

EXPLORING THE POTENTIAL OF RNA INTERFERENCE TO MANAGE WOOD-BORING FOREST PESTS

A McIntire-Stennis supported project
Emerging Project



Forestry and Natural Resources
College of Agriculture, Food and Environment

Both exotic and native insects are increasingly altering forest ecosystems and causing unprecedented economic losses. Innovative approaches to these problems are a focus of work at the University of Kentucky's Department of Entomology. One of these approaches, gene silencing, is being investigated to provide an alternative approach to traditional forest pest management. Direct suppression of forest insect pests is often impractical, unsustainable, and slow acting, and broadscale forest pest management is currently reliant on species selection and maintaining tree vigor. But these techniques are less and less effective in our rapidly changing forests, creating new challenges that warrant innovative approaches to pest management.

In response, this new project is evaluating the use of gene silencing as a means of suppressing forest pests. We've shown that gene silencing through RNA interference (RNAi) can cause rapid and extensive mortality of tree-killing beetles, and we're currently evaluating practical production and delivery approaches.



About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

COLLABORATION



Researchers from the University of Kentucky are working in partnership with the USDA Forest Service Southern Experiment Station, the Forest Health Research and Education Center, and the University of Georgia.



IMPACT

Developing innovative approaches using RNA interference could help manage native and exotic pests, potentially saving millions of trees and protecting tree and forest resources in the US.



> 85%

the rate of emerald ash borer mortality that could be avoided using RNAi to save trees and protect future forests.



Patent

under development for use of RNAi for emerald ash borer suppression.



Southern Pines

are under evaluation. RNAi can cause >75% mortality of southern pine beetle, potentially saving millions of hectares of southern pine forests.