Registration of ‘Choptank’ Wheat

‘Choptank’ (Reg. no. CV-976, PI 639724) is a soft red winter wheat (Triticum aestivum L.) that was jointly developed and released by the Maryland Agricultural Experiment Station, Department of Natural Resource Sciences and Landscape Architecture, and the Virginia Agricultural Experiment Station in 2004. Choptank is named after Maryland’s longest scenic river, which flows 70 miles from the western part of Delaware through Maryland and into the Chesapeake Bay, on Maryland’s Eastern Shore. Choptank has performed well in Maryland, Virginia, and Delaware and provides growers with a high-yielding cultivar with short stature, excellent powdery mildew [caused by Blumeria graminis (DC.) E.O. Speer f. sp. tritici Em. Marchal] resistance and early heading date.

Choptank was derived from the cross ‘Coker 9803’ (PI 548845)/‘Freedom’ (PI 562382) that was made in 1990 at Virginia Polytechnic Institute and State University. The population was advanced from the F2 to F5 generation using a modified bulk breeding method. Wheat spikes were selected in Virginia from the population in each generation (F2–F5) based on the absence of obvious disease, early maturity, short straw, and desirable head shape and size. Selected spikes were threshed in bulk and the seed was planted the following fall of each selection year. Spikes selected from the F5:6 bulk block were threshed individually and planted in separate headrows in the fall of 1996 at Beltsville, MD. Choptank was derived as a bulk of one of these F6:7 headrows selected in 1997 and assigned the breeding line designation MD11–52. In addition to high grain yield, Choptank was selected on the basis of earliness of head emergence, short plant height, and resistance to powdery mildew. Choptank was evaluated in the Maryland Wheat Variety Test for 5 yr (from 2000–2004), in the Virginia and Delaware State Wheat Variety Tests for 3 yr, and in the USDA-ARS Uniform Eastern and Uniform Southern Soft Red Winter Wheat Nurseries in 2004.

Coleoptiles of Choptank are white. Juvenile plants exhibit a semierect growth habit. Plant color at boot stage (Feekes growth stage 9–10) is blue green and a waxy bloom is present on the stem and flag leaf sheath. Anther color is yellow. Spikes are tapering, middense, and awnletted. Glumes are long and wide, with oblique shoulders and obtuse beaks. Kernels of Choptank are red, soft, and ovate with a crease of medium width and depth, rounded cheeks, and a long noncollared brush. Choptank carries the 1BL.1RS wheat–rye chromosomal translocation.

Head emergence of Choptank in Maryland is similar to that of ‘Sisson’ and 2 d earlier than Pioneer brand ‘25R37’. In Maryland, average plant height of Choptank (77.5 cm) is 5 cm shorter than that of Sisson and 2 cm shorter than that of USG ‘3209’. Average straw strength (0.0 lodging score) of Choptank in Maryland is similar to that of Sisson (0.3).

In State Variety Trials conducted in Maryland under a conventional tillage regime over 3 yr (2001–2003) at four to five locations per year, average grain yields of Choptank (4600 kg ha\(^{-1}\)) were similar (\(P < 0.05\)) to those of high-yielding cultivars such as USG 3209 and 250 to 350 kg ha\(^{-1}\) locations per year, average grain yields of Choptank (4600 kg ha\(^{-1}\)) were similar (\(P < 0.05\)) to those of high-yielding cultivars such as USG 3209 and 250 to 350 kg ha\(^{-1}\).

Choptank was also evaluated in the Uniform Southern Winter Wheat Nursery (36 locations) in 2004. Average grain yield of Choptank (4480 kg ha\(^{-1}\)) was similar to that of the check cultivar McCormick. Choptank had a grain yield (722 kg cm\(^{-1}\)) similar to that of the check cultivar McCormick. Choptank was also evaluated in the Uniform Southern Winter Wheat Nursery (36 locations) in 2004. Average grain yield (4440 kg ha\(^{-1}\)) was lower than that of the check cultivar Roane (4814 kg ha\(^{-1}\)). Its grain volume weight was similar to that of the check cultivar Agripro Foster.

Choptank was evaluated for its reaction (\(0 = \) no visible symptoms to \(9 = \) severe infection) to several diseases prevalent in the soft red winter wheat production area in the 2004 Uniform Southern and Uniform Eastern Soft Red Winter Wheat Nurseries. Choptank is resistant (\(n = 5\) environments) to powdery mildew compared to a score of 2.6 for Pioneer ‘26R61’. Based on seedling tests conducted at the USDA-ARS Plant Science Research Unit, NC, Choptank was resistant to 6 out of 13 isolates of powdery mildew. Choptank has expressed resistance (caused by Puccinia triticic Eriks.) to stripe rust (caused by Puccinia striiformis Westend. f. sp. tritici Eriks.) similar to that of the check cultivar AGS 2000. In the 2004 Uniform Southern Soft Red Winter Wheat Nursery (36 locations) in 2004, Choptank had an average grain yield of Choptank (4600 kg ha\(^{-1}\)) was 721 kg cm\(^{-3}\) in 2003 which was 25 kg cm\(^{-3}\) higher than those of Pioneer Brand ‘2580’, similar to that of Southern States ‘560. On the basis of disease scores (\(0 = \) no visible symptoms to 5 = severe infection), Choptank had a disease score of 2 compared to a score of 3.6 for Pioneer ‘26R61’. Based on seedling tests conducted by the USDA-ARS Disease Laboratory in St. Paul, MN, it is postulated that Choptank has genes Lr18, Lr26, and other unknown genes governing resistance to leaf rust. Choptank is resistant (\(n = 5, n = 2\)) to leaf blight (caused by Mayetiola destructor) and is moderately susceptible to stem rust (caused by Puccinia graminis Pers. & Eriks., f. sp. tritici Eriks.) compared to a score of 1 for USG 3209, similar to that of the check cultivar AGS 2000. Seedling tests indicate that Choptank is resistant to Septoria tritici (score 2.5, \(n = 2\)) to stripe rust (caused by Puccinia striiformis Westend. f. sp. tritici Eriks.) compared to a score of 5.8 for AGS 2000 but is susceptible in the Pacific Northwest. Choptank is resistant to WSM virus (score = 0.0, \(n = 2\)) compared to a score of 5 for AGS 2000. Seedling tests indicate that Choptank is resistant to WSM virus (score 0.0, \(n = 2\)) compared to a score of 5 for AGS 2000. Seedling tests indicate that Choptank is resistant to WSM virus (score 0.0, \(n = 2\)) compared to a score of 5 for AGS 2000. Seedling tests indicate that Choptank is resistant to WSM virus (score 0.0, \(n = 2\)) compared to a score of 5 for AGS 2000. Seedling tests indicate that Choptank is resistant to WSM virus (score 0.0, \(n = 2\)).