

Registration of 'Medark' Rice

'Medark' rice (*Oryza sativa* L.) (Reg. No. CV-123, PI 636725) is a high-yielding, early maturing, semidwarf, medium-grain cultivar developed by the Arkansas Agricultural Experiment Station in cooperation with the USDA-ARS, the Louisiana State University Agricultural Center, the Mississippi Agricultural and Forestry Experiment Station, and the Texas Agricultural Experiment Station. It was released in February 2004 because of its improved disease resistance to rice blast [caused by *Pyricularia grisea* (Cooke) Sacc.], brown spot [caused by *Cochliobolus miyabeanus* (Ito & Kuribayashi in Ito) Drechs. ex Dastur], and the physiological disorder straighthead. Medark originated from the cross 'Bengal'/'Short Rico' (cross no. 930254), made at the University of Arkansas Rice Research and Extension Center, Stuttgart, AR, in 1993. Bengal, released from Louisiana (Linscombe et al., 1993), is an early maturing, high yielding medium-grain rice cultivar. Short Rico was a short statured selection made by Dr. Charlie Bollich from a panicle row increase of the cultivar Rico 1 (Bollich et al., 1990), and was designated as RU9103069 in the 1991 Uniform Regional Rice Nursery. The experimental designation for early evaluation of Medark was STG97F5-05-084, starting with a bulk of F₆ seed from the 1996 panicle row P-06-069. Medark was tested in the Arkansas Rice Performance Trials (ARPT) and the Cooperative Uniform Regional Rice Nursery (URRN) during 2000 through 2003 as entry RU0001151 (RU indicates Cooperative Uniform Regional Rice Nursery; 00 indicates year entered; 01 indicates Stuttgart, AR; and 151 its initial entry number).

Medark is similar in maturity to Bengal. It is a semidwarf cultivar like Bengal and has lodging resistance similar to but slightly less than Bengal. In Arkansas trials, Medark and Bengal measure 96 cm in plant height.

Averaged over 20 Arkansas Rice Performance Trials (ARPT), rough rice grain yields of Medark, Bengal, 'Wells', 'Francis', 'Kaybonnet', 'Drew', 'Cocodrie', and 'Cypress' were 8946, 9300, 9654, 9856, 8289, 8592, 8794, and 8137, kg ha⁻¹ at 120 g kg⁻¹ moisture, respectively. Data from the URRN conducted in Arkansas, Louisiana, Mississippi, and Texas during 2000 through 2002 showed that Medark had average grain yield of 9198 kg ha⁻¹ as compared with those of Bengal, Wells, Francis, 'Saber', Drew, Cocodrie, and Cypress at 9603, 10260, 10715, 8643, 8997, 9603, and 8491 kg ha⁻¹, respectively. Milling yields (mg g⁻¹ whole kernel: mg g⁻¹ total milled rice) at 120 mg g⁻¹ moisture from the ARPT, 2000–2003, averaged 660:710, 680:720, 640:730, 650:720, 660:720, 660:720, 670:720, and 680:720 for Medark, Bengal, Wells, Francis, Kaybonnet, Drew, Cocodrie, and Cypress, respectively. Milling yields for the URRN during 2000–2002, averaged 600:700, 620:700, 570:670, 560:700, 610:680, 600:690, 600:690, and 620:690 for Medark, Bengal, Ahrent, Wells, Saber, Drew, Cocodrie, and Cypress, respectively.

Medark varies in greenhouse reaction to common rice blast races IB-1, IB-33, IB-49, IB-54, IC-17, IE-1K, IG-1, and IH-1 with summary ratings of 6.0, 6.5, 8.0, 0.0, 4.0, 4.0, 4.8, and 3.0, respectively, using the standard visual disease scale of 0.0 = immune, 9.0 = maximum disease susceptibility. Respective ratings for Bengal are the following: 6.0, 6.5, 8.0, 0.0, 4.5, 4.5, 4.0, and 1.3, indicating that greenhouse reactions are similar for these two cultivars. However, field blast ratings under natural infection for Medark and Bengal are 2.1 and 4.9 versus 3.2 and 7.0 for leaf and neck blast, respectively. Like Bengal, Medark is moderately susceptible to sheath blight (*Rhizoctonia solani* Kühn), kernel smut [*Tilletia barclayana* (Bref.) Sacc. & Syd. in Sacc.], and false smut [*Ustilagoideia virens* (Cooke) Takah]. Medark is rated susceptible to sheath rot (*Sclerotium*

oryzae Cattaneo) and resistant to brown spot [*Cochliobolus miyabeanus* (Ito & Kuribayashi in Ito) Drechs. ex Dastur] compared with highly susceptible reactions of Bengal to these respective diseases. Medark is moderately susceptible and Bengal highly susceptible with ratings of 5.5 versus 7.5, respectively, for straighthead disorder on a disease scale of 0.0 = immune to 9.0 = highly susceptible. Medark, like Bengal, is highly susceptible to bacterial panicle blight (*Burkholderia glumae* Kurita et Tabei) and prone to kernel discoloration caused by the rice stink bug [*Oebalus pugnax* (Fabricius)].

Plants of Medark have erect culms, green erect leaves, and glabrous lemma, palea, and leaf blades. The flag leaf of Medark is erect but shorter than that of Bengal. The lemma and palea are brown colored at maturity with straw colored apiculi and awns are absent. Kernels are large and similar in size to those of Bengal. Individual milled kernel weights of Medark and Bengal averaged 20.2 and 20.4 mg, respectively, in the ARPT, 2000 through 2003.

The endosperm of Medark is nonglutinous, nonaromatic, and covered by a light brown pericarp. Rice quality parameters indicate that Medark has typical southern U.S. medium-grain rice cooking quality characteristics. Medark, like Bengal, has an average apparent starch amylose content of 142 g kg⁻¹ and a low gelatinization temperature (70–75°C), as indicated by an average alkali (17 g kg⁻¹ KOH) spreading reaction of 6.

The foundation seed field of Medark was rogued several times throughout the season. The variants that may be found in the release include any combination of the following: taller, shorter, earlier, later, glabrous, and partly or totally pubescent plants. Leaves of variants may be broad or narrow. Grains are medium or medium-bold, partially awned with or without black apiculi, red coloration and/or parrot beaking. Other atypical plants may still be encountered in the variety. The total variants and/or off-types numbered less than 1 per 5000 plants.

Breeder and Foundation seed of Medark will be maintained by the University of Arkansas, Rice Research and Extension Center, 2900 Hwy 130E, Stuttgart, AR 72160. U.S. plant variety protection under the Plant Variety Act, Public Law 91-577 was awarded for Medark in 2005 (PVP no. 200500055). Requests for seed must be made to the corresponding author until 20 yr from the date of release by the University of Arkansas (2004), at which time seed will also be available from the NPGS.

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