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## Occurrence of Groundnut Leaf Miner in Northern Malawi

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An outbreak of leaf miner (*Proaerema modicella* Deventer) (Lepidoptera: Gelechiidae) on groundnut (*Arachis hypogaea*) was noticed in Karonga Agricultural Development Division (ADD) in northern Malawi in April 2000. Leaf miner infestation was observed in all 17 farmers' fields surveyed in Kasowa, Baka, Ipyana, and Lupembe areas; however, the pest was very severe and destructive (>5 mines per leaflet) only in Kasowa area. Affected groundnut fields showed a burnt appearance from a distance due to shriveling and desiccation of leaves (Fig. 1). Mild infestation was also observed on pigeonpea (*Cajanus cajan*) grown as mixed crop in groundnut fields. Leaf miner was not observed on other legumes such as common bean (*Phaseolus vulgaris*), bambara groundnut (*Vigna subterranea*), and cowpea (*Vigna unguiculata*). Infested groundnut plant samples were collected from farmers' fields in Kasowa and brought to the laboratory for investigation.

Examination of infested leaves revealed the presence of single shiny white eggs (0.5–0.7 mm long) on the lower

side of the leaflets and on petioles. During the early stages of infestation, small blister-like mines were observed on the upper surface of the leaflets near the midrib due to feeding of mesophyll between upper and lower epidermis. When the mines were split opened, minute yellowish-green larvae with black head, usually one larva per mine, were seen inside. As the feeding advanced, the size of the mines increased and the leaflets became deep brown, rolled, and dried up prematurely (Fig. 2). Webbing of the leaflets was seen in advanced stages of infestation, but was not very severe. Matured larvae were 5–7 mm long and pupated within the webbed leaflets. Moths were grayish and small (7–9 mm long).

In Karonga ADD, groundnuts are cultivated both during the rainy season (from January to April, under rainfed conditions) and during the off-season [(from June to October/November, on residual moisture after lowland rice (*Oryza sativa*), supplemented by occasional showers] predominantly along the Songwe river bordering Tanzania, the Kyungu River Valley, and Kasantha Valley. The short-duration spanish type Malimba (locally known as Kasawaya) is the most predominant groundnut variety grown in both crop seasons. The practice of continuous cultivation of groundnut has been implicated to contribute to survival and perpetuation of diseases such as rust (*Puccinia arachidis*) and rosette (Chiyembekeza and Subrahmanyam 1995). During the surveys conducted in Karonga ADD in the off-season of 1993 (by Subrahmanyam and Nyirenda) and in the rainy season of 1994 (Chiyembekeza and Subrahmanyam 1995) and in other parts of the country in 1986/87 (Wightman and Wightman 1994), a number of arthropod soil pests including white grubs (scarabeid larvae, predominantly *Schizonycha* spp and *Anomala* spp), termites (species of *Ancistrotermes*, *Hodotermes*, *Odontotermes*, *Macrotermes*, *Microtermes*, and *Pseudoacanthotermes*), wireworms (elaterids), false wireworms (tenebrionids), doryline ants (*Dorylus* sp), *Hilda patruelis* (Homoptera: Tettigometridae) and mealy bugs (Homoptera: Pseudococcidae), and foliage feeders such as aphids (*Aphis craccivora*), jassids (cicadellid), *Spodoptera* (probably *littoralis*), weevils (especially *Systates* sp), and flea beetles have been recorded. Soil pests are more serious and economically important than foliage feeders in Malawi (Wightman and Wightman, 1994). It appears that there is no published record of the occurrence of groundnut leaf miner in Malawi. The practice of continuous cultivation of groundnut in Karonga ADD may be a contributing factor for the outbreak of leaf miner in these areas of Malawi. Further studies are required to determine the seasonal occurrence, distribution, host range, yield losses, and biology of groundnut leaf miner.



**Figure 1. Extensive damage to groundnut foliage due to leaf miner infestation.**

Groundnut leaf miner has very limited host range in legumes. Soybean (*Glycine max*), groundnut, and pigeonpea are the most preferred hosts. Groundnut leaf miner has been reported in several countries in Asia (China, Indonesia, Kampuchea, Laos, Malaysia, Myanmar, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam). It is an important pest in eastern and southern Asia (Wightman and Ranga Rao 1994). In recent years, leaf miner was observed to cause considerable damage to groundnut crop in Uganda (P.J.A. van der Merwe and J.M. Lenné, ICRISAT, personal communication). However, we are not aware of any published report of the occurrence of groundnut leaf miner in Malawi and other parts of Africa. Groundnut leaf miner is believed to be a poor migratory pest and should be reduced from the primary foci of infestation. It would be useful to establish pheromone traps at all locations where it had been noticed.

Authors (PS and GVRR) would appreciate receiving information from scientists on the occurrence of groundnut leaf miner in other parts of Africa.

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**Figure 2. Mining of groundnut leaf surface due to leaf miner infestation.**

## Screening of Promising Groundnut Genotypes for their Reaction to *Spodoptera litura*

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Groundnut is an important oilseed crop, occupying about 8 million ha which is about 46% of area under oilseed in India. Yield of groundnut in India is very low compared to that in China and USA. Several reasons could be ascribed to its low productivity of which tobacco caterpillar (*Spodoptera litura*) has become a limiting factor and reduces the yield to some extent (Amin 1988). Hence, an attempt has been made to determine the most stable sources of tolerance in groundnut. Screening techniques for groundnut germplasm against foliage pests are available (Vikram Singh 1979, Wightman et al. 1987). Mahadevan et al. (1988) reported that the variety ICGS 50 is resistant against a foliage pest. The most promising entries having high degree of tolerance were identified as stable sources against some noxious pests. Control is aimed to be achieved through the development of tolerance against the major pests of groundnut.

Field experiments were conducted at the Oilseeds Research Station, Jalgaon, Maharashtra, India during 1995 to 1997 in the rainy season (kharif). Sowing of entries was undertaken in 5-m rows with interrow spacing of 30 cm and plant spacing of 10 cm in randomized block design with two replications. The observations were recorded on foliage eaten by the larvae on ten randomly selected plants. The percent damage rating was scored visually