

Weeden Received Promotion

GENEVA, N.Y.—Norman F. Weeden was promoted to full professor in the Department of Horticultural Sciences at Cornell University at the New York State Agricultural Experiment Station in Geneva, N.Y.

"Weeden is an excellent cooperator and a leader as we enter the era of bioinformatics," said Hugh C. Price, chairman of the horticultural department. "He has pioneered the development of genetic mapping for peas and apples, which has broad application in plant science. He has shown how molecular biology can be used to expand our understanding of the plant genome."

Weeden was an early adopter of molecular techniques to develop genetic maps of horticultural crops. Today he is a recognized specialist in the use of plant genetics. The current focus of this research is the use of molecular markers to tag genes in a number of cultivated species for marker-assisted selection purposes. A highly saturated genetic map for pea has been developed under Weeden's leadership. Markers have been identified for genes that confer or contribute to the resistance to seven

viral or fungal diseases affecting peas. Weeden is chair of the Linkage Map Committee of the Pisum Genetics Association that coordinates mapping efforts in peas worldwide.

"I am honored to have received this promotion," said Weeden, "and very appreciative toward Cornell and the faculty that they find my work useful and interesting." Weeden further explains that plant genetics is a hot field in biotechnology. Through DNA analysis, one can manipulate simple inherited characteristics to help understand more complex ones. He has done most of this work studying peas "because peas represent a good model system for what I am trying to investigate, plus they are easy to grow and cross," he said.

The work Weeden is performing is of great use to commercial growers in developing more efficient crop breeding practices. One of the most important projects is to develop pea varieties tolerant to common root rot, which is caused by a fungus and considered a significant problem in the Northeast. If crops are not properly rotated, the fungus

becomes abundant in the soil and will kill pea plants before they produce seed. It is extremely hard to directly screen for the various genes that influence tolerance and susceptibility, but by "tagging" these genes with easily scored DNA markers, one can make crosses, select for the markers, and develop new varieties with a high level of tolerance.

Weeden has co-invented a machine for DNA extraction—a machine that breeders can use on their own to prepare DNA samples. The machine takes 96 samples at a time and crushes them in less than five minutes using electromagnetic force. The resulting extracts, after dilution, are ready for PCR, where specific genes are multiplied so that their presence can be easily detected by chemical screening. Five laboratories around the world are testing the machine.

Norman Weeden was graduated with a bachelor's degree from Stanford University in 1969, with a masters in biology from Humboldt State University in 1973, and a doctorate in genetics from the University of California at Davis in 1981. He came to Cornell University as an

assistant professor in 1982 and was promoted to associate professor in 1988.

Weeden is a member of the American Society for Horticultural Science, the American Genetics Association, the Botanical Society of America, and the Society for the Study of Evolution. He has

served as associate editor for the Pisum Genetics Association since 1992 and associate editor of "The Journal of Heredity" since 1987. His numerous publications discuss the development and applications of DNA and molecular markers, among other topics.

Residents Learn About Water Quality

HACKETTSTOWN, N.J.—Two recent workshops educated citizens in Hunterdon and Warren counties using forest buffers to protect water quality.

Sponsored by the North Jersey Resource Conservation & Development Council (RC&D) and the Musconetcong Watershed Association, the separate workshops each carried the same agenda and speakers.

Designed to inform landowners and municipal officials about the benefits of establishing buffers along rivers and streams, the workshops explained how using a zone of trees and other vegetation, or riparian forest buffers, can reduce or prevent soil erosion, nutrient runoff, and improve stream health and wildlife habitat.

Fred Kelly, water quality specialist with the USDA Natural Resources Conservation Service, described how riparian buffers enhance water quality by maintaining the cooler water temper-

atures needed for optimum trout production with the shade from streamside forests.

Acting as a buffer, Kelly explained how the vegetation also absorbs nutrient runoff such as nitrates and phosphorus, along with sediment from agricultural fields, before they can enter the waterflow.

Kelly also discussed funding opportunities available to establish buffers. USDA cost-share programs that help landowners establish conservation practices on their property include the Environmental Quality Incentives Program and Wildlife Habitat Incentives Program.

Matt Hall, project specialist with the North Jersey RC&D reviewed the Musconetcong Buffer Inventory that he prepared two years ago, as well as the demonstration tree planting where volunteers planted 3,000 trees to establish a riparian buffer on a three-acre site owned by the Division of Fish, Game & Wildlife last spring.

Donna Drewes, coordinator for the North Jersey RC&D stressed the importance of municipal officials understanding the need for riparian forest buffers to maintain the water quality in all communities. Drewes gave examples of ordinances that have been passed requiring buffers to be planted alongside new housing developments, noting that land use planning and regulations need to have preservation and protection strategies to maintain the overall health of rivers and streams.

Carole Stober, a Lebanon Township resident who attended a workshop, owns about 900 feet of river frontage along the Spruce Run Brook. As a master gardener and a water steward with the South Branch Watershed Association, she is interested in keeping her township green.

"I am worried about new people coming in and not understanding about water quality," Stober said at the conclusion of the workshop.



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