Texas Imported Fire Ant Research and Management Project

Final Progress Report - October 2001

Evaluation of potential imported fire ant quarantine treatments for hay bales.

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Hay producers: On file

Funding amount/2 years: $20,000

Summary of work to be done:
In cooperation with hay producers, this research will evaluate several treatments to attempt to prevent and eliminate fire ant infestations in hay bales in the field and in storage areas. Selected treatments include first treating large replicated plots in hay fields (range .9 to 2 hectares) with broadcast applications of registered bait-formulated insecticides and monitoring randomly selected hay bales produced in treated versus untreated areas for fire ant infestations over time. Second, we will evaluate the efficacy of treating areas *around* ant-infested bales of hay in storage areas with Amdro and monitoring for the elimination of ant infestations in stacked hay bales.

Progress Report

Major accomplishments to date (September 1, 1999 through October 31, 2001):

- Completed field studies in 2000 evaluating the efficacy of using broadcast ant bait applications in hay production systems.
- Treated three of the five plots that were used in 2000 with another broadcast bait application of Amdro® in 2001 to evaluate the efficacy of annually treating areas with fire ant baits in hay production systems.
- Set-up a controlled experiment to evaluate the efficacy of spot treatments of ant bait products (Amdro®) around stored hay bales in the field. Twelve stacks of hay were

placed in a fire ant infested field to become naturally infested with fire ant colonies. Six hay of these stacks were randomly assigned as treatment stacks. Hay treatments comprised placing five teaspoons, the single mound application rate, of Amdro® fire ant bait around each treatment haystack. Final results are still being collected.

Goals achieved/Milestones/Highlights:
We have completed the field evaluation tests comparing fire ant infestation levels in hay bales under treated and untreated conditions for 2000. Our results indicate that with a single broadcast bait application of an insect metabolic inhibitor (Amdro) the number of hay bales infested with fire ants was significantly lower (50%) in treated plots compared to bales in untreated plots. Cumulation curves of the number of bales infested over time indicate that initial ant infestation started within 1-3 days of post-baling and near peak infestation levels were reached within the first week.

Results from repeated applications are still being collected, however preliminary results indicate two things. First, that fire ants had reinvaded the previously treated plots after one year, and that the results from our second annual bait application were the same as in the first initial application. After a second annual treatment of Amdro®, hay bales in treated areas where infested 50% less than bales in control plots and the time to near peak infestation was within 1 week post baling.

Relevance to the Texas Imported Fire Ant Research and Management Plan:
Currently, the only USDA or TDA approved way to have hay or straw approved for shipment from fire ant quarantined counties to non-infested counties is to remove bales from the field immediately after baling and store them in an off ground location. This prevents hay that has been stored in the field in ground contact from being eligible for shipment. There are currently no USDA-APHIS or TDA approved quarantine chemical treatments for assuring that red imported fire ants are not shipped to new locations. This study, in collaboration with hay producers and the Texas Agricultural Extension Service, will develop and evaluate several treatment methods which will reduce or eliminate fire ant infestations in round and/or square bales.

Publication citations, Paper Presentation Citations and other Citable Products:

Poster Presentations
Evaluation of potential imported fire ant quarantine treatments for hay bales. Ronald D. Weeks, Jr., Micheal E. Heimer, Charles L. Barr, and Bastiann "Bart" M. Dress, Texas Agricultural Extension Service, The Texas A&M University System. 12th annual Texas Plant Protection Association Annual Meeting, College Station Texas 2000.

Evaluation of potential imported fire ant quarantine treatments for hay bales. Ronald D. Weeks, Jr., Micheal E. Heimer, Charles L. Barr, and Bastiann "Bart" M. Dress, Texas Agricultural Extension Service, The Texas A&M University System. Entomological Society of America, Annual Meeting, Montreal Canada, 2000.

Evaluation of potential imported fire ant quarantine treatments for hay bale operations. Ronald D. Weeks, Jr., Micheal E. Heimer, Charles L. Barr, and Bastiann "Bart" M. Dress, Texas Agricultural Extension Service, The Texas A&M University System. Annual Imported Fire Ant Research Conference, San Antonio Texas, 2001.

Proceedings Articles

Evaluation of potential imported fire ant quarantine treatments for hay bale operations. Ronald D. Weeks, Jr., Micheal E. Heimer, Charles L. Barr, and Bastiann "Bart" M. Dress, Texas Agricultural Extension Service, The Texas A&M University System. **Submitted** for publication in the Proceedings of the Annual Imported Fire Ant Research Conference, San Antonio Texas, 2001.