Minutes:
RiceCAPs Meeting on Data Collection, San Deigo, January 15, 2004

Rice Caps Members Present:
Clare Nelson, Shannon Pinson, Anna McClung, Jim Oard, Yinong Yang, Yulin Jia,
Guo Liang, Henry Nguyen, Jim Correll.

Cooperators & Advisors present:
Pankaj Jaiswal, Gramene/Cornell
Molly Fogleman, Gramene Outreach
Georgia Davis, U. Missouri
Rodante Tabien, Texas A&M
Susan McCouch, Cornell University
Kay Simmons, ARS National Program Staff.

The meeting was brought to order by Jim Correll at 8:00 AM.

The first topic of discussion was the protocol for data collection and field experimental design for the Milling Yield I (MY1) population that will be planted in 2005. Jim Oard, Shannon Pinson and Anna McClung developed an outline of the experimental plan to lead the discussion: This outline is included at the end of the minutes (below). It was decided that the experimental plan and any modifications made to it would also be discussed with rice breeders at the Feb 17 Stoneville MI, Breeders Meeting, so that their input could be included.

The group discussed the number of families that should be used in the MY1 field planting. There are roughly 500 lines available. It was decided lines with poor seed or very late maturity would be discarded. The group thought that 300 lines would be a good number and also that two planting dates would be good, with one serving as a backup in case of problems. We also discussed with Susan McCouch and Georgia Davis the Pro’s and Con’s of using two replications/line. It was decided that two replications x 300 lines x two locations would probably not be feasible for harvest and analysis of all the desired traits. One concern was that not including two replications would interfere with the publication of the data. Clare Nelson volunteered to consult with Bill Beavis on the topic of replication. Susan McCouch suggested in the future we might consider doing all the markers on as many lines as possible and picking the best individuals for mapping based on the recombination patterns among the progeny. Getting the number of lines down this way would allow us to replicate. Todd Vision has developed some software that will allow us to minimize the number of lines to use. This will make the phenotyping more feasible. The group decided this should be considered for the MY1 population if it is possible to generate the marker data before it is time to harvest the material. We also briefly discussed whether one years data was sufficient, or whether replication over two years would be better and more publishable.

Several agronomic treatments or conditions were discussed and it was also decided the breeder group would be consulted. Some efforts will be made to standardize agronomic practices between sites, but some differences will remain and their effects will be included in location effects.
Detailed Methods for measuring heading date, and height, tillering, lodging, and harvest date were discussed. This will be standardized by having Texas people visit Louisiana while the Louisiana group is scoring in the field. Variance in kernel moisture will be calculated at harvest with a single kernel moisture calculator.

Anna indicated there are small differences in the way different locations derive milling yield estimates, so this needs to be standardized as well as possible. It won’t be possible to have one location do all the milling yield data.

We also talked about the MAS workshop. The scientific board suggested we consider having two workshops, one being more introductory. We decided to coordinate the first workshop with the next board meeting in early June. The workshop will last probably three days. There is a MAS workshop in IRRI in February that we decided we should send a representative to. The group decided that Shannon Pinson would be an ideal representative from our group to attend the MAS meeting to see what we can learn from that workshop.

The meeting was adjourned at 10:30 so that members could attend the Rice Functional Genomics Workshop.
OUTLINE:
Discussion Ideas for Data Collection of CPRS/RT0034 MY1 Cross in 2005

MY1 Population
CPRS/RT0034 = 65% x 40% milling yield
Received 500 F11 Lines, approx 300 g F12 Seed/line produced in 2004
Use Wx and one other marker to eliminate any families with non-parental alleles
Eliminate extremely late flowering families or those lacking in enough seed
Identify 300 families for planting in 2005
Run germination test on a subset of families, estimate planting rate to get proper stand

Planting and Cultural Management

**Planting**
Plant 2 Loc = in LA and AR
Plant Date 1 at each loc = Plant 3-4 weeks after optimum planting date for each location to insure fissuring in susceptible lines
Plant date 2 at each loc = approximately 2 weeks after Plant date 1, as a backup for “environmental event”, managed throughout season? Decision at heading?

**Plot Size**
3 row plots x approx 12 ft initially, trimmed to 10 ft, to give 8 ft of harvest area without edge effects (=1050 rows)
or
2 row plots x approx 12 ft initially, trimmed to 10 ft, to give 8 ft of harvest area without edge effects (=700 rows)
or
1 row plots x approx 12 ft initially, trimmed to 10 ft, to give 8 ft of harvest area without edge effects (=350 rows)

10” between rows
Need to produce about 300 g/plot
Plots will be overseeded
Center row of 3 row plot will be thinned to 1 plant/2 inches for uniform stand
Thinning will occur after full emergence, about 2-3 leaf stage
If center row has poor emergence, a border row can be used
Plot will be dropped if stand is less than 1 plant/2 inches

**Cultural management**
Soil fertility test prior to planting
Fertilizer application –
   Amount – recommended for each location?
   Timing – one application at planting?
Weed management – Command and others as necessary
Water management – keep flooded through harvest to insure no differential impact on dry down
Pest management –
Fungicide application in preventative manner, same for both locations?
    Quadris? – GEM?
    Tilt? - NBLS
Karate application at flood for water weevil
Stink bug control - ?

Experimental design

Experimental design and layout, predetermined randomizations for both locations and sent out
Unreplicated plots
Repeated checks of parental lines throughout field for environmental control
Repeated rows of same parental lines in one area?
Three repeated planting of parents over time (2 weeks of expected heading window) in adjacent blocks – weather over time effect

Pre-harvest Traits for Measurement

Collect weather data from planting through harvest, weather station in field?
All data collected on center row of 3 row plot, and center 8ft of the 10 ft row to avoid edge effects
*Date of planting for field
*Date of emergence for field
*Days to first heading – date first plant in row has one panicle with extruded anthers (days to head calculated from emergence date)
*Days to last heading - date last plant in row has one panicle with extruded anthers(days to head calculated from emergence date)
*Plant height – approx 2 weeks post- last date of heading, record 3 measurements from soil surface to tip of tallest panicle, cm
*Tillering – approx 3 weeks post last date of heading, count number of tillers at approximately 2 ft above ground in a 1 meter length of row
    *Oard – will determine number of productive tillers in this region (>50% seedset)
*Lodging - % of plot lodged (leaning but not in water), if plot is severely lodged, don’t harvest and prevent it from falling on adjacent plots by cutting or stomping down
*Date of harvest – date 90% of the panicles have 90% of seed ripened (optimum maturity) (days to harvest calculated from emergence date)

Harvest Methods and Traits

Need to produce about 300 g rice/plot
Hand harvest 8 ft section of center row of each (3 row) plot at appropriate harvest date
Thresh same day using stationary thresher
Remove excessive plant material by hand
Pull 2 g subsample for moisture analysis, place in labeled zip-lock
*Use CTR 800 record individual kernel moisture on 50 ker, record all individual
kernel data (AR and TX have equipment) (verify calibration of CTR 800 prior to
harvest)
Dry samples in cloth/paper bags using forced air to 12%
Transfer to zip-lock bags for storage
Storage conditions until milling?

**Post-harvest Processing and Traits**

Cleaning of samples to same degree, by one location?
Storage conditions prior to milling?
*Send 1 g cleaned sample to Beaumont in zip-lock for oven moisture at milling
*Send 5 g rough rice to AR, dehull, determine grain dimensions (L, W, T) on
brown rice, % chalk, % greens, 100 kernel weight, kernel volume (3D aspect)?,
record raw data
*Send 5 g rough rice to Beaumont for grain lipids, and grain protein analysis
* Send 10 g sample rough rice to Jodari for field fissuring and induced fissuring
Send samples of any long grain to test milling equipment at two locations or
conduct all milling at one location
Review protocols for cleaning, milling, and separating samples
*Determine hulling percentage, total, whole milled rice using 125 g rough sample
*Send 2 g whole milled rice to Beaumont –
  Amylose ?
  Alkali spreading value ?

**Marker analysis**

Beaumont produces bulk DNA for TX and KS
Beaumont runs 150 current labeled markers against parents
Nelson identifies candidate genes etc
Hulbert tests additional markers from Oard and Nelson ?
Identify 200 polymorphic markers to 300 evaluate progeny
Beaumont evaluates progeny with markers
All data sent to Nelson via template spreadsheets