

United States Department of Agriculture
Agricultural Research Service

and

Utah Agricultural Experiment Station
Utah State University
Logan, Utah

and

United States Department of Agriculture
Soil Conservation Service

RELEASE OF 'HYCREST' CRESTED WHEATGRASS, AGROPYRON CRISTATUM (L.) GAERTN. X A. DESERTORUM (FISCH. EX LINK), SCHULT.

The Agricultural Research Service, U.S. Department of Agriculture, in cooperation with the Utah Agricultural Experiment Station and the Soil Conservation Service announce the release of 'Hycrest' crested wheatgrass, Agropyron cristatum (L.) Gaertn. X A. desertorum (Fisch. ex Link). Schult.

'Hycrest' was developed from a breeding population generated by crossing induced tetraploid Agropyron cristatum with natural tetraploid A. desertorum. The initial crosses were made by D. R. Dewey between 1962 to 1967. The genetic base of the hybrid population was established with seven clones each of induced tetraploid A. cristatum and A. desertorum. Reciprocal crosses were made to insure that the cytoplasm of both species were represented in the breeding population.

In 1974, the hybrid was included in a breeding program by K. H. Asay. Open pollination progenies of 295 F₃ hybrid clones were established in a 7,000-plant source nursery on a range site in northwest Utah. After a two-year evaluation period, 103 clones were selected on the basis of general vigor, leafiness, resistance to insects and diseases, and seed yield potential. The selected clones and their OP progenies were included in replicated tests at two field locations where they were evaluated for seed and forage yield, seedling vigor (in cooperation with D. A. Johnson), and other characteristics previously studied in the source nurseries. On the basis of these data, 18 clones were isolated in a crossing block to develop the first generation of the synthetic strain.

Hycrest, the first interspecific hybrid of crested wheatgrass to be released, tends to be larger and more robust than the two parental species. In trials conducted by F. B. Gomm on five range sites in Utah and Idaho, it established better stands and produced significantly more forage than 'Nordan' or 'Fairway,' particularly during the first two years after seeding (Table 1). In spaced planted trials, the hybrid produced about 20% more seed than Nordan and Fairway. Hycrest also performed significantly better than Fairway and Nordan in terms of stand establishment in the field and root development, emergence from deep plantings and subsequent seedling vigor in

well adapted to sagebrush and juniper vegetation sites, it also established good to excellent stands on shadscale-budsage, shadscale-desert molly, greasewood, and Indian ricegrass sites where annual precipitation is less than 25 cm.

Breeder's seed will be maintained by the ARS at Logan, Utah. Foundation seed will be produced from breeder's seed by the SCS and should be available by the Fall of 1984. For information regarding supplies of Foundation seed contact:

J. R. Carlson
SCS Western Technical Service Center
511 NW Broadway, Room 510
Portland, OR 97209
503 221 2841

Certification of two generations beyond the foundation class will be permitted.

Release date for publicity purposes shall be effective on the date of the final signature of the release notice.

APR 18 1984

Date


Agricultural Research Service
U.S. Department of Agriculture

3-27-84
Date


Director
Utah Agricultural Experiment Station

4-2-84
Date


Soil Conservation Service
U.S. Department of Agriculture

Table 1. Stands and forage yields of crested wheatgrass cultivars on five semiarid range sites in Utah and Idaho¹

Cultivar	Location									
	Lakeside - 1		Lakeside - 2		Thiokol		Huntington		Sublette	
	Stand	Yield	Stand	Yield	Stand	Yield	Stand	Yield	Stand	Yield
	%	kg/ha	%	kg/ha	%	kg/ha	%	kg/ha	%	kg/ha
Nordan	90	1548	97	1923	100	2731	88	662	95	572
Fairway	83	869	82	1340	100	3560	-	-	-	-
Hycrest	95	3140	100	2882	100	4424	95	1674	98	1839

¹Lakeside - 1, Lakeside - 2, and Thiokol data taken year after establishment; data from Huntington and Sublette recorded during establishment year.

Table 2. Seedling emergence and seedling vigor of three crested wheatgrass cultivars from deep plantings in the laboratory

Cultivar	Emergence	Dry Wt.
	%	g/plot
Nordan	25	0.029
Fairway	20	0.025
Hycrest	36	0.057
LSD (0.05)	12	0.029

Table 3. Seedling root development of three crested wheatgrass cultivars after three weeks in the greenhouse.

Cultivar	Root length	Root Wt.	Shoot Wt.	Total Wt.
	mm	-----	mg	-----
Nordan	20.3	2.53	3.22	5.75
Fairway	16.2	2.14	3.24	5.38
Hycrest	19.7	2.95	4.53	7.48
LSD (0.05)	2.0	0.65	0.97	—