

# BIOLOGY AND CONTROL OF THE STABLE FLY (*STOMOXYS CALCITRANS*) IN GIN-TRASH

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## Abstract

Since 1992, burning of cotton gin-trash in Mississippi has been prohibited by clean-air laws. This has led to stockpiling and composting of gin-trash for later use as a soil amendment. The composting gin-trash has proven to be an ideal medium for stable fly development. Stable flies develop throughout the winter in gin-trash aided by the heat of decomposition. Cyromazine (Larvadex 2SL<sup>R</sup>) by Ciba Geigy Corporation has given excellent stable fly control when incorporated into the gin-trash. Cyromazine was used in Mississippi under a FIFRA Section 24:C registration until mid December 1995. The registration was canceled at that time by the U.S. Environmental Protection Agency.

## Introduction

Since 1992, burning of cotton gin-trash in Mississippi has been prohibited by clean-air laws. Gin-trash is now stockpiled and composted for use as a soil amendment or disposed of in various ways. The gin-trash used as a soil amendment is normally allowed to compost over winter and plowed under with spring field preparation.

The decomposing gin-trash has proven to be an excellent medium for development of the stable fly (*stomoxys calcitrans*). The stable fly is a biting fly of both man and animals. It closely resembles the house fly and is referred to as a "biting house fly" by many victims. It is not a filth-breeding fly but prefers decomposing plant material. The stable fly is a warm season insect normally. It normally overwinters as a mature larva, pupating with moderating temperatures of spring, and then emerging as an adult. Heat of decomposition in the gin-trash is speeding up the normal life-cycle of the stable fly, resulting in adult emergence throughout the winter.

Control of the stable fly in gin-trash is difficult. The surface of stockpiled gin-trash is somewhat impervious to water sprays and a registered insecticide with adequate residual action is not available. Cyromazine (Larvadex 2SL<sup>R</sup>) by Ciba Geigy corporation has given excellent control when incorporated into the gin-trash at the rate of two(2) parts-per-million.

## Materials and Methods

Treated and untreated gin-trash is being monitored weekly in the Mississippi delta. Monitoring consists of digging into the gin-trash at various sites observing for the presence of larvae or pupae. Observations for adults are made on and around the gin-trash.

Laboratory studies are ongoing with a laboratory strain of stable fly to determine the optimum rate of Cyromazine for control. Stable fly eggs are introduced into media containing varying amounts of cyromazine, and percent adult emergence is noted.

## Results and Discussion

Field monitoring demonstrates that all stages of stable flies can be found throughout the winter in untreated gin-trash. As many as sixteen (16) larvae and/or pupae per square foot have been found. The presence of pupae is particularly telling. Since stable flies overwinter as larvae, the presence of pupae means that development is continuing through the winter. Adults are evident at any time the temperature exceeds 55°F. The temperature has been found to range as high as 86°F just two (2) inches below the surface of stockpiled gin-trash - this when ambient temperatures are in the 50's°F. No stable flies have been found in cyromazine treated gin-trash.

Preliminary laboratory results indicate that one (1) part-per-million of Cyromazine in gin-trash may be a sufficient rate to control stable flies. This is one-half the rate we have been using in the field.

Cyromazine is water soluble and easy to use at those gins using a water injection system for dust control. The U.S. Environmental Protection Agency canceled the Mississippi special local need registration of Cyromazine for control of the stable fly in gin-trash in December 1995. The cancellation occurred because of lack of a cyromazine residue tolerance in gin-trash as a "feed stuff". A somewhat impractical view, however, the EPA is now viewing several by-products as "feed-stuff" and is requiring residue tolerance data on new pesticide product registrations.

Hopefully the registration problem will be resolved to ultimately allow the use of cyromazine in gin-trash for stable fly control.

Table 1. Temperature of composting gin-trash at various depths on November 17, 1995

Depth	Temperature
8 inches	123.8°F
6 inches	113°F
4 inches	102.2°F
2 inches	86°F

Gin-trash in place 5 weeks