

## REGISTRATION OF 'MAYBELLE' RICE

'MAYBELLE' (*Oryza sativa* L.) (Reg. no. CV-86, PI 538248) is a very early-maturing, long-grain cultivar developed at the Texas A&M University Agricultural Research and Extension Center at Beaumont, TX, by the USDA-ARS and the Texas Agricultural Experiment Station in cooperation with the Texas Rice Improvement Association, the Texas Rice Research Foundation, and the Agricultural Experiment Stations of Arkansas, Louisiana, Mississippi, and Florida. It was officially released June 1989.

Maybelle was developed from a cross of RU7603015/'L201' (Davis Cross no. 622) made by J.N. Rutger, USDA-ARS, Davis, CA in 1978. Seed from the F<sub>1</sub> plant was sent to Beaumont, Texas and an F<sub>2</sub> population was included in the breeding nursery in 1980. In 1983, RU7603015 was released as 'Skybonnet' in Texas (1). L201 was released in California in 1979 (2). Maybelle is an F<sub>7</sub> bulk of a single progeny row in the breeding nursery at Beaumont, TX, in 1983, Selection C622A-Bk-16-3-2-5. It was entered in the Cooperative Uniform Regional Rice Nurseries (URRN) in 1984 with the designation RU8403113.

Maybelle does not possess a gene for semidwarfism, but it is shorter than all current normal, i.e., nonsemidwarf, long-grain cultivars in the southern USA and is highly resistant to lodging. In the URRN grown in Texas, Louisiana, Arkansas, and Mississippi in 1984 to 1988, the average height of Maybelle was 100 cm and those of Skybonnet, 'Labelle', 'Gulfmont', 'Lemont', and 'Tebonnet' were 116, 121, 90, 90, and 124 cm, respectively. Maybelle has a short flag leaf that remains essentially upright to maturity. The flag and upper leaves of Maybelle are shorter than those of all other currently grown cultivars in the southern USA, resulting in significantly less leaf canopy. Maybelle is a very early-maturing variety. The average number of days from seeding to heading for Maybelle in the URRN in Arkansas, Louisiana, Mississippi, and Texas in 1984 to 1988 was 81, compared with 82, 84, 97, and 90 for Labelle, Tebonnet, Skybonnet, and Gulfmont, respectively. Maybelle threshes more readily than Skybonnet, Gulfmont, and Lemont.

The outer surface of the leaf sheath of Maybelle is green and the inside is colorless with a purple tinge near the base. The leaves are glabrous. The spikelet is straw-colored, glabrous, and awnless. The apiculus is purple at heading but the color is very faint at maturity. The grain is nonaromatic.

Paddy grains of Maybelle are similar in size and appearance to those of Tebonnet but are slightly longer (Table 1). Milling yields (mg g<sup>-1</sup> whole grain: mg g<sup>-1</sup> total milled rice) for Maybelle, Skybonnet, Gulfmont, Lemont, Labelle, and Tebonnet in the URRN in 1984 to 1988 averaged 591:705

(59:71%), 617:705 (62:71%), 605:707 (61:71%), 605:713 (61:71%), 606:685 (61:69%), 598:698 (60:70%), respectively.

Maybelle has excellent first crop and superior ratoon yielding ability. The overall average first crop yield of Maybelle in the URRN in the four major rice-producing states in the South in 1984 to 1988 was 7416 kg ha<sup>-1</sup>, compared with 6790, 6975, 6338, 7368, and 7409 kg ha<sup>-1</sup> for Skybonnet, Tebonnet, Labelle, Gulfmont, and Lemont, respectively. The average ratoon crop yield for Maybelle in ten tests over several years was 2565 kg ha<sup>-1</sup> compared with 1797, 1856, 1653, 1919, and 2036 kg ha<sup>-1</sup> for Skybonnet, Labelle, Tebonnet, Gulfmont, and Lemont, respectively.

The principle reason for releasing Maybelle is as a potential replacement for Skybonnet, Labelle, and Tebonnet in those areas of Texas and Louisiana where ratoon cropping is an important practice. Because of its wide adaptability, however, Maybelle may do equally well in those areas of the South where the growing season allows the production of only the main crop.

The cooking and processing qualities of Maybelle are comparable to those of present long-grain cultivars grown in the South. Like other high quality long-grain cultivars, it is characterized as a relatively high amylose-intermediate gelatinizing type.

Maybelle is susceptible to all U.S. pathotypes of *Pyricularia oryzae* Cavara (rice blast) and has lower levels of field resistance to the blast than Skybonnet, similar to that of Newbonnet in nursery studies. According to symptoms, Maybelle is only slightly more resistant than Skybonnet to sheath blight (*Rhizoctonia solani* Kühn) on the average, however, Maybelle sustained half the yield loss suffered by Skybonnet (16% compared with 34%) in a replicated 3-yr study (1988-1990). Maybelle is resistant to physiological straighthead, but susceptible to panicle blight, a disease characterized by spontaneous abortion of florets and whose causes are not understood.

The head-row increase of Maybelle was uniform for height and maturity. The only variants observed and eliminated were 9 out of 600 rows. They were of the same plant and grain type as Maybelle but slightly taller or slightly different in maturity or both.

Breeder seed of Maybelle will be maintained by the Texas A&M University Agricultural Research and Extension Center at Beaumont. Foundation seed will be available from the Texas Rice Improvement Association, Route 7, Box 999, Beaumont, TX 77713. Application will be made for protection of Maybelle under the Plant Variety Protection Act.

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## References and Notes

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## REGISTRATION OF 'S-301' RICE

'S-301' RICE [*Oryza sativa* L. (Reg. no. CV-85, PI 536645)] was developed by the California Cooperative Rice Research Foundation, Inc., at the Rice Experiment Station (RES), Biggs, CA, and was released jointly by the California Agricultural Experiment Station and the USDA-ARS. S-301 is a short-grained cultivar that is intermediate maturing, gla-

Table 1. Paddy, brown, and milled grain dimensions and weight of Maybelle, Skybonnet, Tebonnet, Gulfmont and Labelle grown at Beaumont, TX, in 1988.

Cultivar	Class	Length	Width	length/ width ratio	Weight
					mg
mm					
Maybelle	Paddy	9.25	2.46	3.76	21.2
Skybonnet	Paddy	9.10	2.38	3.83	20.5
Tebonnet	Paddy	8.96	2.37	3.78	20.2
Gulfmont	Paddy	9.48	2.52	3.77	24.1
Labelle	Paddy	9.00	2.30	3.92	19.0
Maybelle	Brown	7.37	2.11	3.50	18.7
Skybonnet	Brown	7.27	2.06	3.53	17.7
Tebonnet	Brown	7.12	2.02	3.52	17.9
Gulfmont	Brown	7.51	2.25	3.34	19.5
Labelle	Brown	6.89	1.97	3.51	15.2
Maybelle	Milled	6.77	2.07	3.27	16.7
Skybonnet	Milled	6.57	2.04	3.22	16.2
Tebonnet	Milled	6.62	2.03	3.27	15.5
Gulfmont	Milled	6.90	2.14	3.22	17.6
Labelle	Milled	6.34	1.93	3.29	13.4

brous, semidwarf, weakly photoperiod sensitive, sparsely awned, and translucent. It has good lodging resistance, good resistance to blanking caused by cool temperatures at the microsporogenesis stage, and improved whole grain (percent head) milling yield. It was tested in the University of California Cooperative Extension (UCCE) statewide intermediate to late yield trials from 1986 to 1989 with the experimental designation 85-Y-502. S-301 has not been directly compared in statewide yield tests with the very early 'S-101' (1) or the early 'S-201' (2) cultivars in its market class because field tests included only rice cultivars of similar maturities. S-301 and S-201 were directly compared in a side by side special test at RES in 1989. S-301 field agronomic characters are compared to cultivars 'M-302' (3) and 'M7' (4), which are in its maturity class.

S-301 is a pure line short grain selection from the 1980 cross R6874. Its pedigree is SD7/73-221//M7P-1/3/M7P-5. The female (SD7/73-221//M7P-1) was a selected F<sub>3</sub> panicle from a bulk of the cross R5369, made in the summer of 1978. SD7 was a cold tolerant, late, glabrous, medium-grain, semidwarf selection from 'CS-M3'/'Calrose 76'. 73-221 was a very early, tall, cold tolerant, pubescent, short-grain selection from 'Colusa'/'Kitaminori'. M7P-1 and M7P-5 were late short-grain selections made in 1977 from an X<sub>2</sub> population of irradiated late, glabrous, cold tolerant medium-grain M7. CS-M3, Calrose 76, Colusa, and M7 are obsolete California cultivars. S-301 is the product of pedigree breeding.

S-301 produces a more translucent sample (less white/green seeds) than S-101 and S-201. S-301 heads in 108 d, which is 1 d later than M-302 and 9 d earlier than M7. Grain moisture at harvest was 10 g kg<sup>-1</sup> higher than M-302 but 15 g kg<sup>-1</sup> lower than M7. S-201 averaged 101 d to heading in statewide early trials (1986 to 1989) and 102 d in the 1989 special trial, while S-301 was 3 d later. S-301's later heading date and higher harvest moisture indicates field maturity to be 5 to 7 d later than S-201. The average plant height of S-301 is 99 cm, which is the same as M-302 but 2 cm taller than M7. S-301 lodging resistance is slightly better than M-302 (8 vs. 11% lodging) but less than M7 (8 vs. 1% lodging). S-301 lodging resistance is superior to S-201 in indirect comparisons of early statewide tests (8 vs. 17% lodging) and in 1989 special (6 vs. 11% lodging). The new cultivar has good seedling vigor, equal to M-302 and M7, but less than S-201. Average seedling vigor scores of 4.2, 4.2, 4.2, and 4.4 on a scale of 1 to 5 (5 is best) were observed for S-301, M-302, M7, and S-201, respectively. S-301 has glabrous leaves and hulls except for a few hairs on the leaf margins and lemma keel. No plant parts of S-301 showed anthocyanin pigmentation.

Panicles of S-301 normally exsert completely from the leaf sheaths. S-301 is similar to current California rice cultivars in tolerance to recommended rice herbicides. S-301 is more resistant to sterility caused by cool temperatures 10 to 14 d before heading than M-302, M7 and S-201 as indicated by sterility scores of 19, 22, 28, and 28% sterility, respectively. S-301, in five tests, averaged 4.7, which made it significantly less susceptible than M-302 (score of 6.1) to stem rot (*Sclerotium oryzae* Cattaneo) but not different from M7 (5.0) and S-201 (5.3), on a scale of 1 to 10. S-301 was not significantly different from M-302, M7 and S-201 in its reaction to aggregate sheath spot [*Rhizoctonia oryzae-sativae* (Sawada) Mordue], though it is rated as slightly more susceptible. Reaction of S-301 to other diseases not prevalent in California is unknown.

Brown rice kernels of S-301 average 21.1 mg per kernel, 5.2 mm long, 2.8 mm wide as compared to 20.9 mg, 5.3 mm 2.9 mm for S-101. Brown rice kernels of S-201 are larger, averaging 24.1 mg, 5.4 mm, and 3.0 mm. Hulled kernels of S-301 have light brown pericarp and white, non-waxy, non-

aromatic endosperm. Physico-chemical tests conducted at the USDA Rice Quality Laboratory at Beaumont, TX, indicate that the apparent amylose makes up 189 mg g<sup>-1</sup> (18.9%) of the endosperm starch, which has a low gelatinization temperature as evidenced by an alkali spreading score of 7.0. These values are typical of U.S. short-grain cultivars (5). The whole grain kernel (percent head rice) of S-301 was superior to S-101 and S-201. S-301, S-101, and S-201 head rice yields averaged 610 (61%), 520 (52%), and 500 (50%) mg g<sup>-1</sup>, respectively, when harvested at a range of moistures in 1987 to 1989. Total milled rice (percent total) of S-301, S-101, and S-201 was 690 (69%), 660 (66%), and 690 (69%) mg g<sup>-1</sup>, respectively. Taste panelists and various marketing agencies indicate the raw (uncooked) appearance of S-301 equal to S-101. They rated the cooked product as acceptable for the majority of short-grain markets except where S-201 is preferred because of its larger seed size.

S-301 was evaluated in 12 tests conducted in cooperation with UCCE in 1986 to 1989. Average paddy (rough) rice yields of S-301, M-302, and M7 were 9.658 Mg ha<sup>-1</sup> (8624 lb acre<sup>-1</sup>), 8.910 Mg ha<sup>-1</sup> (7955 lb acre<sup>-1</sup>), and 8.952 Mg ha<sup>-1</sup> (7993 lb acre<sup>-1</sup>), respectively, at 120 mg<sup>-1</sup> (12%) grain moisture. S-301 produced 0.749 Mg ha<sup>-1</sup> (669 lb acre<sup>-1</sup>) and 0.707 Mg ha<sup>-1</sup> (631 lb acre<sup>-1</sup>) more grain than M-302 and M7, respectively. S-201 averaged 9.331 Mg ha<sup>-1</sup> (8331 lb acre<sup>-1</sup>) in the early statewide tests and 9.203 Mg ha<sup>-1</sup> (8216 lb acre<sup>-1</sup>) in the 1989 special test in which S-301 yielded 9.679 Mg ha<sup>-1</sup> (8642 lb acre<sup>-1</sup>).

The intermediate maturity, good resistance to cool temperature and lodging, comparable yields to S-201, good translucency and superior whole grain head rice make S-301 a good alternative cultivar to S-101 and S-201 in the warmer 2/3 of the rice production area in California.

Classes of seed will be breeder, foundation, registered, and certified produced in California. Foundation seed can be used to produce foundation seed when necessary. Application is being made for protection of S-301 under Plant Variety Protection Act, Title V option. Headrow seed will be produced in foundation fields as necessary to maintain cultivar purity. S-301 was headrowed in 1986, 1987, and 1989. Selected 1986 head rows were bulked for 1987 breeder seed which produced 1989 foundation. No observable off-types were detected. Breeder and foundation seed will be maintained by the California Cooperative Rice Research Foundation, Inc., P.O. Box 306, Biggs, CA 95917.

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