Rice CGC meeting
February 27, 2000
Biloxi, MS

Minutes

The meeting was called to order at 2 pm.

Members present: Dave Mackill, Jim Oard, Jeff Oster, Farman Jodari, Rick Cartwright, Kirk Johnson, Christopher Deren, Anna McClung, Karen Moldenhauer, Allan Stoner, Harold Bockelman, J. Neil Rutger, Sarbagh Salih

Nonmembers present: Jim Correll, Rolfe Bryant, Fleet N. Lee, Hank Beachell, Brian Hamilton, Robert Miller, Georgia Eizinga, Thomas H. Tai, David Kohlwey, Donn Beighley, Bob Dilday, Steven Leath.

1. Curator' report.

Dr. Harold Bockelman, curator at the National Small Grains Collection in Aberdeen, ID, gave a report on the collection, including total number of accessions, accessions assigned PI numbers during the past year, and a list of rice descriptors. There was discussion about when material enters into the US collection. Accessions forwarded to permit holders are not entered into the collection.

2. Grain quality evaluations of the germplasm collection.

David Kohlwey (Riviana Foods) asked that the group consider screening germplasm entries for grain textural traits. During the discussion, it was mentioned that various grain quality characteristics were recorded on accessions in the past, but this was not being continued due to lack of interest. While it appears that this data is desirable, it would be necessary for one of the chemists to express interest in conducting the screening.

3. Presentation of Dr. Sarbagh Salih, USDA-ARS Plant Germplasm Quarantine Office (PGQO, Beltsville).

The PGQO has greatly accelerated the growouts of rice accessions over the past year. However, a large backlog remains, and will not be reduced signficantly with the current rate of growouts, which are limited by greenhouse space.
The currently used procedures now followed by APHIS and ARS in passing germplasm though quarantine are:

APHIS treats seeds in hot water for 15 minutes at 56 C.
Seed is forwarded to ARS.
Seed is dehulled and checked for red bran. Dehulling could help eliminate pathogens.
Seed is surface sterilized in 10% bleach for 2 hours.
Seed is then incubated on PDA+1/2 MS salt medium at 22 C, 16 hours light for 2-3 weeks.

Seedlings free of microbial contamination are transferred to the greenhouse for seed production. Nine-inch pots are spaced 2 feet apart and inspected by APHIS during growout.

Panicles are harvested, seed cleaned and dried, and forwarded to the requestor and the US collection (5g).

This procedure is very safe, but slow (limits accessions processed to 250/year). No pathogens have ever been found on plants during the greenhouse growout. Sarbagh then presented proposed changes to this procedure based on Dr. Mew's report. This included the following:

Eliminate the hot water treatment.
Dehull seeds.
Surface sterilize in bleach.
Germinate on PDA+1/2 MS medium for 7-10 days under conditions specified above.
Send plantlets free of microbial contamination to requestor.
Post-quarantine nursery to be supervised by recipient (greenhouse or field?).
APHIS or state to inspect plants during growout.
Recipient harvests seed.

This would allow annual volume to increase to 1000 or so introductions, enable the recipient to evaluate plants for expected characteristics, and limits PGQO job to quarantine and not seed increase.

Questions for implementation of the proposed procedure include:

When should release of accessions by PGQO occur—at seedling stage or at harvest?
How long should remnant accession seed be kept after seedling distribution?
How many seedlings should be shipped?
Who will do growout for the repository?
Should an aliquot of accessions processed through quarantine be sent to the repository?
How should work be scheduled at PGQO to accommodate requestors (ie, spring or winter growout)?
What will be the cost of shipping plantlets?

PGQO staff changed, with Kevin Donnelly replacing Jean French. Construction is still under way which will result in 50% more greenhouse space, but will not be complete for a year or more. Rice is viewed as a crop of secondary importance in these facilities.

4. Revisions to quarantine regulations.

This topic occupied the remainder of the meeting. Dr. Kirk Johnson began by requesting that the CGC consider a proposed revision of quarantine regulations that would allow private breeders to import brown rice samples directly without going through APHIS. All required procedures would be followed, with inspections of the plants before release from quarantine. Discussion of this suggestion was postponed until after consideration of proposed revisions to quarantine.

As a follow-up to the quarantine project, which include the review conducted by Tom Mew and the discussion held in Stuttgart in December 1999, there were presentations of data collected by Sarbagh Salih, Don Groth, and Toni Marchetti.

Dr. Salih presented results on the effects of hot water treatment on germination and microbial contamination. Variables included 10% or 30% bleach, 1 or 2 hour bleach treatment time, and seed dehulled or not. Hulling seed decreased contamination, hot water treatment did not make

much difference, and 30% bleach resulted in less contamination. If hot water is not used, remnant seed can be stored longer without suffering a decline in germination.

Don Groth reported on methods of rice seed sterilization. He used two seedlots—mixed seed from different field plots, and foundation seed of Cypress. Paddy rice, brown rice, and hot water treatments all showed high levels of contamination. Bacterial contamination increased after hot water treatment. Bleach treatments resulted in mostly sterile seed. Hot water appears to be a redundant treatment, and dehulling must be done to assure effective sterilization. Don prefers agar to blotter incubation for ease of microbial detection. This may be important especially to people not experienced in the use of the blotter test.

Dr. Marchetti compared blotter incubation to agar incubation. He surface sterilized seed with 20% bleach for at least an hour. He believes blotter paper evaluation is just as good and easier than agar. He favored hot water treatment (although this was not part of his experiment) because of better control of storage fungi.

Dr. Steven Leath of USDA-ARS presented the possibility of using a growout site in eastern North Carolina to help in eliminating the current backlog held at Fort Collins. Growouts had been done in Imperial Valley many years ago, but the site was not ideal for rice. Some concern was expressed about the North Carolina site even though it is isolated from present rice growing areas. It could be that rice pathogens are dormant at this site, and this could result in confusion about the origin of a pathogen if detected during a growout at this site. It was suggested that a diverse sample of rice cultivars be planted this season after being sterilized so no diseases would be introduced. This experiment will be coordinated between Bob Dilday and Harold Bockelman with assistance from Fleet Lee for assessment of rice diseases.

It was apparent from the above presentations that (a) dehulling was essential for the effectiveness of the surface sterilization procedure with bleach and (b) hot water treatment did not really add anything to this procedure. The committee subsequently considered two motions. The first recommended complete release of plant materials from quarantine after dehulling, surface sterilization, germination on agar medium and removal of contaminated seeds. This motion was defeated by a vote of 7 to 5. A susequent motion recommended the following: (a) dehulling, surface sterilization with bleach (<u>25% for 2 hours</u>), and grow out on agar medium (a blotter test could be substituted for those experienced with this method), (b) removal of seedlings showing any sign of bacterial or fungal growth, (c) dispatch of the seedlings to the importer (for accessions being processed through the PGQO), growing the plants in a normal greenhouse with inspection by the appropriate authorities and release from quarantine upon harvest of the seed. The CGC would recommend the removal of the requirements for hot-water treatment and autoclaving of plant parts and uncontaminated media after harvest.

Under the proposed changes, the quarantine grow-out could occur in a field nursery under sufficient isolation. At this stage, if was felt that this nursery should be in an area where disease incidence was low or non-existent to avoid confusing diseases resulting from seed-borne inoculum with diseases from external sources. The committee may wish to reconsider the issue of release from quarantine directly following the agar germination because no diseased plants have ever been detected from seedlings that show no disease symptoms after this stage. This issue should be kept on the agenda for subsequent CGC meetings.

Regarding Kirk Johnson's proposal to allow importers to receive brown rice samples direct from overseas sources, the Chairman will check with APHIS to see if this alternative would be allowable.

It was decided that the chairman will develop a draft proposal to APHIS with the recommended changes. The draft would be submitted to CGC members and pathologists for comments, and the proposal would be submitted to APHIS after CGC approval. The chairman will also circulate a list of pathogens to be excluded for comments. The finalized list will be submitted to APHIS for incorporation into the rice protocol.

5. Membership.

The following four CGC members rotated off the committee following this meeting: Chris Deren, Farman Jodari, Anna McClung, and Jeff Oster. The chairman thanked these individuals for their service over the past six years. He submitted the following names as potential replacements for these individuals for new six-year terms:

Jim Correll (replacing Jeff Oster as one of the two rice pathologists on the CGC
Georgia Eizenga
James Gibbons
Barry Tillman

The committee members unanimously approved these four individuals. The new membership list is attached.

The meeting was adjourned at 5:10 pm.

Submitted by:
David J. Mackill
Chair

Appendix I. Current CGC members with year term ends in parentheses.

Dr. David J. Mackill (2002) USDA-ARS-PWA Dept. of Agronomy and Range Science University of California Davis, CA 95616 djmackill@ucdavis.edu	Dr. Kirk Johnson (2002) Agrevo 3926 Yana Place Davis, CA 95616 kirk.johnson@agrevo.com
Dr. Rick Cartwright (2004) Cooperative Extension Service University of Arkansas PO Box 391, 2301 S. University Avenue Little Rock, AR 72203 rcartwright@uaex.edu	Dr. Karen K. Moldenhaur (2004) Rice Research and Extension Center University Of Arkansas P.O. Box 351 Stuttgart, AR 72160 rrec_kmolden@futura.net
Dr. Jim Oard (2004) Louisiana State University M.B. Sturgis Hall Department Of Agronomy Baton Rouge, LA 70803 joard@agctr.lsu.edu	Dr. David Kohlwey (2004) Riviana Foods 2777 Allen Parkway Houston, TX 77019 dkohlwey@riviana.com
Dr. James Correll (2006) Plant Pathology Dept. University of Arkansas Fayetteville, AR 72701 jcorrell@comp.uark.edu	Dr. James Gibbons (2006) Rice Research and Extension Center University Of Arkansas P.O. Box 351 Stuttgart, AR 72160 jgibbon@comp.uark.edu
Dr. Georgia Eizenga (2006) Dale Bumpers National Rice Research Center PO Box 287 Stuttgart, AR 72160 geizenga@ag.gov	Dr. Barry Tillman (2006) RiceTec, Inc. PO Box 1305 Alvin, TX 77512 btill@Ricetec.com
Dr. Harold Bockelman, Ex-officio Ex-Officio USDA, ARS, PWA, NSGC PO Box 307 Aberdeen, ID 83210 nsgchb@sun.ars-grin.gov	Dr. Sarbagh Salih, Ex-officio Ex-Officio Plant Germplasm Quarantine Office Building 465, Entomology Road Beltsville, MD 20705 ssalih@ars-grin.gov
Dr. Allan K. Stoner, Ex-officio Research Leader/CGC Coordinator USDA, ARS, BA, NGRL Bldg. 001, Room 127 BARC-WEST Beltsville, MD 20705 ngrlas@sun.ars-grin.gov	Dr. J. Neil Rutger, Ex-officio USDA, ARS, SPA National Rice Germplasm Center PO Box 287 Stuttgart, AR 72160 jnrutger@futura.net
Grain Crops National Program Leader (Vacant) USDA, ARS, NPS, PS 5601 Sunnyside Avenue Beltsville, MD 20705	Mr. Mark A. Bohning, Ex-officio CGC Facilitator USDA, ARS, BA, NGRL Bldg. 003, 4th Floor Beltsville, MD 20705 dbmumb@sun.ars-grin.gov