Ovipositional Preference of *Maruca (testulalis) vitrata* (Geyer) (Lepidoptera: Pyralidae) in Short-duration Pigeonpea

V R Bhagwat[1], T G Shanower[2], and M A Ghaffar[1]
(1. International Crops Research Institute for the Semi-Arid Tropics, (ICRISAT), Patancheru 502 324, Andhra Pradesh, India; and 2. USDA-Agricultural Research Service, 1500 N Central Avenue, Sidney, Montana 59270, USA)

The spotted lepidopteran pod borer *Maruca (testulalis) vitrata* (Geyer) is an important pest of grain legumes in the tropics and subtropics. It damages buds, flowers, and pods of pigeonpea and thus severely affects grain yield (Singh and Taylor 1978). In India, *Maruca* damage has been found to range from 9 to 51% in pigeonpea (Vishakantaiah and Jagadeesh Babu 1980). Ramasubramanian and Sundara Babu (1989) conducted studies on ovipositional preference on cowpea (*Vigna unguiculata*), hyacinth bean (*Lablab purpureus*), and pigeonpea. However, there is no information available on ovipositional preference on different pigeonpea genotypes. The purpose of this study was to assess the variation in ovipositional preferences of *M. vitrata* in pigeonpea.

Laboratory experiments were conducted to study oviposition among nine short-duration pigeonpea genotypes (MPG 537, MPG 537-M1-2-M5, ICPL 90011, ICPL 84023, ICPL 88034, ICPL 4, MPG 664-M1-2-M20, ICPL 90026-M1-2, and ICPL 87). A cowpea variety, Russian Giant, was used as a control. Ovipositional preference was studied under both choice and no-choice conditions in the laboratory. Field-grown plants were used in the tests. Fresh inflorescences of the test genotypes were maintained in plain water in conical flasks plugged with cotton wool and kept in a rectangular wooden cage (40 × 40 × 30 cm). Five pairs of premated 2-day-old adults were introduced into the cage. The moths were provided with 10% sucrose solution in cotton wool as a food substrate, which was changed daily. In no-choice ovipositional tests, pigeonpea twigs were individually caged with one pair of premated moths. The tests were repeated five times. The number of eggs was counted on every alternate day untill no eggs were observed. Fresh twigs were provided when necessary. The total number of eggs laid on each genotype was recorded in both the tests. A preliminary laboratory trial was also conducted to determine the most preferred plant parts for oviposition by *M. vitrata* on ICPL 87.

The highest number of eggs was observed on leaves (48%) followed by tender pods (24%) of ICPL 87. The minimum number of eggs was recorded on flowers, swollen pods, and mature pods (Fig. 1). Significant differences were observed in the oviposition on different

Table 1. Oviposition by *Maruca vitrata* on ten short duration pigeonpea genotypes, ICRISAT-Patancheru, 1997/98.

Genotype	Number of eggs	
	Choice test	No-choice test
MPG 537 (bulk)	38.6	9.8
MPG 537-M1-2-M5	10.7	3.4
ICPL 90011	108.4	35.4
ICPL 84023	22.7	11.0
ICPL 88034	22.1	5.8
ICPL 4	35.4	7.0
MPG 664-M1-2-M20	38.4	18.8
ICPL 90036-M1-2(C)	26.7	0.8
ICPL 87 (Control)	28.2	68.8
Cowpea (Control)	2.9	0.0
Mean	33.4	16.1
SE	± 15.82	± 18.57
CV%	142.1	258.2

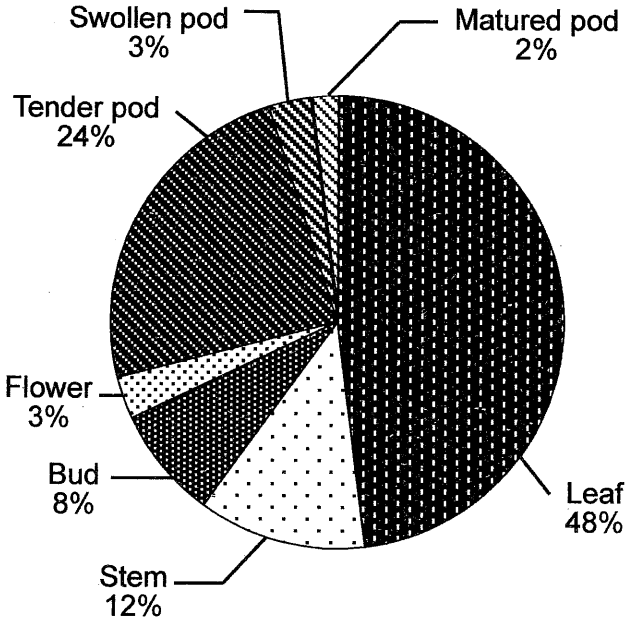

Figure 1. Ovipositional preference of *Maruca vitrata* on different plant parts of ICPL 87.

genotypes (Table 1). ICPL 90011 had the highest number of eggs (108.4±15.82) in choice tests and cowpea had the lowest number (2.9). The highest number of eggs was recorded on ICPL 87 (68.8±18.57) in the no-choice tests followed by ICPL 90011. Fewer eggs were recorded on other genotypes. The lowest number of eggs was recorded on cowpea, followed by ICPL 90036-M1-2 (0.8±18.57). The relative ovipositional preference did not show similar trends in choice and no-choice tests. However, more eggs were laid when the moths were offered a choice. Under the no-choice test the results were less clear. The ovipositional preference by *M. vitrata* to a particular genotype may be influenced by physico-chemical cues that influence oviposition. *Maruca* laid more eggs on pigeonpea than on cowpea. Ramasubramanian and Sundara Babu (1989) found cowpea was preferred over pigeonpea for oviposition. These differences may be due to different genotypes used to study the ovipositional preferences.

Acknowledgment. The authors wish to thank Madhusudhan Reddy, Moinuddin, and other Legumes Entomology staff for their assistance in this experiment.

References

Ramasubramanian, G.V., and **Sundara Babu, P.C.** 1989. Ovipositional preference of spotted pod borer *Maruca testulalis* (Geyer) (Lepidoptera: Pyralidae). Legumes Research 12 (4):193–195.

Singh, S.R., and **Taylor, T.A.** 1978. Pests of grain legumes and their control in Nigeria. Pages 99–111 *in* Pests of grain legumes: ecology and control (Singh, S.R., van Emden, H.F., and Taylor, T.A., eds.). London, UK: Academic Press.

Vishakantaiah, M., and **Jagadeesh Babu, C.S.** 1980. Bionomics of the tur webworm, *Maruca testulalis* (Lepidoptera: Pyralidae). Mysore Journal of Agricultural Sciences 14:529–532.

Influence of Intercrops on the Incidence of *Helicoverpa armigera* (Hübner) in Postrainy Season Pigeonpea

Gouse Mohammed and **A Subba Rao** (All India Coordinated Pulses Improvement Project, Regional Agricultural Research Station, Lam, Guntur 522 034, Andhra Pradesh, India)

Helicoverpa armigera is the major production constraint of pigeonpea in the rainy season in Andhra Pradesh, India. The virulent broods of this pest nearly coincide with the flowering phase of pigeonpea, which normally occurs from mid-November to mid-December. Devastation of the crop is fairly regular except for years when cyclones occur during the month of November. It was found that pigeonpea sown in October flowered during January, by which time the pod borer was in a declining stage.

It has been established that *H. armigera* cannot be controlled by the use of insecticides alone and is best managed by harmonously blending various components of integrated pest management. Growing postrainy season pigeonpea with certain intercrops as a component of *Helicoverpa* management was tried during the 1994/95 and 1996/97 seasons at the Regional Agricultural Research Station, Lam. A total of 11 intercrops were tried in postrainy season pigeonpea, sown at a spacing of 90 × 10 cm (Table 1).

Although earlier workers (Patnaik et al. 1989) reported that intercropping did not make any significant difference either in the intensity or incidence of *Helicoverpa* on pigeonpea, in the present investigation the results indicated that the number of larvae per 20 twigs of pigeonpea during flowering and podding stages was significantly reduced in pigeonpea intercropped with sorghum (*Sorghum bicolor*) (0.8), followed by coriander (*Coriandrum sativum*) (4.0), marigold (*Tajetes erectra*) (4.7), and cowpea (*Vigna unguiculata*) (6.5). In terms of pod damage, pigeonpea intercropped with sorghum had significantly less damage (9.7%) than sole pigeonpea (15.2%). The other combinations, cowpea (12.4%), snap melon (*Cucumis pepo*) (14.6%), and green gram (*Vigna radiata*) (14.9%) were on par with sole pigeonpea. Observations on the activity of parasites and predators revealed that parasitization was almost negligible in this ecosystem, while bird predation on the mature larvae of *H. armigera* was somewhat more; this may be one of the reasons for the variation in pest load and pod damage in various intercropped pigeonpea treatments.