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UCCE

Rice Briefs

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In This Issue

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2010 Rice Variety Trials Results

EVERY YEAR variety trials are established throughout California's rice producing areas. The trials are a cooperative effort between UCCE and the Rice Experiment Station (RES). Their objective is to determine production potential and adaptability of new materials for local conditions, as well as the response of commercial varieties to local weather, soil and agronomic practices.

The trials are conducted in growers fields in several locations in the rice producing counties of California. The tests are grouped as very early, early and intermediate/late. Lines are planted in the most appropriate location for their maturity group, taking into consideration weather but also the field variety of the location (to avoid early or late harvesting). Maturity groups are classified according to the number of days from planting to 50% heading for a variety grown at the RES (Biggs, CA), and they are very early (<90 days to 50% heading), early (90-97 days to 50% heading) and intermediate/late (>97 days to 50% heading). Commercial varieties are included in most tests

Table 1. Very early rice variety tests, 2010.

Variety	Grain type[1]	Average grain yield (lbs/a)	Single location yields (lbs/a)				Seedling vigor (1-5)[3]	Days to 50% heading	Lodging (1-99)[4]
			RES[2]	Sutter	Yolo	San Joaquin			
CM-101	SWX	8,558	9,470	9,500	7,190	8,070	5.0	90	40
L-206	L	8,663	10,200	8,050	8,230	8,170	4.9	95	1
M-104	M	8,227	-	8,270	8,050	8,360	5.0	92	8
M-105	M	8,648	10,600	8,350	7,430	8,210	4.9	91	5
M-202	M	8,160	10,470	6,520	7,890	7,760	5.0	96	1
M-206	M	8,738	11,290	7,890	8,210	7,560	5.0	96	3
S-102	S	8,553	9,380	9,360	7,520	7,950	5.0	87	32

and their yields shown in Tables 1, 2 and 3. Tests are also conducted at the RES, where ease of harvest permits conducting all three tests.

Varieties are grown in plots 200 square feet within commercial fields and managed by co-operating growers in the same manner as the rest of the field. Plots are harvested using a research plot combine, and yields converted to lbs/acre at 14% moisture.

Remember that the trials are conducted in small areas; therefore, yields are a relative indication on how a variety will perform under local conditions.

Table 2. Early rice variety tests, 2010.

Variety	Grain type[1]	Average grain yield (lbs/a)	Single location yields (lbs/a)				Seedling vigor (1-5)[3]	Days to 50% heading	Lodging (1-99)[4]
			RES[2]	Butte	Yuba	Colusa			
CM101	SWX	8,255	7,990	6,770	8,870	9,390	5.0	83	50
L206	L	9,750	11,090	8,400	9,070	10,440	4.9	85	1
M105	M	10,258	11,530	8,530	10,040	10,930	4.8	83	9
M202	M	9,883	10,210	8,190	10,220	10,910	5.0	90	2
M205	M	9,825	10,790	7,950	9,370	11,190	5.0	93	1
M206	M	10,080	10,990	8,440	10,330	10,560	4.9	85	2
M208	M	9,703	11,370	8,210	8,840	10,390	5.0	91	1
S102	S	9,233	9,400	7,330	10,010	10,190	5.0	80	42

Table 3. Intermediate/late rice variety tests, 2010.

Variety	Grain type[1]	Average grain yield (lbs/a)	Single location yields (lbs/a)			Seedling vigor (1-5)[3]	Days to 50% heading	Lodging (1-99)[4]
			RES[2]	Glenn	Sutter			
L-206	L	9,780	11,610	8,340	9,390	4.9	92	33
M-202	M	9,633	10,430	7,970	10,500	5.0	95	33
M-205	M	9,810	11,030	9,210	9,190	4.9	100	13
M-402	MPQ	8,967	8,240	9,360	9,300	5.0	110	6

[1]S=short; M=medium; L=long; PQ=premium quality; WX=waxy; R=Newrex
[2]RES=Rice Experiment Station, Biggs, CA
[3]Subjective rating of 1-5 where 1=poor and 5=excellent seedling emergence.
[4]Subjective rating of 1-99 where 1=none and 99=completely lodged.

How Much Phosphorus Should You Apply to your Rice Field?

In the California rice production area, less than 10% of soils are phosphorus (P) limited. This means that in most soils, you will not see yield increases when applying P fertilizer. However, over time, P levels can be depleted and affect yield. To avoid this, you need to determine the P status of your fields and adjust your P rates if needed.

There are two common methods to determine the P needs of your crop, a soil test and plant tissue analysis. When doing a soil test, the P level in the soil is adequate when the Olsen P test shows a P concentrations above 6-9 parts per million (ppm). When doing plant tissue analysis, the Y-leaf should be sampled about 35 days after seeding (the Y-leaf is the most recently fully expanded leaf). When P concentrations in the Y-leaf are above 0.2%, P levels are adequate. The problem with tissue analysis is that by the time the results are received back from the lab, the window for P application has passed. Nevertheless, the result from the tissue analysis can be used to make P application decisions next year.

Another way to determine the P needs of your crop is to develop an **input-output P budget**. You can combine the results of your soil test and P budget to determine if a P application is needed and in what amount. Phosphorus fertilizer is relatively immobile in soils. Unlike nitrogen, P is not lost through gasification and little is lost with irrigation water or through leaching. Think of the soil as a P bank. You "deposit" P when you apply a P fertilizer, and you "withdraw" P when you harvest the grain and straw. To be efficient, you want to deposit enough P to maximize yields and avoid deficiencies.

To develop a P budget, you need to average your input or P application (in lbs P_2O_5/a added) and output or yield (in cwt/a) during the past 5 years. Then, use the tables in page

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New University of California Rice Blog

Three Farm Advisors from the University of California Cooperative Extension will be publishing a blog dealing with rice production starting this growing season. The UC Rice Blog will serve as an Internet-based journal that will feature pictures and comments on issues the Advisors encounter in the field that are of interest for those involved in rice production.

The Farm Advisors are Luis Espino, Colusa, Glenn and Yolo counties; Chris Greer, Sutter/Yuba, Sacramento, and Placer-Nevada counties; and Cass Mutters, Butte County.

To find the blog, go to: http://ucanr.org/blogs/riceblog/

Only grain removed

Grain yield (cwt@14%)	P fertilizer added (lb P_2O_5/ac)														
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
	P balance (lb P_2O_5/ac)														
50	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39	44
55	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36	41
60	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39
65	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36
70	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28	33
75	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31
80	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28
85	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26
90	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23
95	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20
100	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18
105	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
110	-57	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13

Remove grain and ½ of straw

Grain yield (cwt@14%)	P fertilizer added (lb P_2O_5/ac)														
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
	P balance (lb P_2O_5/ac)														
50	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39
55	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36
60	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28	33
65	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30
70	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	7	12	17	22	27
75	-46	-41	-36	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24
80	-49	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21
85	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18
90	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
95	-58	-53	-48	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	7	12
100	-61	-56	-51	-46	-41	-36	-31	-26	-21	-16	-11	-6	-1	4	9
105	-64	-59	-54	-49	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6
110	-67	-62	-57	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3

How Much Phosphorus...

(Continued from page 3)

4, developed by Bruce Linquist, UC Davis, to determine if you have a positive or negative budget. If you only remove grain and incorporate or burn the straw, use the "Only grain removed" table. If you remove the straw, use the "Remove grain and ½ of straw" table. On the table, locate your average yield on the left hand column and lbs P_2O_5/a added on the first row. Follow the numbers next to your yield and below the amount of P_2O_5 added, and the number where row and column intercept is the value of your P budget. If the P budget is negative, you are extracting more P than you are adding; if it is positive, you are building up P in the soil.

You can combine results from the soil test and P budget to determine how much P you need to apply. When the soil test indicates that P levels are above 20 ppm and the P budget is positive, you don't need to apply any P fertilizer, there is enough P in the soil and increasing the level of P will not produce any benefit. When the soil test indicates that the P level is below 6 ppm and the P budget is negative, you need to add P fertilizer to the soil. You can start adding as much P as needed so that your P budget becomes positive. Monitor your yield and P levels to make any further adjustments.

When P is not a limiting factor (the soil test shows P levels above 6 ppm), all that is needed is a maintenance P application. This means that you need to add as much P as you are extracting with the grain and straw. Use the P budget tables to determine how much P fertilizer is needed for the expected yield in your field so that the P budget value is close to zero.

For example, if you incorporate your straw and your average yield is 80 cwt/a, you need to apply close to 45 lbs P_2O_5/a. If your source of P is monoammonium phosphate (MAP), you would apply 80 lbs of MAP/a (MAP is 56% P_2O_5). If the straw is usually removed, you would apply 89 lbs of MAP/a.

Winter Meetings and Rice Production Workshop Presentations Available On-line

If you missed the 2011 Rice Growers Winter Meetings or Rice Production Workshop, the presentations are now available at the UCCE Colusa County Rice website. The presentations are available in PDF format that can be printed. If you have questions about the content, please contact Luis Espino at 530.458.0578 or laespino@ucdavis.edu.

The presentations are available at: http://cecolusa.ucdavis.edu/rice/

Contribution of California Rice Farmers to the State's Economy

In a recent report, the Agricultural and Food Policy Center from Texas A&M University analyzed the contributions of the US rice industry to the US economy. The report covers all rice producing states, and concludes that during 2009, the US rice industry contributed $17.6 billion to US wages, salaries and profits; generated $34.4 billion of economic output; and supported 128,000 jobs nationwide. These contributions come from farmers, millers and end users such as exporters, food processors, brewers and pet food manufacturers. The California industry plays a prominent role, contributing significant economic benefits to the state of California and the US. Following are some key findings that refer to the contributions of California rice farmers.

In the report, contributions to the economy are categorized as output, value added and number of jobs supported. Output refers to the dollars rice farmers spend to support their operations. For example, when a rice farmer pays for fuel to prepare the ground, the dollars spent on fuel become an output. The same would be true for expenditures on seed, fertilizer, agrochemicals, machinery and other purchases made by rice farmers. Value added refers to wages and salaries paid by rice farmers and industries that supply the farmers. These industries include fertilizer dealers, hardware stores, tractor parts dealers, etc. Value added also refers to the profits generated by the farming operations and their supporting industries. Finally, the number of jobs supported includes jobs directly created by farmers, as well as jobs that are created because of the economic activity of rice farmers. For example, farmers create jobs on their own farm, and their activities support employment of consultants, suppliers, technicians, etc.

Table 4. Contribution of California rice farmers to the state's economy in 2009

Output		**Value added**		**Number of jobs supported**	
Billion $	%*	Billion $	%*	Number	%*
1.79	32	0.99	35	12,656	35

* Percentage contribution of California rice farmers to US economy from all US rice farmers

Findings of the report that refer to California rice farmers are shown in Table 4. In 2009, California rice farmers generated $1.79 billion of output, second after Arkansas. When it comes to wages, salaries and profits, California rice farmers contributed $0.99 billion to the state's economy. Among farmers from all rice producing states, California rice farmers contributed the most. Finally, California rice farmers supported 12,656 jobs, the highest

number when compared to the number of jobs supported by rice farmers in other rice producing states. About a third of all economic contributions of US rice farmers to the US economy originate in California.

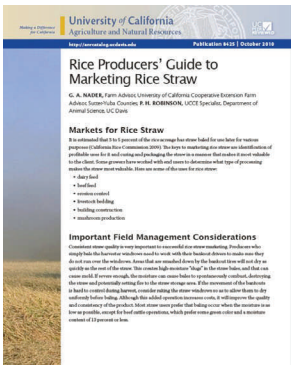
Additionally, a recent report by Ducks Unlimited estimates the cost of replacing waterfowl habitat provided by flooded rice fields during winter is over $1.5 billion. These figures show the importance of the contributions of California rice farmers to the economy of the state, the environment and the prominent role California rice farmers play within the US rice industry.

Sources:

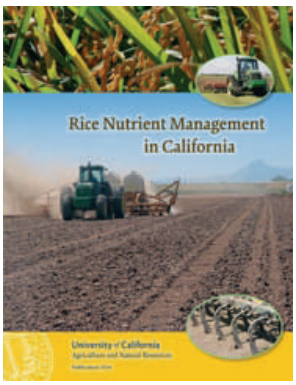
Richardson, J. W. and J. L. Outlaw. 2010. Economic contributions of the US rice industry to the US economy. Agricultural & Food Policy Center, Department of Agricultural Economics, Texas AgriLife Extension Service, Texas A&M University, Report 10-3. Available at http://www.usarice.com/doclib/188/4897.pdf

Petrie, M. and K. Petrik. 2010. Assessing waterbird benefits from water use in California ricelands. Ducks Unlimited. Available at http://www.calrice.org/pdf/DucksUnlimited.pdf

New UC ANR Publications



Two new University of California Agriculture and Natural Resources publications are available to the rice industry. The publication "Rice Producers' Guide to Marketing Rice Straw" is available for free at the UC ANR Publications website. The publication covers aspects of producing straw of good quality, costs of straw removal, straw preparation and marketing to different markets. The authors, G. A. Nader and P. H. Robinson, describe current markets and how straw needs to be managed to fit these markets. The publication can be downloaded for free at:
http://anrcatalog.ucdavis.edu/pdf/8425.pdf



The publication "Rice Nutrient Management in California", by Jack Williams, retired UCCE Farm Advisor, walks you through the steps needed to analyze your soil fertility practices so you can make more informed decisions about nutrient management for your rice crop. Chapters cover the basics from soil types and how flooding affects soil fertility to a complete analysis of seven nutrients along with salinity, pH and other toxicities. Also included is a chapter on nutrient management for organic rice. This is a full-color manual illustrated with 74 figures, illustrations and photographs, and 23 tables, and can be purchased at your local UCCE county office.

Meeting announcements and newsletters are also available at our website: http://cecolusa.ucdavis.edu

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