summer of 1982. Shoshone expressed tolerance by having both increased shoot and root weight to *M. hapla* in environmentally controlled studies. Additional research conducted at the University of Wyoming showed true resistance (lack of nematode reproduction on roots) to *M. hapla* did not exist in the world collection of *O. viciifolia* or in other species of *Onobrychis*.

The sainfoin entries included in the trial and the number of plants and percent contribution to the intercross at Torrington is as follows: experimentals Bozeman (17 plants, 9.6%), Creston (36 plants, 20.4%) and W-40 (32 plants, 18.1%); and varieties Eski (33 plants, 19.0%), Melrose (28 plants, 15.9%) and Remont (30 plants, 17.0%). Background of the sainfoin entries consist of

selections of plant introductions originating from western Asia (Turkey), and Europe (Austria, Czechoslovakia, Hungary, Bulgaria, Yugoslavia, U.S.S.R. and France).

Sainfoin, a member of the Fabaceae (Leguminosae) family, is extremely palatable and nutritious forage for all classes of livestock and wildlife. It tends to mature faster than alfalfa providing early spring forage. Unlike alfalfa, sainfoin can be grazed without concern of bloat in ruminant animals. At similar stages of maturity, sainfoin has been lower in crude protein but has higher digestible nutrients than alfalfa. It can be used for wildlife habitat restoration, for wildlife enhancement as a component with other forage species, or as a legume component under the Conservation Reserve Program. Beekeepers indicate honey yields with sainfoin are much greater than with alfalfa. Other than the Northern root-knot nematode, no damaging insects or diseases were observed on Shoshone during the eight years of field testing. Sainfoin is not attacked by the alfalfa weevil (*Hypera postica* Gyllenha), which is a serious pest of alfalfa. It is well adapted to both dryland and irrigated conditions in Wyoming and Montana, and should be adapted to other areas in the northern Rocky Mountains, as well as, in the northern Great Plains and the inland Pacific Northwest.

Forage yield was determined over 24 location years which included seven sites in Wyoming and Montana. All plots were cut twice each year except at the Archer dryland site during drought years. At four of the seven sites, Shoshone was compared to Remont sainfoin, developed by Montana State University, which had previously performed well in Wyoming trials. Average annual forage yield, adjusted to 12% moisture, for Shoshone and Remont were 4.37 vs 4.04 T/A when irrigated and 1.21 vs 1.15 T/A, respectively, under dryland conditions. Both varieties were also evaluated as a mixture with forage grasses (Bozoisky Select Russian wildrye under dryland and Manska intermediate wheatgrass under irrigation). Average annual yields for Shoshone and

Remont-grass interplanings were 3.97 vs 4.16 T/A under irrigation and 0.95 vs 0.94, respectively, under dryland. Shoshone has similar winterhardiness as Remont while yields are equal to, or slightly better than, Remont. In an irrigated legume trial in Bozeman Montana, Shoshone had the second highest four-year yield (6.14 T/A at 12% moisture) of 16 legume entries which included sainfoin (five entries), alfalfa (three entries), birdsfoot trefoil (five entries) and cicer milkvetch (three entries).

The breeder seed class of Shoshone will be maintained by the University of Wyoming, Department of Plant Sciences, State Seed Certification Service located in Powell, Wyoming.

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Director, Wyoming Agricultural Experiment Station Date