Nothing is known of the wild host range of beanfly in the Northern Territory.

Results
Spray trials to find an alternative to dimethoate were inconclusive. The formulation trialled was imidacloprid flowable, applied as a seed dressing. The formulation proved difficult to handle and it is unlikely to find commercial use in its present form.
A range of parasitoids have been reared from beanfly puparia, none of the parasitoids belonged to the genus *Opius*. The parasitoids reared from beanfly puparia collected on snake beans were; Pteromalidae sp? and Tetracampidae sp?, while those from puparia collected on phasey bean were; *Eurytoma* sp? and Pteromalidae sp?.

Cultivated host plants of beanfly identified were snake bean, *Vigna unguiculata* and phasey bean, *Macroptilium lathyroides.*

Wild hosts of beanfly are *Vigna radiata,* beanfly oviposited and completed its life history, *Vigna vexillata,* beanfly freely oviposited and fed on the oviposition punctures, but was unable to complete its life history. Both species of *Vigna* are indigenous to the Top End.

5.1.16 INTEGRATED PEST MANAGEMENT OF VEGETABLES WITH PARTICULAR REFERENCE TO SNAKE BEAN (*VIGNA UNGUICULATA)*

G Young and L Zhang

This project was undertaken to control two spotted mite and other bean pests by means of natural enemies and safe pesticides.

Two spotted mite (TSM), *Tetranychus urticae* Koch (Acarina: Tetranychidae) is the most serious pest of snake beans in the Darwin area usually limiting the productive life of the crop to less than 6 weeks. Two spotted mite is resistant to a greater or lesser extent to all of the available miticides.

A non chemical method of controlling two spotted mite is by the use of the Chilean predatory mite, *Phytoseiulus persimilis,* Athias-Henriot (Acarina: Phytoseiidae). The predatory is reared commercially in NSW and Queensland. When TSM appears on the crop predatory mites are released and the population of predators brings the TSM population under control.

Leaf feeders can be adequately controlled with either carbaryl, to which *P. persimilis* is resistant, or *Bacillus thuringiensis.*

The cowpea aphid can be controlled with pirimicarb which is only active against aphids.

Results
P. persimilis brought two spotted mite under control within three weeks of introduction to the crop, extending the productive life of the crop for up to five weeks

longer than normal. Two percent petroleum spray oil or the miticides fenbutatin oxide and propargite were used to retard the rate of increase of TSM and allow the predator populations to catch up with the prey. All of these substances are relatively non toxic to the predatory mite. Predators of two spotted mite recorded were; mites belonging to the families, Phytoseidae, Cunaxidae and Chaetodactylidae?; *Scolothrips ?sexamaculatus* (Pergande) (Thysanoptera: Thripidae); *Feltiella acarivora* (Zehntner) (Diptera: Cecidomyiidae).

5.1.17 MANAGEMENT AND CONTROL OF *MASTOTERMES* IN NORTHERN AUSTRALIA

L Miller(CSIRO), M Neale and M Hoschke (CSIRO)

The purpose of this project was to develop effective control methods against *Mastotermes darwiniensis* in horticultural crops that are environmentally sustainable and can be applied by growers or other persons non-expert in termite biology and control. Studies of the biology of the species are being carried out in conjunction with development and testing of control methods so that their effectiveness can be fully assessed.

Mastotermes darwiniensis Froggatt (Isoptera: Mastotermitidae) is the most destructive species of termite in tropical Australia. In Northern Australia this species accounts for about one million dollars in annual production losses within horticultural tree crops and also is responsible for losses in vegetable and agricultural crops. *Mastotermes* can cause major damage to buildings, wooden structures, electrical cables and a variety of other materials. The main chemical registered for use in horticulture against this pest is an organochlorine. With organochlorines being phased out it is necessary that other alternatives be developed.

Methods

A series of plots designed to monitor *Mastotermes* activity on a seasonal basis were established and monitored at regular intervals.

The data gathered show that there is a complex pattern of relationships between *Mastotermes* and other termite species, and between termite activity and temperature/rainfall, but that different termites respond to different environmental factors.

Selected plots are being treated with a variety of bait formulations and monitoring of activity will continue until October.

Suitable aggregation techniques have been developed to deliver the current bait substrate (see below) in large quantities to *Mastotermes* colonies. Preliminary trials with various baits have shown that, although termite activity can be reduced using alternative toxins, quantity of bait delivered is critical.

A bait substrate has been developed which appears to overcome repellency associated with otherwise promising bait toxins. Testing of toxins has been largely confined to