 **AGRONOMY PROGRESS REPORT**

 Agricultural Experiment Station Cooperative Extension

 **January 2025 # 340**

# CALIFORNIA RICE VARIETIES

## **Description and Performance Summary of the 2024 And**

 **Multi-year Statewide Rice Variety Tests in California**

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University of California Cooperative Extension rice variety evaluation tests were conducted in the Sacramento Valley in 2024. This program, a cooperative effort involving the California Cooperative Rice Research Foundation, Inc. (CCRRF) and the United States Department of Agriculture (USDA), compares advanced breeding lines with commercially available rice varieties, and evaluates preliminary breeding lines to find their adaptation to the principal rice growing areas of California. Entries in the tests include lines and varieties developed by CCRRF rice breeders. The Rice Research Board provides funding and cooperating growers provide land for this program. Variety names and brief descriptions of the current publicly developed varieties are listed in Table 1.

California rice acres decreased in 2024 with a total of 467,000 acres planted and 464,000 acres harvested when compared to 2023 with 516,000 acres planted and 513,000 acres harvested. The estimated statewide yield was 8,530 lbs./acre, a small decrease from 2023 (8,540 lbs./acre).

**EXPERIMENTAL PROCEDURE**

#### Cultivars and Locations

Field experiments were conducted at nine locations, eight farm locations throughout the rice growing region of California and one location at the Rice Experiment Station. Three classes of tests were conducted at each site: 1) Three-replication advanced tests consisting of advanced breeding lines and commercial varieties; 2) Two-replication advance test consisting of advance breeding lines and commercial varieties; and 3) Two-replication preliminary tests consisting of new lines to be evaluated on a statewide basis.

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All variety tests were conducted in three zones, Zone 1, Zone 2, and Zone 3 for a total of nine statewide tests. The three-replication advanced tests were arranged in randomized complete block designs, the two-replication advance test was arranged in randomized complete block designs, and the two-replication preliminary was planted in randomized complete block designs. Seed for the tests was provided by the RES. Groups, test locations, and commercial standards in each test were as follows:

***Zone 1***

Fourteen commercial varieties and thirteen advanced breeding lines were evaluated in two three-replication advanced tests at each location listed below.

 Date Planted Date Harvested

1. Colusa County (Dennis) 05/17 10/02
2. Glenn County (Wylie) 05/23 10/19

Three commercial varieties and eleven breeding lines were evaluated in two two-replication advance tests. The two-replication preliminary tests evaluated one commercial variety and thirteen preliminary lines at both locations. Commercial varieties at each location included S102, S202, CA201, CH203, CM101, CM203, M105, M206, M209, M210, M211, M521, A202, CJ201, CT202, L207, and L208.

***Zone 2***

Fourteen commercial varieties and thirteen advanced breeding lines were evaluated in the three-replication advanced tests at each of the following locations.

 Date Planted Date Harvested

1. Butte County (RES) 05/21 10/13
2. North Butte County (Sheppard) 05/22 10/15
3. South Butte County (Schohr) 05/13 09/21

Three commercial and eleven breeding lines were evaluated in three two-replication advance tests. The two-replication preliminary tests evaluated one commercial variety and thirteen preliminary lines at each location. Commercial varieties at each location included S102, S202, CA201, CH203, CM101, CM203, M105, M206, M209, M210, M211, M521, A202, CJ201, CT202, L207, and L208.

***Zone 3***

Fourteen commercial varieties and thirteen advanced breeding lines were evaluated in the three-replication advanced test at three of the following locations. The fourth location at San Joaquin only included medium grain varieties and lines.

 Date Planted Date Harvested

1. North Yolo (Gallagher) 05/17 10/01
2. San Joaquin (Del Rio) 04/30 10/08
3. Sutter County (Lauppe) 05/22 10/10
4. Yuba County (Rue) 05/25 10/12

Three commercial and eleven breeding lines were compared in three two-replication advance tests. The two-replication preliminary tests compared one commercial variety and thirteen preliminary lines at each location. Commercial varieties at the three locations included S102, S202, CA201, CH203, CM101, CM203, M105, M206, M209, M210, M211, M521, A202, CJ201, CT202, L207, and L208.

**Planting and Harvesting**

Individual plots were water-seeded by hand at a planting rate of 150 lbs./acre at most locations with the trial found in San Joaquin being drill seeded at a rate of 150 lbs./acre. Agronomic characteristics measured for each entry were seedling vigor, days to 50% heading, plant height, lodging at harvest, grain moisture at harvest, and grain yield at 14% moisture. Seedling vigor was rated subjectively by visual observation on a scale of 1 (poor) to 5 (excellent) at three to four weeks after planting. Scores were based on plant health and stand of crop emergence through water. Days to 50% heading was measured as the number of days from planting to when 50% of the heads were free from the boot. Plant height was measured at harvest as the distance from the soil surface to the tip of the panicle. Plant lodging was rated visually at time of harvest on a scale of 0 (no lodging) to 100 (all plants completely lodged).

Variety trial harvest was completed in mid-October. The University of California, Davis’s ALMACO combine harvested seven trials, the Rice Experiment Station’s ALMACO combine harvested the trial at the Butte County (RES) location, and a hand harvest was performed at the San Joaquin trial. Harvested areas were 151ft2 (UCD ALMACO), 140ft2 (RES ALMACO), and 15ft2 (Hand Harvest). Grain moisture was assessed at harvest and yields were adjusted to 14% moisture.

**SUMMARY OF ZONE 1 RICE VARIETY TESTS**

Yields in the three-replication advanced line tests averaged 8,880 lbs./ac across both locations with Colusa averaging 8,970 lbs./ac and Glenn averaging 8,790 lbs./ac (Table 4-5). In the three-replication advanced test, L208 was the highest yielding commercial variety at Colusa, and S202 was the highest yielding commercial variety at Glenn ranking 2nd and 1st overall. L207 and S202 were the next highest yielding commercial varieties at the Colusa location, and L208 and CM203 were the next highest yielding commercial varieties at the Glenn location ranking second and fifth respectively (Table 3). The long grain entry 20Y1010 was the highest yielding advanced entry at the Colusa location with 10,380 lbs./ac, and the highest yielding advance line at the Glenn location was short grain 20Y2001. Average days to 50% heading was 80 days. Medium grain M211 was the latest variety at 86 days to reach 50% heading.

**SUMMARY OF ZONE 2 RICE VARIETY TESTS**

Yields in the three-replication advanced line tests averaged 8,800 lbs./ac overall, 8,960 lbs./ac at the RES/Biggs, 9,030 lbs./ac at North Butte, and 8,400 lbs./ac at South Butte (Tables 6-8). Short grain S202 was the highest yielding commercial entry at the RES with 10,150 lbs./ac. The long grain variety L208 was the highest yielding commercial variety at both North and South Butte location with 10,910 lbs./ac and 10,280 lbs./ac. Average days to 50% heading was 84 days. The commercial standard M206 averaged 81 days over the three locations.

**SUMMARY OF ZONE 3 RICE VARIETY TESTS**

Grain yields in the three-replication advanced tests averaged 8,910 lbs./ac overall, 9,050 lbs./ac at North Yolo, 8,800 lbs./ac at Sutter, 11,230 lbs./ac at San Joaquin, and 8,350 lbs./ac at Yuba (Tables 9-11). The three highest yielding entries at each location: commercial variety S202 (10,750 lbs./ac), commercial variety L208 (10,460 lbs./ac), and advance breeding line 19Y1018 (10,080 lbs./ac) at North Yolo; advance line 20Y1009 (10,700 lbs./ac), S202 (10,590 lbs./ac), and 20Y1010 (10,020 lbs.ac) at Sutter; 19Y3128 (12,260 lbs./ac), 18Y3018 (12,130 lbs./ac), and 18Y3102 (11,800 lbs.ac) at San Joaquin; and L208 (9,930 lbs./ac), 19Y1018 (9,560 lbs.ac), and 20Y1009 (9,390 lbs./ac) at Yuba. The average grain moisture at harvest was 16.5%, average lodging 29%, average days to 50% heading 86 days, average seedling vigor 4.8, and average plant height 98 cm.

A nine-location combined yield and agronomic performance summary is given in Table 3. Entries are ranked by grain yield with the highest yielding entry appearing first. A 5-year yield summary of selected commercial rice varieties by location and year (2020-2024) is presented in Table 13.

Comparing the commercial standard medium grain entries over a 5-year period and across locations M211, M105, and M206 were the three highest yielding varieties (Table 13).

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