

## Scientists Entice Trees to Yield

# FLOWERING SECRETS



By Karen Brasher

Unlocking secrets of the flowering process in trees is the goal of research under way in the College of Agriculture and Life Sciences and the College of Forest Resources.

Funded by a 2005 National Science Foundation grant, the project includes faculty from the departments of forestry and biochemistry and molecular biology. Also involved are research colleagues at Pennsylvania State and Virginia Tech universities, universities of Alabama and Florida, and at Umea University in Sweden.

"The initiation and formation of lower buds are critical events in life cycles of trees," said coinvestigator Cetin Yuceer, an assistant professor at the Forest and Wildlife Research Center. "Without flowering, there would be no seed formation for the propagation of subsequent generations."

The \$1.75 million NSF grant is specifically for work with the flowering process in poplar trees, but the results of the research will have applications to other species, including those that are important sources of food for wildlife.

Timely and adequate seed yields are essential for wildlife nutrition, Yuceer explained, adding that the poplar tree was selected for the project because it is the only tree with a previously sequenced genome.

"The goal of our research is to discover the major genes and their associated factors that regulate flowering in trees," said project investigator Dawn Luthe. "The information we gain from poplars can be applied to other tree species, such as oaks and pines."

The professor of biochemistry and molecular biology said the research will help scientists better understand why oak trees do not produce bumper crops every year. Additional benefits would include the manipulation of seed/fruit production, acceleration of breeding programs and increased production of woody biomass, she added.

The three-year project also will include the organization of biotechnology workshops for Mississippi high school teachers and for minority high school and college students.

The MSU scientists on the project team are excited about the dual-level benefits of the project—unearthing tree genome secrets to advance basic tree biology while exposing future scientists to cutting-edge research.

"On one hand, teachers will learn about recent technology developments in gene research, so they can transfer this experience to their students," Yuceer said of the outreach effort. "On the other, minority high school and college students will learn how to conduct research at early stages in their careers."

*Photos by Paul Wray, Iowa State University, [www.forestryimage.org](http://www.forestryimage.org)*



The genes that regulate flowering in poplar trees are the target of National Science Foundation-funded research at MSU.