

# CALIFORNIA RICE RESEARCH BOARD

## Executive Committee

### Agenda

Wednesday, April 26, 2017 – 11:30 am

Teleconference Meeting

Primary Meeting location: 707 Main St, Colusa, CA

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

Phone: 530-673-6247 or web site: [www.syix.com/rrb/meetings.htm](http://www.syix.com/rrb/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 4/24/2017

- 1) Establish Quorum and Introductions
- 2) Review of project proposal by Patrick Teagarden for Weedy Rice Spectral Imaging
- 3) Committee action on Teagarden project
- 4) Adjournment

#### Participants:

- 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.



April 3, 2017

To: The California Rice Research Board  
PO Box 507  
Yuba City, CA 95992

From: Patrick Teagarden  
Alaska Aviation Proving Ground, Inc.  
385 Freeport Blvd. #17  
Sparks, NV 89431

Reference: Red "Weedy" Rice Spectral Imaging Proof of Concept

Introduction: Alaska Aviation Proving Ground, Inc. is a small commercial company who has developed specific technologies that we believe can be applied to significantly mitigate the Red "Weedy" Rice problem in California. It is our opinion, that weedy rice can be differentiated from commercial rice from an aerial platform. If it can be differentiated, then we believe it expands the options to treat this very serious problem. The purpose of this project is an initial "proof of concept" to determine if the measurement of spectral reflectance has the potential for distinguishing the two varieties of rice. It is our intent to perform this "proof of concept" in cooperation with the California Rice Experiment Station during the months of April and May 2017. It is our hope, as we are a very small company without venture capital funding, that the California Rice Research Board, will partner with us by funding \$9300 to AAPG, Inc. towards conducting these tests. This covers the direct costs of the people that will be performing most the system setup and analysis. We are not asking for the board to cover the cost of equipment, the project manager, nor any of the travel costs. It is our belief that this research is very important because it may lead to a solution for a very significant problem for the rice industry. The participation of the California Rice Research Board is far more significant than just the dollars it provides for my company; it is a clear indication to my investors, who will be instrumental funding a solution based on this proof of concept, of the significance of the problem and the need of a solution.

Project Leader: Patrick A. Teagarden, 385 Freeport Blvd. #17 Sparks, NV 89431

Principal Investigators: Patrick Teagarden, MPS; Keith Cunningham, Ph.D

Cooperators: Kent McKenzie - California Rice Research Station Biggs, California

Objectives: 1. To determine of certain multispectral imaging technology can be applied to differentiate Red “Weedy” Rice and Commercial Rice in a lab environment. 2. To determine of an active emitter during daylight hours significantly increases the signal to noise ratio of the data acquisition. 3. The efficacy of acquiring data in night time conditions using the NIR LED light panel as the primary source of illumination.

Procedure:

1. Setup a single variety of weedy rice and m-206 rice in the greenhouse at the California Rice Experiment Station under the supervision of Kent McKenzie.
2. Plant 4 trays of M-206 rice, plant 4 trays of a single variety of weedy rice, plant 2 trays of M-206 with two weedy rice plants dispersed in the middle.
3. Setup a single multispectral camera with a filter wheel with 6-10nm filters at wavelengths that have through previous research been determined to be effective in differentiating rice varieties.
4. Acquire imagery data 24 hours per day, 7 days a week for approximately 60 days, or until the weedy rice growth must be discontinued per Kent McKenzie.
5. Analyze the imagery to determine throughout the life cycle of the vegetation when the two varieties can be differentiated and the effectiveness of the NIR light.
6. Determine the viability of developing an AI Neural Network solution for real time differentiation.
7. Develop a basic algorithm for differentiation of the two varieties.

The cost associated with this project are as follows:

Dr. Keith Cunningham, Remote Sensing Expert	10 hours	@	\$100/hr	\$1000
Dr. Stanley J. Smith, Algorithms Expert	20 hours	@	\$100/hr	\$2000
Ray Wilson, Artificial Intelligence Neural Networks	40 hours	@	\$70/hr	\$2800
Corey Upton, Technician	100 hours	@	\$35/hr	\$3500
	<b>Total</b>			<b>\$9300</b>

It is our intent to move forward with this research because it is a significant problem and business opportunity. Please join my company in the first steps in determining whether this spectral imaging technology can be applied in the mitigation of California Red Weedy Rice.

Thank You,

Patrick A. Teagarden, President AAPG  
 907 382-5276  
 alaskauav@outlook.com