REGISTRATION OF KY 1625 SWITCHGRASS GERMPLASM

A fine-stemmed leafy switchgrass (Panicum virgatum L.) germplasm, KY 1625 (Reg. No. GP-57) (PI431575) was developed by the USDA Soil Conservation Service and released as germplasm in 1987 in cooperation with the Kentucky Agricultural Experiment Station. This germplasm is an increase of a strain that was collected in 1966 from Raleigh County, West Virginia, along the south side of the New River Alluvium, 1 km upstream from Highway 19 bridge, and accessioned KY 584. Seed from KY 584 was planted and selected from a collection of 35 other native switchgrass accessions at the Quicksand Plant Material Center from 1967 to 1970. In 1971, 20 clones were planted in a 5 m row for comparison with 51 switchgrass accessions that included the original 35, plus new accessions that included the cultivars Blackwell, Cave In Rock, Nebraska 28, Pathfinder, Wabasso, Pangburn, Kanlow, and Cartage. Evaluations were made to select for fine stems, leafy characteristics, and late maturity. KY 584 was the superior accession for these traits. Clonal material was increased from KY 584 and placed in a 0.04 ha field for seed increase and was designated KY 1625. Seed from the 0.04 ha plot was used to expand the increase field to a total of 1.14 ha.

KY 1625 switchgrass is a perennial warm-season grass with a high leaf-to-stem ratio and has consistently shown higher protein and digestibility levels than other switchgrass accessions. According to an unpublished study at the University of Kentucky in 1986 by T.H. Taylor, R.O. Parriott, and L.T. Jones, Jr., KY 1625 showed the higher average percent total nonstructural carbohydrates over 3 yr than cultivars Blackwell, Cathage, and Kanlow. KY 1625 is more leafy and has finer stems than Kanlow or Blackwell; however, it has poor seed quality and seedling vigor (1). Cytogenetic studies of nine plants of KY 1625 indicated chromosome numbers of 2n = 36, 54, and 72. Apparently, both polyplody and aneuploidy (x = 9 in switchgrass) may be present in this germplasm. This variability in chromosome number may account for the poor viable seed set. A fine-stemmed leafy switchgrass which regenerates from callus tissue in culture. Crop. Sci. 15:719-724.

3. Dep. of Agromosy, 1575 Linden Dr., Univ. of Wisconsin, Madison, WI 53706. Research supported by College of Agric. and Life Sci., Univ. of Wisconsin and NC83 Seed Production of Insect Pollinated Legumes. Registration by CSSA. Accepted 30 Jan. 1989. *Corresponding author.

REGISTRATION OF PR6555 RICE GERMPLASM LINE WITH MODERATE RESISTANCE TO SHEATH BLIGHT

RICE (Oryza sativa L.) line PR6555 (PI 521360) (Reg. no. GP-66) is short-statured and early flowering with moderate resistance to sheath blight. It was developed by transferring resistance from the Vietnamese cultivar Tetep (PI 280682) to the U.S. cultivar Lemont (PI 475833) through backcrossing. Tetep is widely recognized for its high level of resistance to rice blast disease caused by Pyricularia oryzae Cav. (1) and sheath blight (2), caused by the fungus Thanatephorus cucumeris (Frank) Donk. (=Rhizoctonia solani Kuhn).

However, Tetep is very tall, lodges, and is late maturing in the USA. Lemont is a relatively early maturing, semidwarf, long-grain cultivar with high yield potential and good agronomic characteristics but is very susceptible to sheath blight (3). To transfer resistance from Tetep to Lemont, individual plants from the first through third backcrosses to Lemont were selected for low infection structure counts and for resistant-type lesions in the greenhouse. In 1986, selfed plants from each generation were tested in replicated progeny field tests. Plants were selected in the field based on sheath blight resistance and Lemont plant type (4). Selections were advanced to consecutive generations in a Puerto Rico winter nursery and progeny tested in replicated tests in the disease nursery at the Rice Research Station in Crowley, LA in 1987.

Disease ratings of plants in the field were scored 30 to 35 d after heading on a 0 to 9 scale, where 0 indicated no infection and 9 indicated death of the whole plant. Infection structure counts and lesion type were not determined for the field grown progeny tests. PR6555 disease ratings were significantly better than Lemont in both years, averaging 4.4 ± 0.3 and 4.2 ± 1.0 in 1986 and 1987 field tests as compared with 2.2 ± 0.4 and 1.2 ± 0.4 for Tetep and 6.7 ± 0.9 and 5.9 ± 1.2 for Lemont.

PR6555 averaged 0.92 m in height compared with 1.23 m for Tetep and 0.84 m for Lemont. PR6555 is early flowering, averaging 5 d earlier than Lemont. The selection has glabrous leaves and hulls. The alkali-spreadling and apparent amylose scores averaged 2.9 and 216 mg/g, respectively. Gelatinization temperature type is intermediate to high intermediate. These chemical test results indicate that PR6555 cooking quality is typical of U.S. long-grain cultivars (5). Rough, brown, and milled grain dimensions, respectively, averaged LXW 8.2 ± 0.5 X 2.5 ± 0.1; 6.6 ± 0.1 X 2.2 ± 0.2; and 6.0 ± 0.2 X 2.2 ± 0.2 mm per kernel for PR6555. Lemont averaged LXW 9 ± 0.4 X 2.5 ± 0.3; 7.4 ± 0.1 X 2.2 ± 0.1; and 7.3 ± 0.4 X 2.1 ± 0.1 mm. Weight was 18.5 ± 0.1 and 21.5 ± 0.1 grams per thousand grains of paddy rice.


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