Registration of 'Ahrent' Rice

'Ahrent' rice (Oryza sativa L.) (Reg. no. CV-125, PI 628972), is a high yielding, very short-season, blast resistant long-grain cultivar developed by the University of Arkansas Division of Agriculture, Agricultural Experimental Station. It was released in March of 2001 to qualified seed growers in Arkansas. Ahrent originated from the C3 cycle of a recurrent selection program to increase sheath blight tolerance. S, plants were screened for their tolerant disease reaction (disease scale 0 = no disease, 9 = maximum disease) to the pathogen Rhizoctonia solani Kühn in inoculated field plots. Parents for each cycle of selection were the most tolerant S, plants from the most tolerant crosses. Parents were those having a tolerant sheath blight rating of 1 to 3 indicating a reduced vertical disease progression relative to nearby susceptible plants, which rated a 6 or more. The plants were kept in families (by cross); selections were made within the families; and selected S, plants were crossed between families in most cases. The recurrent selection population for Ahrent (cross no. 880427, made in 1988) involved the following cultivars: 'Vista', 'Nortai', 'Lemont', 'L-201', STG77M11697, 'Kat', 'Tebonnet', and 'Labelle'. Vista (Jodon et al., 1973) released in 1971, is very short season, medium-grain cultivar, with some blast resistance. Nortai (Johnston et al., 1973) is a midseason, short-grain cultivar with good sheath blight tolerance which was released in 1972. Lemont (Bollich et al., 1985) is a high yielding, midseason, long-grain, semidwarf cultivar which is very susceptible to sheath blight, released in 1983. L-201 (Tseng et al., 1979) is a long-grain rice with sheath blight tolerance. STG77M11697 is from the cross C9628/NorTmorse/2/Zenith; C9628 is a medium-grain gold hulled selection from 'Rexoro'/Lacrosse'/Magnolia'. Rexoro, Lacrosse, and Magnolia have been described by Johnston (Johnston, 1958). Northrose (Johnston and Henry, 1965) released in 1962, is a short season, medium-grain cultivar with some sheath blight tolerance. Zenith (Johnston, 1958) is a medium-grain selection out of 'Blue Rose' with sheath blight tolerance released in 1936. Kat (Moldenhauer et al., 1990), released in 1989, is a blast resistant, midseason, long-grain cultivar with good sheath blight tolerance. Tebonnet (Kuenzel et al., 1985), released in 1984 is a short season, long-grain cultivar with moderate sheath blight tolerance. Labelle (Bollich et al., 1973) is a very short season, long-grain cultivar which is very susceptible to sheath blight, released in 1972. The experimental designations for early evaluation of Ahrent were RU19901030, RU9401188 and STG922L03-042, starting with a bulk of S5 seed from the 1992 panicie row L03-042. Ahrent was tested in the Arkansas Rice Performance Trials (ARPT) during 1995, 1998–2000, in the Cooperative Uniform Regional Rice Nursery (URRN) during 1994–1995, 1999–2000 as entry RU9401188 in 1994–1995, and RU9901030 1999–2000 (RU number indicates Cooperative Uniform Regional Rice Nursery; 94 or 99 indicates year entered; 01 indicates Stuttgart, AR; and 188 or 030 indicate entry number).

Ahrent is similar in maturity to 'Cocodrie' (Linscombe et al., 2000). Ahrent, like 'LaGrue' (Moldenhauer et al., 1994) and 'Newbonnet' (Johnston et al., 1984), has greater straw strength, an indicator of lodging resistance, than Kay, Kaybonnet or 'Drew' (Moldenhauer et al., 1998). On a relative straw strength scale (0 = very strong straw, 9 = very weak straw) Ahrent, Drew, Newbonnet, Kay, Kaybonnet, and Lemont rated 3, 4, 5, 5, and 1, respectively. Ahrent is 100 cm tall which is approximately 10 cm shorter than Drew.

Rough rice grain yields of Ahrent have been consistent across locations in the ARPT being greater than Drew. Kaybonnet, 'Cypress' (Linscombe et al., 1993) and Newbonnet in all three years. In 15 ARPT tests (1998–2000), Ahrent, 'Wells' (Moldenhauer et al., 2007), LaGrue, Kaybonnet, Drew, 'Jefferson' (McClung et al., 1997), and Cocodrie averaged yields of 8266, 8467, 7509, 8013, 7106, and 7913 kg ha⁻¹ [120 g kg⁻¹ (12%) moisture], respectively. Data from the URRN conducted at Arkansas, Louisiana, Mississippi, and Texas during 1999–2000 showed that Ahrent had an average grain yield of 8997 kg ha⁻¹ compared to the yields of Wells, LaGrue, Drew, Kaybonnet, Jefferson and Cocodrie at 10512, 10832, 9626, 9655, 8619, and 9952 kg ha⁻¹, respectively. Milling yields (mg g⁻¹ whole kernel: mg g⁻¹ total milled rice) at 120 g kg⁻¹ (12%) moisture from the ARPT, 1998–2000 averaged 620690, 570720, 580690, 600700, 610710, 530680 and 640710 for Ahrent, Wells, LaGrue, Kaybonnet, Drew, Jefferson, and Cocodrie, respectively. Milling yields for the URRN, 1999–2000, averaged 540670, 540700, 550670, 560690, 570900, 570690 and 570690 for Ahrent, Wells, LaGrue, Kaybonnet, Drew, Jefferson, and Cocodrie, respectively.

In greenhouse studies, Ahrent, like Kay, Kaybonnet, and Drew, is resistant to rice blast [Piricularia grisea (Cooke) Sacc.] races IB-1, IB-49, IB-54, IC-17, IE-1, IG-1, and IH-1, rating a 3, 2, 0, 3, 1, and 1, respectively, on a disease scale of 0 = immune, 9 = maximum disease. Like Kay, Kaybonnet, and Drew, Ahrent is susceptible to the blast races IB-33 and IE-1K, rating 7 and 8, respectively. Using the standard disease scale R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, and VS = very susceptible to disease Ahrent is rated a MS to sheath blight (Rhizoctonia solani Kühn) which compares with Wells (MS), LaGrue (MS), Drew (MS), Kaybonnet (MS), Jefferson (MS), Cocodrie (S), and Cypress (VS). Ahrent is rated MS to kernel smut [Tilletia barclayana (Breut.) Sacc. & Syd. in Sacc.] compared to Wells moderately resistant (MR), LaGrue (VS), Kaybonnet (MS), Drew (MS), Jefferson (S), and Cocodrie (VS). Ahrent is rated MR to leaf smut [Entyloma oryzae Syd. & P. Syd.] compared to Wells to sheath blight (Cercospora oryzae Miyake), and S to false smut [Ustilaginoidea virens (Cook) Takah]. Ahrent, like Wells, Newbonnet, and Cypress, appears to be susceptible to discolored kernels caused by the rice stalk bug [Oebalus pugnax].

Plants of Ahrent have erect culms, green erect leaves, and glabrous lemma, palea, and leaf blades. The lemma and palea are straw colored with mainly purple colored apiculi, and some short tip awns are present on the lemma at maturity. The purple apiculi color often fades to brown color at maturity. Individual milled kernel weights of Ahrent, Wells, LaGrue, Kaybonnet, Drew, Jefferson, and Cocodrie, averaged 16.7, 18.5, 17.7, 15.0, 15.8, 19.4, and 17.5 mg, respectively, in the 18.5°C, as indicated by an average alkali (17 g k g⁻¹ KOH) spreading reaction of 3 to 5.

The endosperm of Ahrent is nonglutinous, nonaromatic, and covered by a light brown pericarp. Rice quality parameters indicate that Ahrent has typical southern U.S. long-grain rice cooking quality characteristics as described by Webb et al. (1985). Ahrent has an average apparent starch amylose content of 205 g kg⁻¹ for 1999–2000 ARPT, which was similar to Wells in the same tests, and an intermediate gelatinization temperature (70–75°C), as indicated by an average alkali (17 g kg⁻¹ KOH) spreading reaction of 3 to 5.

The foundation seed field of Ahrent 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 or pubescent plants, as well as intermediate or very long slender grains and grains with long awns. Other atypical plants may still be encountered in the cultivar. The total variants and/or off-types numbered less than 1 per 5000 plants.