Wild rice variety testing in California

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Introduction: The objective of this trial is to compare field performance of two common clones of wild rice grown in California with Franklin, a wild rice variety which was released in Minnesota in 1992 and will probably be released in California for 1999 production.

Seed Sources: Table 1 summarizes characteristics of the three varieties.

Table 1. Wild rice varieties tested in 1997.

Variety	Release Date	Origin	Characteristics	Source
Johnson	1968	Algot Johnson, Minnesota	Tall, long season, robust	From Goose Valley 1996 production, bin P-1, Originally obtained from Al Eleshio, Fall River Valley, 1998 production.
K-2	1972	Kosbau brothers, Minnesota	Short stature, shorter season	From Lyneta Ranch in Modoc County, isolated production for over 10 years.
Franklin	1992	University of Minnesota	From K-2, Less Shattering	From UC owned stock grown on River Ranch, 1996 harvest, 2nd crop in California.

Trial Location and Design: The trial was conduced in Goose Valley Ranch, 4 miles north of Burney, CA at 3,100 ft. Elevation. The previous crop was timothy hay and the site had not ever produced wild rice. Preplant fertilizer was 300 lb/ac 9-22-23, 300 lb/ac urea, and 30 lb/ac 22% zinc. Individual plots were 30' X 50' in size. Four replicates of each variety arranged in a block design were seeded at a 100 lb/ac rate. Germination rates of seed are listed in Table 2. Seeding was conducted on May 15th and harvest on September 6, 1997. The remainder rest of the field was planted to the variety Johnson and flooded immediately after seeding. Water depth was maintained at 24"and not varied throughout the season.

Table 2. Germination of wild rice seed used in 1997 yield trial at Goose Valley Ranch (a).

	Percent germination after 7 days (b)
Johnson	66 ± 6.2
K-2	13 ± 3.7
Franklin	63 ± 16.8

a) four replicates of 20 seed under 1.5" of water in an 8 oz Styrofoam cup at room temperature (~ 75°).
b) ± standard error.

Measurements: Harvest was by a commercial axial flow rice combine with a 16' wide header. Wild rice was collected directly in plastic sacks and weighed. Plant height was measured immediately before harvest. Maturity was a determined by a visual estimate of the date when the 80% dark kernel stage was achieved.

Results: Table 3 summarizes results of the study. There were no significant differences in yield or height of the plants. The Franklin variety was about a week earlier in maturity than the other varieties. Small amounts of lodging (< 20%) occurred in the trial and showed an irregular pattern likely due to variation in fertilizer distribution in the corner of the field where the trial was conducted. Floating seed of Johnson from the adjacent field spread across all plots and mixed with all varieties. However, it was possible to observe individual variety differences due to height (the Johnson), flower color (the K-2 and Franklin) and early maturity (Franklin). At harvest, consistent yield reductions occurred because combine concave settings were too wide for yield conditions.

Table 3. Yield, height and maturity of wild rice in 1997.

	Yield, green lbs/A	**Height, inches**	**Days to maturity (80% dark kernels)**
Johnson	1602	110	114
K-2	1669	99	114
Franklin	1661	101	107
LSD 5%	N S (478)	N S (15)	

Discussion: The most useful information obtained from this trial is the observation that Franklin matures earlier than the California K-2 and Johnson varieties. Because of the excellent growing conditions all varieties averaged over 8' high.

The mixing of the Johnson variety from the adjacent field nullified the yield results. Poor germination of K-2 and errors in combine settings negated yield results. Future studies should include testing of seed germination before planting and borders or screen to prohibit mixing of varieties. More attention should be paid to combine adjustment before harvest.

Despite problems with this trial, Franklin continues to show promise for the California wild rice industry because of its earlier maturity and observed shattering resistance.