Vegetation
Impacts Drainage Ditches

Jerry Farris

By Karen Brasher

Heavy showers can dump enormous amounts of rain in a short time and cause dangerous municipal flooding around businesses, homes and streets.

Robert Kröger knows the value of managing ditch vegetation for maximum protection of property and safety considerations. He is a new assistant professor and water management specialist with Mississippi State University's Forest and Wildlife Research Center.

Kröger was part of a team that recently evaluated Jonesboro, Ark., which, like many cities, experiences heavy storms that cause flooding from rainwater runoff. City leaders began developing a storm-water management plan with help from Kröger and scientists with the Arkansas Biosciences Institute and the U.S. Department of Agriculture – Agricultural Research Service.

Part of the reason for flooding is that low-lying Jonesboro is situated in three watersheds. Even with about 300 miles of ditches designed by the Federal Emergency Management Agency (FEMA), the area cannot keep up with the amount of water moving through during some storms.

"The goal of the project was to provide reliable information on the FEMA drainage ditches in need of urgent attention," Kröger said. "We evaluated more than 50 sites, and team members quickly noticed that many drainage canals had become heavily vegetated with water-loving wood species. While some could be properly maintained by city workers, other canals were too thickly congested with trees such as willows, sycamores and sweet gums."

Kröger said a maintenance strategy for all the ditches could be developed by understanding what types of vegetation were in the ditches and their proportion compared with grasses.

Woody species often collapse into a drainage canal, where they create debris dams. These dams and the woody debris caught along the edges of drains and box culverts during deluges are among the leading causes of municipal flooding problems.

"Our efforts, combined with planning by residents, city council members and other administrators, have contributed significantly to Jonesboro's improved storm-water management plan," Kröger said.

Jerry Farris of the Arkansas Biosciences Institute said the new comprehensive plan assigns rankings to the ditches: those suitable for drainage, those with intermediate woody vegetation growth and those requiring constant maintenance.

"The system allows planners to monitor and manage ditches that are prone to tree growth," Farris said. "Integrated management of mechanical drainage controls, along with herbicide treatments that stabilize the growth of native plant species, should lead to a sustainable and achievable maintenance of drainage canals for Jonesboro."

Kröger and Farris agreed that the proven Arkansas plan could serve as an example for other municipalities interested in formulating similar strategies.