

consider it as an option for earlier maturity and diversity from M-206, but watch for what is learned as it enters commercial production and how it will work for their location and situation.

Management Guidelines:

The following guidelines are based on research, observation and experience gained in developing M-105. These suggested cultural practices are intended to assist in the production of optimum yields and quality of M-105.

- Uniform water depth, adequate fertility, uniform seed distribution and good weed control practices are important because they maintain uniform heading and harvest moisture which in turn increase head rice milling yield.
- Fertilizer rates and other management practices should be similar to those for M-104 and M-206 in your production area.
- Preferred seeding dates are the same as for M-206 although it would be expected to perform better in later planting dates. M-105 should be seeded at the rate of 130 to 150 lbs/acre. Excessive seeding rates reduce yield potential and increase susceptibility to disease.

- Water depth should be increased to about 8 inches before panicle initiation (50 to 55 days after planting) to protect developing panicles from low temperature exposure during occasional cool nights.
- Although M-105 has given very high stable milling yields, as the harvest moisture falls below 18% head rice yield can decline rapidly.

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M-105 RICE: DESCRIPTION AND MANAGEMENT GUIDELINES



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M-105

Introduction:

M-105 is a very early to early maturing, semi dwarf, smooth hulled, Calrose quality medium-grain cultivar. It was developed by the California Cooperative Rice Research Foundation, Inc. (CCRRF) at the Rice Experiment Station (RES), Biggs, CA and released to growers in April 2011. Protection and registration of M-105 is being sought under the US Plant Protection Act as well as an US Plant Utility Patent, and registration with the Crop Science Society of America.

Pedigree and Breeding:

M-105 is a very early selection with parentage from S-103, M-204, M-104 and closely related to M-206, currently the predominant medium-grain cultivar in California. A primary breeding objective in this cross was to recover the high stable milling yield found in M-206 in a very early maturing rice.

Agronomic Characteristics:

Tables 1 and 2 contain a summary of the agronomic data collected in the UCCE Statewide Yield Tests. M-105 seedling vigor, based on seedling vigor scores is slightly below M-206. No marked difference in M-105 tolerance/susceptibility to standard rice herbicides from the parent varieties has been observed. M-105 maturity as measured at days to 50% heading averages about 3 days later or earlier than M-104 and M-206, respectively. M-105 does dry down more slowly than M-104, and similar to M-206. This trait is probably a factor in providing high stable head rice yields. Lodging is a highly variable trait to measure, but testing suggests M-105 may be more resistant to lodging than M-104. UC

Statewide 2006-10 plot yields in very early tests averaged 9130, 9250, and 9460 lbs/acre for M-104, M-105, and M-206, respectively; and in early tests 9560 and 9610 lbs/acre for M-105 and M-206, respectively.

TABLE 1. AGRONOMIC PERFORMANCE IN UCCE STATEWIDE YIELD TESTS 2006-2010 (VERY EARLY LOCATIONS).

Variety	Yield at 14% moisture lbs/acre	Single Location Yields				% Grain Moisture at Harvest	Seedling Vigor (1-5)	Days to 50% Heading	Lodging (%)	Plant Height (inches)
		Biggs	Sutter	Yolo	Joaquin					
M-104	9130	8520	9510	9060	8930	17.3	5.0	83	25	35
M-206	9460	10290	9420	9390	8690	18.9	4.9	89	17	36
M-105	9250	9480	9510	9260	8790	18.1	4.9	86	15	37

TABLE 2. AGRONOMIC PERFORMANCE IN UCCE STATEWIDE YIELD TESTS 2006-2010 (EARLY LOCATIONS).

Variety	Yield at 14% moisture lbs/acre	Single Location Yields				% Grain Moisture at Harvest	Seedling Vigor (1-5)	Days to 50% Heading	Lodging (%)	Plant Height (inches)
		Biggs	Butte	Colusa	Yuba					
M-206	9610	10230	8530	9940	9740	17.8	4.9	85	17	39
M-105	9560	10270	8500	9790	9670	17.7	4.8	82	17	38

As shown in Table 3 all three varieties have similar disease reaction with M-104 being slightly more sensitive. M-206 showed less sensitivity to Bakanae disease. Growers are still recommended to bleach treat seed for Bakanae. M-105 is susceptible to the race of blast disease found in California. Experience indicates the M-105 and M-104 are more susceptible to blast than M-206, however the field resistance of M-105 is not known.

TABLE 3. AGRONOMIC RESULTS OF RES INOCULATED DISEASE SCREENING NURSERIES FOR STEM ROT, AGGREGATE SHEATH SPOT AND BAKANAE 2007-2010.

Very Early Test Variety	SR†	AgSS‡	Bakanae§	Early Test Variety	SR	AgSS	Bakanae
M-104	5.9	3.3	5.1	M-202	5.5	2.2	3.5
M-206	5.4	3.0	2.6	M-206	5.3	2.7	2.0
M-105	5.7	2.9	4.1	M-105	5.3	2.5	3.0

† SR=stem rot score where 0=no damage and 10=plant killed.

‡ AgSS= Aggregate sheath spot number of top four leaves affected.

§ Bakanae score=number of elongated plants in inoculated row.

Performance in Colder Areas:

As shown in Table 1, rice cultivar M-105 has shown greater yield than M-104 except in the very cold San Joaquin county location, but

yields less than M-206 except in the very cold San Joaquin county location. Yield potential would be M-206>M-105>M-104. In terms of resistance to cold temperature induced blanking, M-105 would be below the very tolerant M-104 but at least equal to M-206 based on greenhouse tests and cool temperature nursery observations.

Milling and Quality:

By far the greatest attribute observed in testing 05-Y-471 (M-105) was its head rice milling yield and stability that represents a very significant improvement over M-104 and equivalent to M-206. Although M-105 has given very high stable milling yields, as the harvest moisture falls below 18% head rice yield can decline rapidly. Combining the head rice stability with early maturity was a primary breeding objective in developing this variety. Physicochemical tests fit the Calrose US medium grain type. Evaluation by California marketing organization indicated M-105 was acceptable for the Calrose market. Kernels are slightly shorter and a slightly lower kernel weight. M-105 would be acceptable for comingling for drying and storage with other Calrose varieties.

Area of adaptation:

The performance data collected at RES and by UCCE indicates that M-105 has broad adaptation allowing it to be grown in all California rice producing areas. Its yield potential is below M-206 and M-205 except in cool temperature situations seen in cold growing seasons, late planting, and the cool production regions. It is not as early and resistant to cool temperature blanking as M-104 but has better milling yield potential and stability. As a new variety, growers should