

CALMOCHI-203 RICE: DESCRIPTION AND MANAGEMENT GUIDELINES



2016

Calmochi-203

Introduction:

Calmochi-203 is a high yielding, semi-dwarf, early-maturing, glabrous (smooth hull), waxy (glutinous or sweet), short-grain rice 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 2015. Calmochi-203 is protected under the US Plant Protection Act, Title 5 (to only be sold as a class of certified seed), as well as a US Plant Utility Patent. Calmochi-203 is available exclusively to California rice growers, export of seed is prohibited, and the use in genetic or breeding research requires a Material Transfer Agreement.

Pedigree and Breeding:

Its pedigree is M7//D51/R57/3/M-302/4/Calmochi-101(87Y259)/5/Calmochi-101/6/NFD-108/7/M102/CM101/3/Akenohoshi//Calpearl/Calmochi-101. 87Y259 is a high yielding, glabrous, waxy short-grain line developed by RES. Calmochi-101 is a very early maturing, pubescent, semi-dwarf, waxy rice developed and released by CCRRF in 1985 and the current waxy rice in production. NFD108, is a high yielding, early maturing, pearl type, pubescent grain, waxy rice released by N.F. Davis. Akenohoshi, released in Japan, is non-glutinous, medium to tall, late maturing with high spikelet number and sensitivity to cool temperature. Calpearl is a high-yielding, pubescent medium grain, released by N.F. Davis. NFD108, Calpearl, M7, M-302, and M-102 are no longer in commercial production. Calmochi-203 was tested in the 2010-14 University of California Cooperative Extension (UCCE) statewide tests under the experimental designation 09Y2141.

Agronomic Characteristics:

Table 1 contains a summary of the agronomic and quality data collected in the UCCE Statewide Yield Tests and at the RES. Seedling vigor scores, days to heading, lodging, and disease resistance value for Calmochi-101 and Calmochi-203 were similar. Calmochi-203 takes about 10 days longer to reach harvest maturity than Calmochi-101 due to its larger kernel, higher yield, and glabrous hull. Calmochi-203 significantly out yielded Calmochi-101 in all comparisons averaging 9,650 and 7,590 lb/acre, respectively, for a 27% yield advantage. Commercial seed production field yields ranged from 93 to 107 cwt/acre in 2015.

It has no major resistance gene to the blast pathogen present in California, however, the field resistance of Calmochi-203 to blast is not known. Growers are recommended to bleach treat seed for Bakanae. No marked difference in sensitivity to standard rice herbicides has been observed, however commercial experience is limited.

Milling and Quality:

In RES milling tests from 2012 to 2014, head rice percentage of Calmochi-203 ranged from 64 to 66%, while it ranged from 61 to 64% for CM-101. When averaged across years, head rice percentage was higher in Calmochi-203 at 65% than Calmochi-101 at 63%. Calmochi-203 kernels are larger, heavier and rounder. Physico-chemical analysis and mill/market evaluation did identify some cooking quality differences between Calmochi-203 and Calmochi-101. Growers should confirm with their buyer/mill/marketer for suitability for their rice processing needs before contracting the crop.

Table 1. Agronomic and quality data from the UCCE Statewide Yield Tests and the RES 2010-2014.

Trait	Calmochi -203	Calmochi -101
Agronomics		
Grain Yield (lb/acre)	9650	7590
Seedling Vigor (1-5)	4.9	4.9
Heading (Days)	85	84
Heading to Maturity (Days to 20% MC)	57	46
Planting to Maturity (Days to 20% MC)	136	125
Plant Height (in)	40	38
Lodging (%)	41	40
Blanking at San Joaquin (%)	9.3	6.7
Disease Reactions		
Stem Rot (0-10; 0 is Resistant)	5.3	5.2
Aggregate Sheath Spot (0-4; 0 is Resistant)	2.8	2.5
Blast (0-4; 0 is Resistant)	2.9	2.7
Grain Quality		
Head Rice (%)	65	63
Grain Length (mm)	5.2	5.05
Grain Width (mm)	2.94	2.75
L/W Ratio	1.77	1.83
1000-Grain Head Rice Weight (g)	22.8	19.9
Apparent Amylose (%)	0	0
Alkali Spreading Value (1-7)	6	6

Area of Adaptation:

Grain yield trend analysis indicates that Calmochi-203 is well suited in California rice growing locations and can achieve high yields in favorable production areas or perhaps under high-input production system. Results of San Joaquin County and cold greenhouse tests indicate that it is not as cold temperature blanking resistant as Calmochi-101.

Management Guidelines:

The following guidelines are based on research, observation and experience gained in developing Calmochi-203. These suggested cultural practices are intended to assist in the production of optimum yields and quality.

- 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 other varieties in your production area. Excessive N will increase lodging, blanking, and disease
- Preferred seeding dates are the same as for other California varieties. Standard seeding rates of 130 to 150 lb/acre are recommended. Excessive seeding rates reduce yield potential and increase susceptibility to disease.
- Water depth should be increased to about 8 inches after panicle initiation (50 to 55 days after planting) to protect developing panicles from low temperature exposure during occasional cool nights.

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Cover graphic art by Linda Seaman.

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