Registration of ‘Moon Cake’ Vegetable Soybean

‘Moon Cake’ vegetable soybean [Glycine max (L.) Merr.] (Reg. no. CV-481, PI 632905) was developed by the USDA-ARS at Beltsville, MD, and released on 6 Feb. 2003. Moon Cake is a large-seeded maturity group V cultivar of tall height intended for use as edamame. Moon Cake was not developed by genetic engineering and is susceptible to the glyphosate [N-(phosphonomethyl)glycine] herbicide. Mooncake was bred for tall height to reduce its vulnerability to competition with weeds. Tall plant height may be especially valuable to organic vegetable soybean producers. Following harvest of green pods for use as a vegetable, the remaining leaves and stems may provide forage for livestock and prove useful for farmers with diversified farming operations.

Moon Cake is an F₂-derived line from the cross OR5–12–1T × Disoy (Weber, 1967). Mooncake was developed by pedigree selection of the F₂, F₃, and F₄ progeny for large seed size, tall plant growth, and lodging resistance at Beltsville, MD, in 1997, 1998, and 1999. OR5–12–1T is a tall, tawny pubescent sister line of the forage soybean cultivar Tyrone (Devine et al., 1998). Both OR5–12–1T and Tyrone were derived from the cross PA4–11 g1 × Ripley (Cooper et al., 1990). PA4–11 g1 was selected as a forage type from the four way cross [Wilson 6 × Forrest] × [Perry × L76–0253] (Bernard, 1968; Hartwig and Epps, 1973; Weiss, 1953). L76–0253 is an F₆ segregate of the cross Williams × PI229358 (Bernard and Lindahl, 1972).

Moon Cake has white flowers and gray pubescence. Seeds are elongate with shiny lustrous yellow seed coats and light buff colored hilum. Mature seeds of Moon Cake produced at Princess Anne, MD, weighed 27 g per 100 seeds compared with 14.9 g for Hutcheson and 16.1 g for Tara. Mature seeds of Moon Cake had 43.8% protein and 18.6% oil compared with 44.0% protein and 17.6% oil for Hutcheson and 44.8% protein and 16.2% oil for Tara. Moon Cake is an indeterminate maturity group V cultivar and matures earlier than both Hutcheson and Essex (Buss et al., 1988; Smith and Camper, 1973). The sucrose concentration in green seeds of Moon Cake harvested forty days after the initiation of flowering averaged 101 g kg⁻¹ of seed on a dry weight basis while the maturity group V cultivar Kahala (PI 355067S; available at http://www.ars-grin.gov/cgi-bin/npgs/html/acc.html?PI1486231; verified 23 Dec. 2005) averaged 61 g kg⁻¹ in tests at Virginia State University at Petersburg, VA.

Moon Cake was evaluated under the experimental designation VG-3. In replicate trials at Beltsville, MD, in 2001, 2002, and 2004, plants of Moon Cake grew to an average height of 158 cm while Essex and Hutcheson grew to average heights of 76 and 80 cm, respectively. In 2001, Moon Cake produced 21 seed bearing nodes with an average of 7 cm between nodes. In 2001, Moon Cake yielded 3144 kg ha⁻¹ of dry grain while Essex yielded 4112 kg ha⁻¹ and Hutcheson yielded 3729 kg ha⁻¹. In 2002, Moon Cake yielded 2864 kg ha⁻¹ while Essex yielded 4179 kg ha⁻¹ and Hutcheson yielded 5088 kg ha⁻¹. In 2004, Moon Cake yielded 4455 kg ha⁻¹ of dry grain while Essex yielded 4335 kg ha⁻¹ and Hutcheson yielded 5359 kg ha⁻¹. Moon Cake yielded 3695 kg ha⁻¹ while Hutcheson yielded 3158 kg ha⁻¹. In this test, Moon Cake grew to 186 cm while Hutcheson grew to 95 cm. At Princess Anne, MD, Moon Cake yielded 915 kg ha⁻¹ of dry grain while Hutcheson yielded 1669 kg ha⁻¹. In this same test, Moon Cake had a 139 cm height while Hutcheson grew to a height of 147 cm.

In tests conducted at Jackson, TN, Moon Cake was resistant to both race 3 and race 14 of the soybean cyst nematode [Heterodera glycines Ichinohe]. In tests in Indiana, Moon Cake was resistant to frogeye leafspot [caused by Cercospora sojina Hara (syn. C. daizu Mura)] and was mildly susceptible to sudden death syndrome [caused by Fusarium virgatae (Kaufmann & Gerdmann.) Sacc. var caulivora Athow and Caldwell].

Breeder seed of Moon Cake will be maintained by the Sustainable Agricultural Systems Laboratory, Animal and Natural Resources Institute, USDA-ARS, Beltsville, MD. Quantities of seed of Moon Cake may be obtained from the corresponding author for at least 5 yr for research purposes, including development and commercialization of cultivars. Seeds were deposited in the National Seed Storage Laboratory, Beltsville, MD 20705-1299. Registration by CSSA. Received 23 May 2005. *Corresponding author (devinet@ba.ars.usda.gov).


References


