Minutes of the CFGRP Advisory Council Meeting held May 5, 2004

**Announcements**

The members of the CFGRP presented Dr. Tim White, director of the School of Forest Resources and Conservation, a plaque in appreciation for his service as director of the Cooperative Forest Genetic Research Program from March 1986 - August 2003. Tim’s innovative leadership in the CFGRP will be valued for generations to come!

**CFGRP Year in review:**

Greg Powell highlighted the many CFGRP accomplishments for the year and outlined future activities.

1. The CFGRP had a very busy and productive year! Volume measurements were taken on 124 full-sib slash pine block plots; 128 3rd cycle forward slash pine selections were made; 60 elite hybrid selections were made; 23% of the main population breeding was completed the first year after top grafting; and needle samples were taken from 31 Florida loblolly pine selections for the Founders Project.

2. Some of the activities scheduled for the coming year are: 1) Top grafting release on this past winters top grafts; 2) Fertilization, weed control in the PMXII and Florida loblolly pine tests; 3) This winter we will complete the top grafting and continue breeding the 3rd cycle slash pine selections; and 4) We will continue to clone bank the new elite hybrid selection and Florida loblolly pine selections.

**Discussion:**

Six topics were discussed at this year’s round table discussion.

1. The changing role of the CFGRP staff. Historically, the CFGRP staff has provided strategic planning, technical support, conducted supportive research, data management and analysis. In addition to these activities, the CFGRP staff has taken on more field activities
the last two years including test establishment, test measurement, top grafting and breeding. This has resulted in higher operation cost and less availability of CFGRP staff for cooperator visits. CFGRP members have agreed to help with staff field activities and pay travel expenses when staff visits members to help with their field activities.

2. A proposal was made and passed to combine the annual contact meeting and annual advisory council meetings into one 2 day annual meeting. This two day annual co-op meeting will take place in early May and will be hosted by a CFGRP cooperator as determined through a rotation method.

3. The question of how to effectively determine where to deploy rust resistance slash pine seedlings was discussed. After much discussing it was decided that CFGRP staff would collect as much information on rust hazard zones as they can from co-op members, USFS, DOF, and UF and report recommendations to CFGRP cooperators.

4. A proposal was made and passed to add straightness to future CFGRP progeny test measurements. This is already done by the WGFTIP and NCSUITIP for loblolly pine. Straightness measurements is becoming more and more important as we go through each cycle of breeding and testing because of inbreeding depression. Clem Lambeth of Weyerhaeuser company agreed to assist with teaching CFGRP members the Weyerhaeuser method of measuring straightness at the next CFGRP annual meeting in May 2005.

5. The question was asked, “Is it time to establish a 3rd cycle slash pine seed orchard?” and the answer is yes! Information is now available for choosing excellent 3rd cycle selection to be used in the establishment of new seed orchards. CFGRP staff is available to assist all members with clonal selection and seed orchard design.

6. Themes for the next CFGRP annual meeting were discussed. Potential topic included pollen handling, breeding and straightness measurements. It was decided to wait until later in the year to decide on the meeting theme.

**Fiscal Matters:**

The actual budget for fiscal year 02-03, the projected budget for fiscal year 03-04 and the proposed budget for fiscal year 04-05 were presented. The proposed budget for 04-05 was accepted without change.

**Genetic Architecture of Rust Resistance**

Dr. John Davis, a School of Forest Resources and Conservation faculty member gave his report on the genetic architecture of rust resistance. Dr. Davis asked the question “is Fusiform rust resistance inherited simply (monogenic) or is resistance inherited quantitatively (polygenic)”. The answer to both questions is yes! He then explained each type of resistance and the need for future cooperative research on rust resistance. It was agreed that the CFGRP would allocate up to $1,000 from their 04-05 budget to work on this project.

**The CFGRP Slash Pine Hybrids (P-30)**
Dr. Dudley Huber presented a report on the CFGRP slash pine hybrids 8th year results and future opportunities for research. The report indicated the value of the genetic merit of the maternal slash pine parent in the performance of hybrid taxa. The primary opportunity presented was the infusion of alleles from hybrid taxa into slash pine using backcross breeding and molecular markers. The cooperative agreed to support this research. Dr. Clem Lambeth indicated that future research in these areas might require creation of an intellectual properties agreement for the cooperative. The staff will pursue drafting such an agreement.

**CFGRP 3rd Cycle Slash Breeding and Testing (P-72)**

Dr. Dudley Huber outlined the CFGRP 3rd cycle slash pine breeding and testing plans for the mainline and elite populations. For mainline breeding, the target is to breed 36 parents in a circular mating design for a total of four crosses per parent and 72 crosses per breeding group, 720 full-sib crosses in total. For elite breeding, the target is to breed 6 elites from each in breeding group in a circular mating design within a superline, 5 crosses per elite and 15 crosses per subline for a total of 75 crosses each for the orange and blue superlines. One hundred seeds per cross are needed for both mainline and elite progeny testing and selection.

Both mainline and elite populations, will be tested in the same progeny tests. The target is 10 tests with 5 complete replications each, or an equivalent multiple of tests and replications for a total of about 4000 trees per test with borders. Scheduled measurements are first year survival and rust, 6th year height, dbh, rust and straightness.

**Director ST300, Machine for Measure Wood Stiffness**

Dr Gary Peter introduced a new machine that uses ultrasound to measure wood stiffness. He asked if the CFGRP would be interested in cost sharing this machine with SFRC, FBRC, CFGRP and his monies. This machine which is made by Fibre-gen, costing $9219, can be used in the field on standing trees as well as in a laboratory setting. It was agreed that the CFGRP would supply $1500 from the 03-04 budget to help pay for this machine.

**Top Grafting 3rd Cycle Slash Pine (P-69)**

CFGRP graduate student Alex Medina presented the results from the first year after top grafting measurement for the 3rd cycle slash pine (P-69). Mean 1st year survival was 74.6%. One of the main known sources of variation in survival was interstock effects with 18% of the total phenotypic variance. The variation due to the interaction between interstock and Permnum was 10.5%.

Total male flower production was 5067 strobili, with an overall mean of 2.7 flowers per living graft. The interstock and its interaction with crown position were the most important known source of variation with 12.9% and 12.4% respectively. The permnum and its interaction with interstock variation was 9.6%. There was a significant differences in male flower production among cooperators and crown positions.

Total female flower production was 2701 strobili, with an overall mean of 1.5 flowers per living graft. The differences among top grafted selections was the main source of variation with 20.2% of the total phenotypic variation. The difference in the mean female flower production is strongly significant with a clear trend of increase female flower production.
from the mid-crown to the top of the crown.

**Shoot Elongation Patterns and Genetic Control of Height Growth in Pinus taeda Using Replicated Clonal Trials (P-71)**

CFGRP graduate student Liliana Parisi introduced her masters research on shoot elongation patterns and genetic control of height growth in *Pinus taeda* using replicated clonal trials (P-71). The objectives of this study are: 1) Determine whether clones differ in the timing of growth initiation or cessation; 2) Determine the relative contributions of the different flushes to total height growth; 3) Determine the number of stem units and mean stem unit length per flush; and 4) Estimate genetic parameters, genetic architecture and seed source effects for phonological characteristics. For this study, Liliana is measuring two sites, 4,500 trees per site, several times during the growing season.

**Optimal Design and Analysis of Clonal Forestry Trials Using Simulated Data (P-68):**

CFGRP graduate student Salvador Gezan gave an up-to-date report on his doctoral research on determining “optimal” methods for design and analysis of clonal forestry trials using simulated data. The study is divided in three stages.

The first stage considered traditional experimental designs. Some of the conclusions are that for the same trial size higher heritabilities are found for single-tree plots (STP) than on four-tree row plots; for STP Row-Column design is the best option; lower heritabilities are found on patchy surfaces; a 25% mortality does not produce significative changes on the heritability; and the use of post-blocking gives almost the same results than blocking at time of design.

The second stage, used different techniques to model spatial variation compared with the traditional experiments using tests simulated for STP. Here again, Row-Column designs gave the best results. The use of autoregressive models was better than incomplete blocks, and when the nugget was included better fit was obtained for the models. None of the different covariate models fitted was very successful.

The third stage is currently in progress. Its general objective is to use a series of simulations to discriminate conditions under which clonal testing over multiple sites is improved for different number of families, clones and ramets, levels of GXE interaction and site heterogeneity patterns for a fixed amount of resources (ramets).

**Executive Committee:**

The executive committee now consists of: Mark Davis, Chair; Paul Belonger, Future Chair Early McCall, Past Chair. Our thanks to the 2003 executive committee (Early McCall chair, Mark Davis future chair and Mike Cunningham, Past Chair) for their leadership during the past year and special thanks go to Mike Cunningham who will rotate off of the CFGRP executive committee after serving for three years.