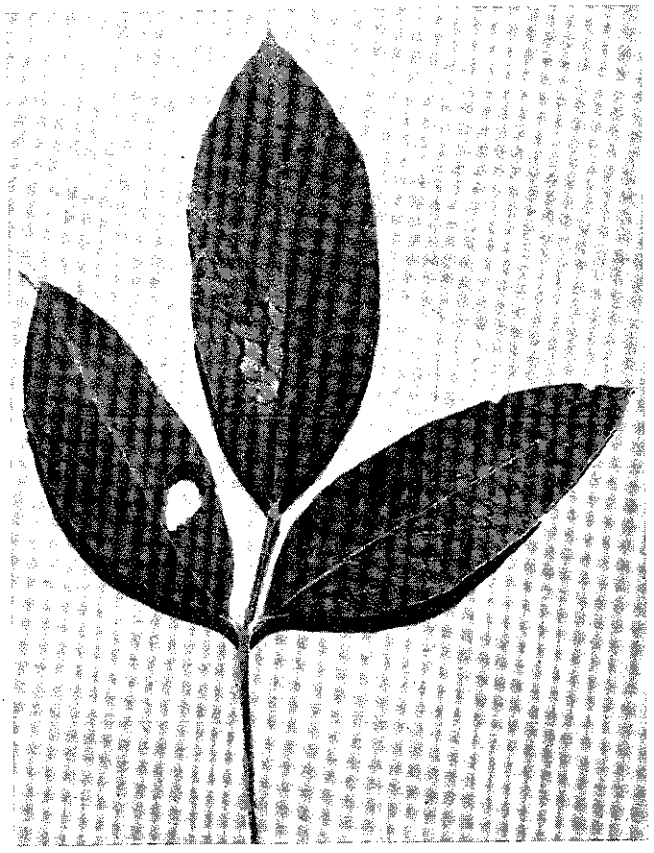

Figure 1. Leaf spot symptoms on pigeonpea caused by Periconia byssoides *Pers.*

The authors wish to thank the Commonwealth Mycological Institute for identifying the fungus.

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Entomology

Pheromone Trap Network for *Heliothis armigera* in India

Cooperative work between ICRISAT and the Tropical Products Institute in London had led to the development of pheromone traps which are very effective in attracting and trapping *Heliothis armigera* males. The synthetic pheromone is a 97:3 mixture of (Z)-11-Hexadecenal and (Z)-9-Hexadecenal. One mg of this pheromone is absorbed on a rubber septum, which is placed inside a funnel trap held 2 meters above ground level. Our record catch is 288 *H. armigera* moths in one trap in one night at ICRISAT Center. We can increase the catches by making the traps more complicated but we have accepted a compromise between efficiency and cost. We have found that a baited septum is attractive for more than 80 days, but the catches decline considerably after 40 days. We have standardized the use of each septum for 28 days.

Here at ICRISAT we are continuing experiments to improve our pheromone utilization. In these experiments we are comparing the catches of moths in pheromone and light traps with populations of *H. armigera* eggs and larvae in the fields. We are hoping to establish the relationship of trap catches and field populations across climatic and other conditions. We already know that the light trap:pheromone trap catch ratios are not constant, but we think that the data we are collecting from pheromone traps will be useful in monitoring populations of the insect.

We had earlier set up, in collaboration with the All India Coordinated Pulse Improvement Project, a net-work of light traps across India for the recording of *H. armigera* and other pest populations. Some of our collaborators have found difficulty in maintaining these traps, particularly in the rainy season when the expensive lamps are occasionally broken by rain. Sorting the catches in these traps requires a skilled recorder and can take considerable time. Light traps are particularly difficult to run in areas where there is a poor electricity supply. As pheromone traps are free from these problems, the AICPIP-ICRISAT collaboration was extended to include a pheromone trap network in 1981. Some cooperators now have both pheromone and light traps and the catches in these will give useful comparisons. Some cooperators have only pheromone traps. In 1981, pheromone traps were successfully used at 11 sites (Table 1). We have recently increased this number and hope to extend the network further both inside India and in neighboring countries.

We hope that the catch records from the expanded network, continued over a number of seasons, will be useful for correlating climatic data with *H. armigera* populations.

Table 1. Monthly catches of *Heliothis armigera* in pheromone traps in operation at different location in India (1981-82).

Month/year	Pantnagar	Hissar[a]	Kanpur	Gwalior	Jabalpur	Badnapur	ICRISAT[a]	Coimbatore	Anand	Faizabad	Dholi
June 81	NTI	NTI	NTI	NTI	NTI	NTI	9.7	NTI	NTI	NTI	NTI
July 81	NTI	NTI	NTI	NTI	NTI	NTI	36.2	NTI	NTI	NTI	NTI
August 81	NTI	12.5	0	NTI	0	3	121.5	1	1	0	4
September 81	NTI	245.5	8	19	22	102	318.5	2	38	2	2
October 81	188	78.3	0	32	68	582	30.8	185	18	0	0
November 81	71	37.8	17	10	96	73	282.0	119	33	3	0
December 81	5	22.8	4	2	110	80	454.7	264	178	3	0
January 82	1	23.0	26	16	491	202	315.0	286	586	1	0
February 82	6	275.0	34	310	870	173	189.8	316	1088	6	42
March 82	1087	729.0	549	974	2361	71	54.5	209	1269	209	249
April 82	448	1906.0	1241	516	463	64	314.3	202	683	32	6
May 82	50	1702.0	213	73	ND	15	65.3	357	301	ND	15
June 82	0	235.5	183	31	ND	ND	82.8	343	129	ND	32

a. These data are the means of four traps at Hissar and of six at ICRISAT Center. Other locations had only one trap.

NTI = Trap not installed; ND = Data not yet received.

Using this information we should be able to determine the dynamics of this pest in Asia. We eventually hope to be able to predict the size and timing of attacks in any area and so help to plan timely control measures.

We are very grateful for the excellent cooperation that we are receiving from the entomologists of AICPIP. We wish to thank Dr. Nesbitt of TPI who supplies the many septa required in these studies and Drs. V.S. Bhatnagar and S. Sithanantham who conducted the early experimentation on trap design. It is hoped that a complete account of this experimentation will be available in the near future.

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Incidence of Pod Borer on Pigeonpea Cuitivars Under Intercropping

During the 1981-82 rainy season, five pigeonpea varieties were grown as a pure crop and as an intercrop with pearl millet (BJ 104) at our station. For intercropping, pearl millet and pigeonpea were grown at a 2:1 row propor-

Table 1. Data on pod borer incidence and grain yield in pigeonpea grown as pure crop and intercrop during the 1981-82 rainy season at Solapur, Maharashtra, India.

Variety	Pure crop			Intercrop		
	Pods examined	Pods affected by pod borer(%)	Yield (kg/ha)	Pods examined	Pods affected by pod borer(%)	Yield (kg/ha)
No.148	452	23.2	612	738	37.1	337
BDN 2	866	19.4	627	691	23.4	511
ICP-1	576	18.5	591	634	17.5	398
BDN 1	725	12.0	698	1251	26.7	330
T.21	348	15.8	360	1006	30.2	381
CV (%)		13.9			38.8	
SE $\pm$		0.8			5.15	