

early maturing cultivars and experimental entries at sites representative of the California rice growing areas. Average yield of M-203 was 9.3 Mg ha⁻¹ (8300 lb/acre⁻¹) of paddy (rough rice) at 120 g kg⁻¹ (12%) grain moisture compared to 10.6 Mg ha⁻¹ (9420 lb/acre⁻¹) for M-202. Average yields of M-203 and M-201 in 10 replicated trials were the same at 9.1 Mg ha⁻¹ (8090 lb/acre⁻¹). M-203, in three replicated trials at nine N fertility levels in 1987 gave maximum yields at 30 to 60 kg ha⁻¹ less N than required by current California early short- and medium-grain cultivars. This difference in response is probably related to the greater susceptibility of M-203 to lodging. M-203 is expected to be produced for current premium quality markets. M-203 will be a viable alternative to M-401 in years when the late maturing M-401 can not be seeded early. M-203 is not intended as a substitute for M-201 or M-202.

M-203 was released in 1988 jointly by the developer, California Agricultural Experiment Station, and USDA-ARS. It has been approved for certification by the California Crop Improvement Association.

Application is being made for protection of M-203 under Plant Variety Protection Act, Title V option. Classes of seed will be breeder, foundation, and registered and certified produced in California. Head-row seed will be produced as necessary to maintain cultivar purity. Breeder and foundation seed will be maintained by the California Co-operative Rice Research Foundation, Inc., P.O. Box 306, Biggs, CA 95917.

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References and Notes

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4. H.L. Carnahan, C.W. Johnson, S.T. Tseng, J.J. Oster, and D.M. Brandon, California Co-operative Rice Res. Foundation, P.O. Box 306, Biggs, CA 95917; and J.E. Hill, Dep. of Agronomy and Range Science, Univ. of California, Davis, CA 95616. Registration by the CSSA. *Corresponding author. Accepted 30 Dec. 1988.

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REGISTRATION OF 'S-101' RICE

'S-101', rice (*Oryza sativa* L.), (Reg. no. 77) (PI 514277) is a very early maturing, semidwarf, short-grain cultivar developed by the California Co-operative Rice Research Foundation at the Rice Experiment Station, Biggs, CA. The Line S-101 was tested in the University of California Co-operative Extension state-wide tests with the experimental designation 85-Y-136. S-101 is a pure line selection from the cross, R-5621, made in the winter of 1978 to 1979. Its pedigree is 70-6526//R26/'Toyo-hikari'/3/'M7'/74-Y-89//SD7/73-221. The 70-6526 was a high yielding, short stature, chalky, short-grain selection from the cross 'Calady' male sterile//'Dee Geo Woo Gen'/'Colusa'. R-26 was a translucent, tall, medium-grain selection from the cross K8-C-263-12 (long-grain from Surinam)/Colusa. 74-Y-89 was a tall, short-grain selection from 'CS-M3'/Toyo-hikari. SD7 was a cold tolerant, glabrous, medium grain, semidwarf selection from CS-M3/'Calrose 76'. 73-221 was a very early, tall, cold tolerant, short-grain se-

lection from Colusa/'Kitaminori'. Colusa, CS-M3, Calrose, and Calrose 76 are obsolete cultivars that have been registered in *Crop Science*.

S-101 is a product of pedigree breeding. A winter nursery in Hawaii was used to accelerate generation advance. S-101 is photoperiod insensitive, heads about 7 d earlier than 'S-201' (1), and is ready to harvest 10 to 12 d earlier than S-201. The time from seeding to harvest of S-101 is similar to that of 'M-101' (2). Average mature plant height of S-101 is 82 cm, which is 8 cm shorter than S-201. S-101 is equal or superior to S-201 in resistance to lodging. S-101 has pubescent lemma, palea and leaf blades and moderately heavy awning. No plant parts of S-101 show anthocyanin pigmentation.

Panicles of S-101 normally are exerted completely from the leaf sheaths. The new cultivar has good seedling vigor similar to that of S-201. S-101 is similar to current California rice cultivars in tolerance to recommended rice herbicides. Reaction of S-101 to sterility caused by cool night temperatures 10 or 14 d before heading has been between that of S-201 and M-101. The earlier flowering of S-101 in contrast to S-201 also provides an added escape mechanism from the effect of cool temperatures that normally intensify as the season progresses. S-101, in 5 tests, was less susceptible than S-201 to stem rot (caused by *Sclerotium oryzae* Catt.) with respective average scores of 5.5 and 6.2 on a scale of 1 to 10. S-101 and S-201 are both moderately susceptible to aggregate sheath spot [caused by *Rhizoctonia oryzae-sativae* (Saw.) Mordue]. Reaction of S-101 to other diseases that are not prevalent in California is unknown.

Brown rice kernels of S-101 are lighter than those of S-201, averaging 21.7 mg per kernel, 5.5 mm long, and 3.1 mm wide compared to 25.0 mg, 5.4 and 3.2 mm for S-201, respectively. Milled kernels of S-101 are translucent in contrast to those of S-201, which have a pronounced white belly. Grains of S-101 have light brown pericarp and white, non-aromatic endosperm. Results from the USDA National Rice Quality Laboratory at Beaumont, TX indicate that apparent amylose makes up 180 g kg⁻¹ (18%) of the endosperm starch, which has a low gelatinization temperature as indicated by an alkali spreading score of 6.5. These values are typical of USA short-grain cultivars (3). Taste panelists rated S-101 as satisfactory. Whole kernel (head) milling yield of S-101 was superior to that of M-101, averaging 595 vs. 439 g kg⁻¹ for the latter in 12 tests representing a range of harvest moistures. Total milling yield was 12 g kg⁻¹ lower for S-101 than for M-101 in these tests.

S-101 has performed very well in replicated trials conducted at Biggs in 1985 in co-operation with the University of California Co-operative Extension in 1986 and 1987. These tests included current very early and early maturing cultivars and experimental entries at sites representative of the California rice growing areas. S-101 averaged 10.4 Mg ha⁻¹ (9250 lb acre⁻¹) of paddy (rough rice) at 120 g kg⁻¹ (12%) grain moisture compared to 9.9 Mg ha⁻¹ (8810 lb acre⁻¹) for the currently grown short-grain cultivar, S-201, in 16 tests. Average yield of S-101 in 19 tests was 10.3 Mg ha⁻¹ (9170 lb acre⁻¹) compared to 9.6 Mg ha⁻¹ (8550 lb acre⁻¹) for the very early, medium grain, M-101. In three replicated tests at nine N fertility levels S-101's response to N was similar to that of current early, short- and medium-grain cultivars S-201, M-201, and M-202. S-101 is adapted to the same areas as S-201 and it should replace S-201 because of its overall favorable performance and improved seed translucency.

Foundation seed of S-101 was made available to seed growers in 1987 with certification pending naming and release. It was officially released in 1988 jointly by the devel-

oper, the California Agricultural Experiment Station, and USDA-ARS. It has been approved for certification by the California Crop Improvement Association.

Application is being made for protection of S-101 under the Plant Variety Protection Act, Title V option. Classes of seed will be breeder, foundation, and registered and certified produced in California. Head-row seed will be produced as necessary to maintain cultivar purity. Breeder and foundation seed will be maintained by the California Co-operative Rice Research Foundation, Inc., P.O. Box 306, Biggs, CA 95917.

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REGISTRATION OF 'A5474' SOYBEAN

'A5474' soybean [*Glycine max* (L) Merr.] (Reg. no. CV-234) (PI 527701) was developed by Asgrow Seed Co., subsidiary of the Upjohn Co. Kalamazoo, MI. It matures about 3 d earlier than 'Forrest' (1) and is classified as Maturity Group V. A5474 was released because of its high productivity and disease resistance. Prior to its release in 1981, it was identified as XP5474. It has been evaluated in state experiment station soybean cultivar trials throughout the southern USA from 1980 through 1987.

A5474 originated as an F₄ plant from the cross ('Tracy' (2) × D71-6234) F₁ × J74-122 made in the greenhouse at Ames, IA in 1976. D71-6234 is a high protein selection from D66-7398 × PI 95960. D66-7398 is a selection from D61-3505 × (PI96035 × D61-2624), which was evaluated in Uniform Preliminary VI in 1968. D61-3505 is a selection from D49-2491 6 × Pi 174862 and D61-2624 is a selection from D49-2491 4 × PI 174862. D49-2491 is closely related to 'Lee'. J74-122 is a sister line of 'Bedford' (3). The original F₄ plant was selected after screening a portion of the F₂ population for resistance to Race 4 of soybean cyst nematode (*Heterodera glycines* Ichinohe) in the greenhouse at Portageville, MO under a contract with the University of Missouri Delta Center. The F₂ was advanced to the F₄ by the pedigree method in Florida and Missouri.

A5474 has a determinate growth habit, white flowers, tawny pubescence, and brown pod walls. Seeds are shiny yellow with black hila. A5474 has resistance to Races 3 and 4 of the soybean cyst nematode and has the *Rps_{1c}* gene for resistance to Phytophthora root rot [caused by *Phytophthora megasperma* F. sp. (Drechs.) *glycinea* Kuan and Erwin]. It is resistant to the foliar diseases bacterial pustule [caused by *Xanthomonas campestri* pv *phaseoli* (Smith) Dye] and powdery mildew (caused by *Microsphaera diffusa* Cke. & Pk.).

A5474 is susceptible to root knot nematode [*Meloidogyne incognita* (Kofoid & White) Chitwood], and stem canker [caused by *Diaporthe phaseolorum* (Cke. & Ell.) Sacc. var. *caulivora* Athow & Caldwell]. Asgrow Seed Co. will be responsible for maintaining breeder seed.

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References and Notes

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REGISTRATION OF 'A5980' SOYBEAN

'A5980' Soybean [*Glycine max* (L) Merr.] (Reg. no. CV-235) (PI 527702) was developed by Asgrow Seed Co., subsidiary of the Upjohn Co., Kalamazoo, MI. It is classified as late group V maturing similar to 'Bedford' (2). A5980 was released because of its high productivity on clay or shallow soils of the Mid-south where other cultivars of similar maturity fail to achieve adequate growth.

Prior to its release in 1984, it was identified as XP5980. It has been evaluated in various state experiment station soybean cultivar trials throughout the southern USA from 1982 through 1987.

A5980 originated as an F₅ line from the cross ('Tracy' (1) × D71-6234) F₁ × J74-122 made in the greenhouse in Ames, IA in 1976. D71-6235 is a high protein selection from D66-7398 × PI 95960. D66-7398 is a selection from D61-3505 × (PI96035 × D61-2624), which was evaluated in Uniform preliminary VI in 1968. D61-3505 is a selection from D49-2491 6 × PI174862 and D61-2624 is a selection from D49-2491 4 × PI 174862. D49-2491 is closely related to 'Lee'. J74-122 is a sister line of Bedford (2). Generations were advanced to the F₅ by single seed descent in Florida and Missouri.

A5980 has purple flowers, tawny pubescence and tan pod walls. Seeds are shiny yellow with black hila. A5980 is similar in growth characteristics to Bedford. However, seeds are larger averaging 15 g/100 seed compared with 12 g/100 seed for Bedford. Performance of A5980 has been superior to cultivars of similar maturity on slowly drained soils of the Mississippi delta even though it lacks a major gene for resistance to phytophthora rot [caused by *Phytophthora megasperma* f. sp. (Drechs.) *glycinea* Kuan and Erwin] (3, 4, 5).

A5980 has resistance to Races 3 and 4 of the soybean cyst nematode (*Heterodera glycines* Ichinohe) based on greenhouse and field evaluation. It is resistant to bacterial pustule [caused by *Xanthomonas campestris* pv. *phaseoli* (Smith) Dye]. A5980 is susceptible to root knot nematode [*Meloidogyne incognita* (Kofoid & White) Chitwood], and stem canker [caused by *Diaporthe phaseolorum* (Cke. & Ell.) Sacc. var. *caulivora* Athow & Caldwell].

Asgrow Seed Company will be responsible for maintaining breeder seed.

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