

# CALIFORNIA RICE RESEARCH BOARD

## Executive Committee

### Agenda

Tuesday, May 2, 2017 – 10:00 am

Teleconference Meeting

Primary Meeting location: 4171 Sutton Rd, Maxwell, CA

For further information contact Dana Dickey, PO Box 507, Yuba City, CA 95992

Phone: 530-673-6247 or web site: [www.syix.com/rb/meetings.htm](http://www.syix.com/rb/meetings.htm)



Conference phone number: 1-800-944-8766

Conference code 95992#

Board members wishing to participate, contact Dana Dickey at [530-673-6247](tel:530-673-6247) / [ricebrd@syix.com](mailto:ricebrd@syix.com) no later than 4/28/2017

- 1) Establish Quorum and Introductions
- 2) Review of revised project proposal by Whitney Brim-DeForest for Weedy Rice Control
- 3) Committee action on revised project
- 4) Adjournment

Board members participating by teleconference:

Tom McClellan

Joe Richter

Drew Rudd

Brett Scheidel

- Each of the Agenda Items above will include discussion and possible action by the Board. All meetings of the Rice Research Board are open to the public and subject to the Bagley-Keene Open Meeting Act. All interested parties are invited and encouraged to attend the meeting. Time will be allowed for members of the public to make comments on each Agenda item. This time will be limited to two minutes per person for each Agenda item.
- Persons with Disabilities needing special accommodation should contact Dana Dickey, Manager, Rice Research Board at 530-673-6247 at least five days prior to the meeting.
- This Meeting Notice and Agenda is available on the California Department of Food and Agriculture's Website at [www.cdafa.ca.gov/mkt/meeting.html](http://www.cdafa.ca.gov/mkt/meeting.html). For further information regarding the Agenda for this meeting, please contact Dana Dickey, Manager, Rice Research Board at 530-673-6247.

**PROJECT PROPOSAL**  
**COMPREHENSIVE RESEARCH ON RICE**  
August 1, 2016 – July 31, 2017

**PROJECT TITLE:** Weedy Red Rice Control in Rice

**PROJECT LEADER AND PRINCIPAL INVESTIGATORS:**

*Project Leader:*

Whitney Brim-DeForest, CE Farm Advisor, Sutter, Yuba, Placer and Sacramento Co.

Principal UC Investigators:

Kassim Al-Khatib, Professor, Department of Plant Sciences UC Davis  
Bruce Linqvist, CE Specialist, Department of Plant Sciences, UC Davis  
Luis Espino, CE Farm Advisor, Colusa, Glenn Co.  
Randall G. Mutters, CE Farm Advisor, Butte Co.  
Michelle Leinfelder-Miles, CE Farm Advisor, San Joaquin Co.

Field and Greenhouse Operations:

Amar Godar, Research Associate, Department of Plant Sciences UC Davis  
Ray Stogsdill, Research Associate, Department of Plant Sciences UC Davis

**OBJECTIVES OF PROPOSED RESEARCH:**

1. To assess the current distribution of CA weedy red rice by conducting a survey along with grower interviews, and from the survey, to generate a genetic analysis and morphological analysis of weedy red rice in CA
2. To expand our knowledge of weedy red rice ecology including response to burial in the soil, longevity in the seedbank, and germination and emergence patterns during the season
3. To determine the effects of winter management practices (burning and flooding) on weedy red rice populations in infested fields
4. To evaluate the efficacy of in-season systems-level practices (fallow and crop rotation) on weedy red rice populations in infested fields
5. To disseminate pertinent results and best management practices to rice growers and other stakeholders

**EXPERIMENTAL PROCEDURES TO ACCOMPLISH OBJECTIVES:**

*Objective: To survey the distribution of weedy red rice in CA and generate genetic analyses of weedy red rice populations*

**1.1 Survey and Grower Interviews.** A survey of weedy red rice infested fields will begin in 2016, and continue over the next 2-3 years. The survey will pinpoint field locations and samples will be collected from each field. Information on the field history and management will also be collected from growers with infested fields. **Populations of weedy rice will be tracked in these fields, using soil seedbank analysis as well as visual observations during the season. Changes in the populations will be correlated to the practices growers utilize in their fields.**

**Genetic and Morphological Analyses.** Using the materials collected from the survey, a genetic analysis and morphological analysis of the weedy red rice populations will be conducted beginning

in the winter of 2016. Samples will be compared to known weedy red rice biotypes from other parts of the world and to commercial rice varieties. **Due to restrictions on growing weedy rice at the Rice Experiment Station, part of this research will be conducted at the UC Davis greenhouses.**

***Objective: To expand current knowledge of weedy red rice ecology***

**1.2 Dormancy and Germination.** A series of greenhouse and small-scale field experiments will be conducted to increase information on the ecology of the weedy red rice populations in California. Seed will be collected from field populations in fall 2016. Dormancy breaking experiments will begin in fall 2016. Once methods to break dormancy have been elucidated, experiments to determine germination response to temperature, oxygen and soil water potential will begin. The estimate on timing to finish the dormancy experiments is approximately one year, finishing in fall-winter 2017. The germination experiments would begin soon after, and the estimated timeline for the experiments would be approximately one year.

**Seed Viability and Longevity.** Assessments of seed response to burial will be superimposed over the research project in Objective 1.1. Weedy red rice seed will be buried in mesh bags in the fields beginning in fall 2017 and removed at intervals to determine the effects of flooding versus no flooding on seed viability. Some bags will remain buried in the fields over the rice growing season as well to determine longevity over the course of the entire experiment. Results from the two experiments would be available near the conclusion of the field studies (in 2021), although preliminary results would be available earlier.

**Emergence and Growth.** Emergence counts of weedy red rice will be superimposed over the rice fields in ~~Objective 1.3~~, beginning in spring 2017. An herbicide untreated portion of each field will be marked off, and emergence counts will take place in these fields. ~~Additional counts will occur in Objective 1.4 fields, with similar untreated areas marked off in these fields as well.~~ Early growth experiments will take place in the greenhouse at the Rice Experiment Station beginning in spring 2017. Combined with the results from the germination experiments, these will allow for the development of growing degree models for the timing of herbicide applications or cultural controls such as tillage. Due to the necessity for replications, the experiments would occur over two years (2017-2018), and be completed by 2019.

**Competition Studies.** Greenhouse experiments will be conducted to determine the relative competitive ability of the weedy rice in comparison to the major California rice varieties. The start date of these experiments will be in late 2017 or early 2018.

**Herbicide Susceptibility.** The weedy rice populations will be screened for tolerance to the registered California rice herbicides, as well as the proposed herbicides for spot treatments in the field. The start date of these experiments will be in late 2017 or early 2018.

**The following field studies will not take place in grower fields, due to the fact that the weedy rice populations are not extensive enough to make it possible to have replicated experiments. We are exploring additional means to obtain the same information.**

***Objective: To understand the impact of winter management practices on weedy red rice populations***

**1.3** The proposed management practices are: 1) straw incorporation followed by winter flooding; 2) no incorporation followed by winter flooding; 3) no incorporation followed by burning; and 4) no

incorporation followed by both burning and flooding. **The location of this trial is not yet known, but they will likely take place on UC property.**

***Objective: To determine the efficacy of in-season systems-level management practices on weedy red rice populations***

**1.4** The proposed management practices are: 1) control (continuous flood); 2) fallow-rice-fallow-rice rotation; and 3) sorghum-rice-corn-rice rotation. The fallow will allow investigation into the efficacy of repeated weed recruitment flushes followed by glyphosate sprays on reducing the weedy red rice population. The sorghum rotation will allow for the use of non-rice herbicides to reduce the weedy red rice population. As with the winter management research project, assessments of weedy red rice populations in each field will take place at intervals throughout the rice season. In the fallow treatment, there will also be an evaluation of weedy red rice emergence, with each flush, to determine if there is a limit to the number of flushes possible over a season. The location of these trials are not yet known. **The location of this trial is not yet known, but they will likely take place on UC property.**

***Objective: To ensure research results and best management practices are available to stakeholders***

**1.5** Dissemination of research results to growers and other stakeholders will occur through a variety of channels. The UCCE farm advisors will be responsible for newsletters and blog posts containing pertinent research updates to current clientele in each advisor’s respective counties. Updated best management practices will be written by the principal investigators and posted to the UCANR Rice website, as well as to the blog and newsletters. Posters and presentations with pertinent results will be given at the Winter Grower Meetings, at UC Davis Weed Day, at the RES Field Day, and at regional and national scientific meetings. Several publications in peer-reviewed journals are expected as well.

**PRESENT OUTLOOK AND ESTIMATED SUCCESS IN ACCOMPLISHING OBJECTIVES**

The UC Rice Research program has been successful in steadily delivering applied solutions to growers through our collaborative research program. The experiments outlined in the above objectives deal with the serious problem of weedy red rice, focusing on practical management solutions driven by manipulation of fields at the systems’ level.

With the participation of growers, UC and UCCE faculty, students and support staff, we expect to deliver solutions that growers’ will be able to utilize in the field. Collaboration with the California Rice Experiment Station and the California Crop Improvement Association will further strengthen the delivery of results and recommendations to the growers.

**INTELLECTUAL PROPERTY STATEMENT:** Will this project result in development of intellectual property, which has potential for commercialization? No  X  Yes \_\_\_\_\_ If “Yes”, please explain what is it you will create that might have commercial value.

**WEEDY RED RICE CONTROL IN RICE  
REQUEST (August 1, 2016-July 31, 2017)**

**Expenditure Category**

**Dollar Amount**

General Assistance

Project Leader:

Whitney Brim-DeForest, CE Farm Adv, Sutter, Yuba, Placer & Sac County.

25% effort - No Salary Requested

## PI UC Investigators:

Kassim AL-Khatib, Prof. Dept of Plant Sci. UC Davis, 10% effort - No Salary Requested  
 Bruce Linqvist, CE Specialist. Dept. of Plant Sciences, 10% effort - No Salary Requested  
 Luis Espino, CE Farm Advisor, Colusa, Glenn County, 15% effort - No Salary Requested  
 Randall G. Mutters, CE Farm Advisor, Butte County, 10% effort, - No Salary Requested  
 Michelle Leinfelder-Miles, CE Farm Adv, San Joaquin County, 10% effort - No Salary Requested

## Field and Greenhouse Operations:

Amar Godar, Research Assoc, Dept. of Plant Sci., UCD No Salary Requested  
 Ray Stogsdill, Research Assoc, Dept. of Plant Sci., UCD No Salary Requested

Greenhouse & Field Supplies (GPS/Stakes/Herbicides)	\$2,500.00
Genetics' Lab Supplies	\$24,905.00
UC Davis Greenhouse Rental (4 months)	\$400.00
Vehicle for 6 months (Biggs)	\$3,000.00
Travel to present research	\$1,500.00
Post-Doctoral Salary Step 1 plus 17.3% benefits (7 months)	\$33,000.00
<b>TOTAL REQUEST</b>	<b>\$65,305.00</b>

**Budget justification**

Benefits are calculated using UC Davis composite rates for different titles. The Postdoctoral Scholar will be located at the Rice Experiment Station and will be in charge of coordinating field work with cooperating growers, and data collection. The Postdoctoral Scholar will also be responsible for the synthesis of results and publications from the research projects. Additional project assistants will be paid for by the Weed Science program as needed. Supplies will be used for setup and maintenance of the research sites, and will include a GPS, stakes, herbicides, as well as greenhouse and lab supplies such as pots and petri dishes. ~~The cost of the germination table is \$10,000, so half will be paid for by Kassim Al-Khatib's lab.~~ The vehicle is for conducting research at sites in Glenn, Butte, Colusa, Placer, Sutter and San Joaquin Counties as well as for travel to the UCD greenhouses. This project will use the current vehicle from the Weed Science project from October to March, and the additional vehicle will be used from April to September. Travel expenses will be to present research at regional and national conferences.