pheromone was pinpointed by gas chromatography and electroantennogram analysis, and its molecular weight was determined. Gas phase IR was used to further characterize the compound's structure. Hopefully, the identification can be completed this winter, so that field testing during beetle flights can begin in 1999.

## A Parasitic Fly that Kills Mole Crickets: Its Use in States North of Florida.

**University of Florida**

*Dr. J. Howard Frank*

Start Date: 1998
Number of Years: 3
Total Funding: $26,680

Objectives:

1. *To explore farther south in South America (colder climates) to obtain stocks of the fly Ormia depleta, a natural enemy of the mole cricket.*
2. *To culture the captured South American flies in our laboratory and supply them to collaborators in other states for release.*

*Ormia depleta* is a tachinid fly specialist on some species of *Scapteriscus* mole crickets. It is native to Brazil and Paraguay. A stock of this fly, captured at Piricicaba in subtropical Brazil (about 23° S) was brought to Florida in 1987 and cultured in quarantine. Beginning in 1988, progeny of these flies were released in all areas of Florida in an attempt to establish a population - about 10,000 flies were released. A population became established in peninsular Florida and persists year-round to about 28°N latitude, and seasonally (the fall of each year) in a marginal area extending to about 29°N. Subsequent releases in Georgia, North Carolina, and Alabama did not result in establishment of populations there.

Although the established populations of the fly exhibit strong seasonality in Florida, with much greater numbers trapped in May-June and in November-December than at other times of year, the fly seems capable of breeding throughout the year. That is, there is no dormant period (diapause) in winter. In the laboratory, adult flies need artificial nectar as a dietary item. Thus, it seems that the established stock of the fly, from subtropical Brazil, fares poorly in winter in northern Florida perhaps because it is not adapted to diapause during those months of the winter when plant nectars are in short supply (after freezes).

The fly is known to exist in southern Brazil to 30°S. It is possible that flies at 30°S are adapted to withstand colder winters by entering diapause. Therefore, they might be expected to survive in the southern USA at 30°N, and perhaps much farther north. The objective of this project is to obtain a stock of the fly from extreme southern Brazil, bring it to quarantine in Gainesville, culture it, and provide stock to collaborating turfgrass entomologists in Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas.

In November 1998, two entomologists will travel to southern Brazil to spend almost four weeks collecting living *Scapteriscus* mole crickets as hosts for the fly. When scores of mole crickets have been assembled and maintained in containers in a laboratory in southern Brazil, flies will be trapped. Larvae of the flies will be reared on the mole crickets, and brought to the pupal stage. Fly pupae will be brought to quarantine in Florida for establishment of a laboratory culture. The timing of the visit (early summer) is based upon what is known about abundance and seasonality of *Scapteriscus* mole crickets and the fly in subtropical and temperate Brazil.

Work in 1999 will focus on labor-intensive culturing of several of the fly for distribution to other southern states.

## Best Management Practices for New Dwarf Bermudagrasses

**Texas A&M University**

*Richard H. White*

Start Date: 1998
Number of Years: 3
Total Funding: $69,989

Objectives:

1. *Determine the performance, mowing tolerance, and pest resistance of 15 experimental and commercially available bermudagrass and one zoysiagrass on a golf green.*
2. *Determine the effects of vertical mowing, topdressing, and nitrogen fertility on performance, thatch development, fall and spring overseeding trasition, and turf quality of five dwarf bermudagrasses.*

New dwarf bermudagrasses are, in general, more aggressive thatch producers than *TIFDWARF*. Judicious nitrogen fertilization will be required to slow the rate of thatch accumulation for many of the new bermudagrass cultivars. Nitrogen amounts greater than 10 pounds annually per 1000 square feet improved turf quality but contributed to increased thatch, decreased ball roll distance, and did not substantially increase shoot density. No differences in thatch accumulation have been observed among light (frequent) and severe (infrequent) vertical mowing and topdressing regimes. However, severe, infrequent vertical mowing reduced turf quality for long periods. Overseeded *Poa trivialis* establishment the first season was good for all grasses when light, frequent vertical mowing was applied during the growing season.

Several new-dwarf bermudagrasses provided good to excellent turf quality and were superior to *TIFDWARF* at 0. 125 inch mowing heights. Mean turf quality of *MINIVERDE, TIFEAGLE, CHAMPION, MOBILE, FLORADWARF, MS SUPREME,*