Registration of Germplasms

REGISTRATION OF AGROPYRON REPENS × A. SPICATUM GERMPLASMS RS-1 and RS-2¹
(Reg. No. GP11 and GP12)

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The two hybrid populations are characterized by the vigor and productivity of Agropyron repens and attributes of A. spicatum. The RS-1 population is essentially caespitose, with very limited rhizome development; the RS-2 population has moderate rhizomes. Both germplasms will probably be best adapted for range seedings in the 30- to 45-cm precipitation zones and for hay or pasture under irrigation.

The initial cross was made in 1962 between a local strain of hexaploid (2n = 42) Agropyron repens (L.) Beauv. (quackgrass) and two accessions of tetraploid (2n = 28) A. spicatum (Park.) Scribn. & Smith (bluebunch wheatgrass). The F₁ hybrid had 2n-35 chromosomes, and although meiotically irregular, it was partially fertile so that generation advance was accomplished without chromosome doubling. Mass selection from the F₁ to the F₅ generation effectively improved the fertility and general vigor of the population. Selection was restricted to plants with characteristics of both parent species and plants with excessive rhizome development were excluded. More intense selection was initiated in the F₅ generation, and progenies of 170 selected F₆ or F₇ clonal lines were evaluated on representative semiarid range sites.

The parental clones of the RS-1 and RS-2 populations were selected on the basis of general vigor, degree of spread, forage yield, seed yield, and seed quality. Polycross progenies from the 12 F₆ or F₇ clones with the highest selection index and rhizome development of less than 0.25 m per year were blended to form the RS-I composite. The 10 clones with the highest selection index and rhizome development of less than 0.25 m per year were blended to form the RS-2 composite. The F₆ to F₇ generation effectively improved the fertility and general vigor of the population. Selection was restricted to plants with characteristics of both parent species and plants with excessive rhizome development were excluded. More intense selection was initiated in the F₅ generation, and progenies of 170 selected F₆ or F₇ clonal lines were evaluated on representative semiarid range sites.

The chromosome number of RS-1 and RS-2 stabilized at 2n = 42 and meiotic stability and good fertility have been achieved. Rate of phenological development is intermediate to that of the parental species. Date of bloom at Logan ranges from mid to late June. Average seed yields of the parental clones in trials near Logan (42 cm annual precipitation) were 28 and 26 g per spaced plant for RS-1 and RS-2, respectively. The base population from which the parental clones were selected averaged 15 g of clean seed per plant.

The degree of rhizome development is under genetic control and is responsive to selection pressure. Annual rhizome growth among clones in the F₆ or F₇ generation ranged from 0.1 to 0.6 m per year, with 63% of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a surface mine reclamation site near Decker, Mont. (30 cm annual precipitation), forage yields of the lines averaging 0.25 m or less. On a sur...