

## **Non-technical Summary**

# **A Survey of Red Imported Fire Ant (Hymenoptera: Formicidae) Species and Social Forms Across Four Counties in East-Central Mississippi.**

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Within North America, "imported fire ants" refers not to a single species, but rather two species, the red and black imported fire ants, and to a hybrid between them. The zone of hybridization extends across central and northern Mississippi, north of I-20, into some portions of northern Alabama and southern Tennessee. The red and black imported fire ants and their hybrid are difficult to distinguish by appearance, and scientists are now relying on a variety of other methods, including gas-chromatograph (GC) analysis of cuticular hydrocarbons and venom alkaloids, to distinguish them. There are also two distinct social forms found within the North American populations of the red imported fire ants. The typical social form is the monogyne or single queen form, which has a single queen per colony and spreads reproductively by mating of males and females from different colonies. An alternate social form, the polygyne form, has multiple queens per colony and can spread by the budding of one colony from another. The polygyne form of red imported fire ants has been detected across their North American range, and is the predominant form in some areas of Texas and Florida. Where in the past, the social forms were distinguished by looking for multiple queens per colony, scientists have recently developed a test for a specific allele in the DNA that is associated with the polygyne social form in North American populations of the red imported fire ant. We have employed the GC methods for distinguishing imported fire ant species/hybrids and the test for the polygyne allele described above, to ants collected from four counties within the hybrid zone in east central Mississippi. The purpose was to discover the distribution of species and social forms across this area and to determine whether the allele associated with polygyny in the red imported fire ants can be found within hybrid colonies as well.