Registration of ‘Whitten’ Kenaf

‘Whitten’ kenaf (Hibiscus cannabinus L.) (Reg. no. CV-1, PI 639889) was developed and released by the Mississippi Agricultural and Forestry Experiment Station (MAFES) in 2005. Whitten was named in honor of the late U.S. Representative from Mississippi’s First District, and patron of kenaf research, the Honorable Jamie L. Whitten.

Whitten, known experimentally as DRC96–1, was selected for (i) cordate leaf base with shallow lobing and serrated margins, (ii) plant height, a gross indicator of yield (Wilson and Joyner, 1969; Higgins, 1974), (iii) resistance to powdery mildew [caused by Leveillula taurica (Lev.) Arn.], and (iv) delayed flowering. Kenaf cultivars begin growth with a simple, undivided leaf shape. After 7 to 10 nodes, some cultivars such as Everglades 71 (E71) (Wilson et al., 1965), Gregg (Cook and Scott, 2000), SF 459 (Cook and Scott, 1995), and Tainung 2 (T2) convert from the juvenile, shallowly lobed leaf to a deeply divided leaf. The divided-leaf cultivars superficially resemble marijuana (Cannabis sativa L.). This resemblance has caused growers and researchers trouble with local, state, and federal law enforcement officials. Whitten retains the undivided (juvenile) leaf shape, similar to Everglades 41 (E41) (Wilson et al., 1965), Cuba 108 (C108), and Dowling (Cook et al., 2000).

Whitten is a short-day flowering cultivar, with date of first flower occurring in mid-October at Starkville (latitude 33°46' N), intermediate to T2 (1 October) and E41 (30 October) at the same location.

Whitten was derived and selected as a single plant from the S2 (F3) segregating array of a cross of E41 (PI 552873) (Wilson et al., 1965), an improved cultivar with undivided leaf shape, and a powdery mildew resistant selection of ‘Guatemala 45’, made during the 1994 growing season. Whitten was tested in nursery plots on the research facilities of MAFES in 1996 and 1997. Seed of individual plants was increased during winter months in the greenhouse by sectioning living stalks and rooting each section. Whitten was developed and increased during the terminus of the 1988 Federal Kenaf Initiative, so trans-U.S. testing was not possible. Whitten has been extensively field tested in Mississippi, at Experiment Stations in Poplarville (2004), Brooksville (1999), Starkville (1999–2002 and 2004) and various locations in the western alluvial plain of Mississippi and Tennessee (Money, MS 1999; Payne, MS 2000; Memphis, TN 2002). Tests were also conducted at Safford Agricultural Center, Tucson, AZ (Clark and Carpenter, 1998); Western Colorado Research Center (Pearson, 2000); and by the author in North Carolina (2004). Average total stalk yield of Whitten was 16.61 Mg ha⁻¹, similar to T2 (15.58 Mg ha⁻¹), but significantly greater than E41 (14.04 Mg ha⁻¹), Dowling (13.99 Mg ha⁻¹), E71 (13.83 Mg ha⁻¹), Gregg (13.79 Mg ha⁻¹), SF459 (13.70 Mg ha⁻¹), and C108 (10.95 Mg ha⁻¹).

Whitten also performed significantly better than other test cultivars for resistance to powdery mildew in greenhouse and field screenings at Starkville. When evaluated on a 1-to-5 rating scale, on which a rating of 1 means the plant shows no symptoms and 5 indicates complete susceptibility. Whitten had a mean rating of 1.0, significantly better than Dowling, T2, E41, and Gregg with mean mildew ratings of 3.3, 3.3, 3.4, 4.0, and 4.5, respectively.


Whitten exhibited lower mean mildew ratings than SF459, E71, Dowling, T2, E41, and Gregg with mean mildew ratings of 2.9, 3.3, 3.3, 4.0, and 4.5, respectively. Mean bast fiber percentage as calculated by the method of Sij et al. (1993) for the eight cultivars tested was 40.2% (SF 459) to 34.3% (Whitten). However, determination of bast fiber yield per hectare is a function of total stalk yield and bast fiber percentage. Data indicates Whitten produced the highest yield per hectare from Whitten (highest yield), SF 459 (second highest yield), E41, 71, T2, Gregg, Dowling, and SF459 (lowest yielding, lowest bast fiber percentage cultivar; 5.7 Mg bast ha⁻¹).

Seed of Whitten will be maintained by USDA-ARS, Southern Regional Plant Introduction Station, 3202 N. Main Street, Griffin, GA. Small quantities of seed will be made available for research and breeding purposes on request.

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References


