

Plant Breeding, Genetics and Physiology Program

Minutes of meeting held on Thursday, Feb. 16, 2006

Attendance: Ariel Castro, Patrick Hayes, Jennifer Kling, Glenn Howe, Shawn Mehlenbacher, Oscar Riera-Lizarazu, Mary Slabaugh, Steve Strauss, Isabel Vales

Agenda

- Review current curriculum - What can we do with existing resources?
 - to address critical needs
 - to achieve better integration across departments
- Review the Program proposed by students in 2004
 - Is it attainable?
 - Does the plan need to be modified?
- Discuss possible models for administering a Plant Breeding, Genetics, and Physiology Program
- Identify additional resources that may be needed
- Identify next steps towards implementation of the Program

OSU is well-placed to offer an interdepartmental graduate degree program in Plant Breeding, Genetics, and Physiology, given the diversity of crops and environments that are important for agriculture and forestry in Oregon. The program should improve coordination and interaction across departments and enhance our ability to attract good students, faculty and funding.

J. Kling gave an overview of the strengths and weaknesses of the current curriculum (see the power point presentation for details) and highlighted some issues of immediate concern. The introductory Plant Genetics course has been offered as a slash course (CSS/HORT 430/530), but may be changed to a 400-level course in 2007. It was agreed that an introductory course for graduate students is essential. The plan developed by graduate students in 2004 includes three core courses in Plant Breeding, Genetics and Physiology that would be required for all students. One option would be to try to work with the Genetics program so that GEN 311 covers more basic plant genetics. Pat Hayes could then develop an introductory Plant Genetics course for graduate students that would go into more depth on topics relevant to plants.

The current weaknesses in staffing and course offerings in Plant Physiology were also discussed. Some felt that we should drop 'Plant Physiology' from the program name, because it is a misrepresentation given the current situation. The prevailing view was that we should use the PBGP program to leverage more support for this discipline, which is an integral part of plant breeding and genetics research.

A high turnover of faculty is expected in Horticulture in the near future due to upcoming retirements (Mock and others). A plant breeder may be recruited to work on introduction and improvement of ornamental crops. Erica Bakker will soon be joining MCB, providing additional expertise in Plant Genomics and Bioinformatics.

A comprehensive list of courses related to the PBGP was reviewed. Many of the courses included on the list are in the OSU catalog, but have no assigned instructor. J. Kling will visit with the departments involved to make sure that the information is accurate and up-to-date. Pat

Hayes agreed to work with her over the next month to develop a realistic plan of coursework for graduate students coming into the PBGP program.

Students in Horticulture are required to take HORT 512 'Discussions in Plant Science' once each year. This year, Jim Myers is focusing the course on Crop Domestication, and has about 12 students enrolled. The topic he will be addressing in HORT 512 next year is 'Intellectual Property in Plant Breeding'. Jim also plans to develop the Crop Domestication material into a 3-credit course.

Isabel Vales and Oscar Riera-Lizarazu will be offering the 3-credit series on DNA fingerprinting, mapping, and QTL analysis (CSS 620, 621, 622) in Fall of 2006.

CSS 630 'Current Topics in Plant Breeding' will be offered in a reading and discussion format in Spring, 2006. Glenn Howe will take the lead in organizing the course, with commitments from J. Kling, Pat Hayes, and possibly Shawn Mehlenbacher to participate as instructors. It was agreed that this type of course is very beneficial for students, but that it could not substitute for a more formal course covering advanced topics in plant breeding.

John Henning was not able to attend the meeting, but sent written comments about the curriculum. He expressed concern that students may not be getting much exposure to conventional breeding techniques needed to run a plant improvement program, and that there is little emphasis on techniques used for cross-pollinating species. The group generally agreed with these concerns, and noted weaknesses in biometrics and quantitative genetics.

Based on experience teaching the CSS 650 Advanced Plant Breeding course last spring, J. Kling proposed that Population Genetics should be required as a prerequisite for the course, and that the course should focus on Quantitative Genetics in Plant Breeding and hands-on analysis of genetic data in a recitation. Another course or series of modules could be developed to provide practical experience in use of mating designs, selection techniques, breeding for disease and insect resistance, etc., including examples from Forestry. A suggestion to offer separate courses for cross-pollinating and self-pollinating crops was not widely endorsed, because many species are readily adapted to both mating systems and students must be prepared to work with any type of crop.

Glenn Howe intends to offer a 3-credit course in the Fall of 2006 that would cover Genetics of Natural Populations and Ecological Genetics. This should help to fill a recognized need to give students more exposure to techniques for studying whole systems.

The need for Plant Breeders to develop skills in data base management and use of information technology was also highlighted.

The main features of the students' 2004 proposal for a Plant Breeding, Genetics and Physiology Program were briefly reviewed and endorsed by the group. An immediate effort will be made to provide information to students and faculty about the PBGP curriculum, and to look for synergies across departments, pending implementation of a formal program. A better definition of the core curriculum should be available by the end of March. Isabel Vales offered to assist J. Kling in investigating potential linkages with other universities and initiatives for training plant breeders around the world.