With a view to screening pigeonpea material for resistance to *Alternaria* blight under natural field conditions, and to selecting genotypes for rabi suitability, all our breeding material (F_2 onwards), plus ACT-2, ACT-3 and rabi pigeonpea trials, were planted on 18-20 September 1980 at Varanasi, India. The disease started appearing as leaf spots and finally became well established throughout the field. The terminal leaves of infected lines became smaller and the plants produced no flowers. In the trials only four entries - MA-128-1, MA-128-2 (from BHU), DA-2 (from Dholi), and 20-105 (from West Bengal) - were free of symptoms and were in the fruiting stage at the time of writing. All the remaining entries appear to be highly susceptible to this disease. The extent of infection in some of the entries, including Bahar, was 100%. A similar situation was noticed at Dholi (personal communication with Dr. S.C. Gupta, ICRISAT).

Some promising breeding material has been identified. The lines that were apparently disease-free will be tested further for their resistance to *Alternaria*.

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Entomology

Survey of Insect Pest Damage in Farmers' Fields in India

Although insect pests were well known to be major yield-reducers on pigeonpea in many parts of India, there appear to be no widespread survey data from farmers' fields of pest-caused damage. Consequently, in 1975, ICRISAT pulse entomologists initiated a series of survey tours to sample farmers' fields throughout the major pigeonpea growing areas of India. These tours were undertaken in cooperation with national entomologists, and were timed to coincide with the expected maturity phase of the crop in the differing areas. Inspections were made from motorable roads, and fields containing pigeonpea were sampled at 20-km intervals. Data including field size, cropping pattern, and pesticide use were collected and samples of the mature pods were brought back to our laboratory where they were analysed for pod damage.

We have now virtually completed the survey, having visited 1112 farmers' fields over 15 States in India in tours that totaled 44,000 km. The data are currently being analysed and prepared for future publication. Initial mean data of insect caused damage in the pod samples are shown in Table 8. It can be seen that damage caused by the lepidopteran borers (mainly *Heliothis armigera*) was particularly predominant in southern India, but that pods damaged by pod fly (*Melanagromyza obtusa*) were more common in central and northern India. The hymenopteran pest (*Tanaostigmodes* sp.), which can be a major problem on research farms, was found to be of little or no importance in farmers' fields. Bruchids are best known as pests of stored grain, but our surveys showed considerable infestations in the pods, particularly in southern India.

In nearly 76% of the fields surveyed the pigeonpea was intercropped or mixed with other crops. Another 8% of the samples were from hedges on field bunds or borders. Only 6% of the fields visited were treated with pesticides.

In the full publication of our data we will discuss the variation recorded within and bet-

Table 8. Percentage of pigeonpea pods damaged by insect pests in samples collected from farmers' fields during ICRISAT insect pest damage surveys, 1975-80.

Zones[a]		Lepidopteran borers	Pod fly	Hymenopteran	Bruchid
I	Northern zone above 23°N (n = 424)	15.8	22.5	0.1	0.1
II	Central zone 20-23°N (n = 202)	25.1	21.0	1.2	2.4
III	Southern zone below 20°N (n = 486)	41.0	13.2	2.6	6.3

a. n = number of fields sampled.

ween areas and years. We will also discuss the shortcomings of such surveys, particularly in relation to estimates of yield loss directly caused by pests. We have already found the data useful for reallocating the priorities in our pest management research efforts, particularly in the siting of multilocation tests of materials selected from our plant resistance project.

We wish to thank the many entomologists and others who helped us in this survey program, and the very many farmers who so willingly answered our questions, allowed us to take pod samples, and invited us into their homes.

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Major Pest Problems of Pigeonpea in Uttar Pradesh, India

Pigeonpea in India is infested by about 200 species of pests, including insects, mites, birds, and rodents. This array of pests is considered to cause serious losses to pigeonpea, resulting in poor yields.

Late-maturing cultivars form the major portion of the pigeonpea crop grown in Uttar Pradesh. These cultivars are sown in June-August and harvested in March-May. Recently, early-maturing types, such as T-21, have also become popular, mainly in irrigated tracts of western and central Uttar Pradesh. Early

Table 9. Major pests of pigeonpea recorded during 1978-79 and 1979-80 in Uttar Pradesh.

Maturity group	Crop stage	Pest species
1. Early	1. Seedling and vegetative	1. Leaf tier, *Eucosma critica* Meyr. 2. Galerucid beetle, *Luperodes* sp. 3. Thrip, *Caliothrips indicus* (Bagnall); *Megaleurothrips distalis* (Karny)
	2. Flowering	1. Spotted caterpillar, *Maruca testulalis* Geyer 2. Blister beetle, *Mylabris phalerata* (Pallas)
	3. Podding	1. Pod fly, *Melanagromyza obtusa* (Malloch) 2. Spotted caterpillar, *M. testulalis* 3. Bruchid, *Callosobruchus* sp.
2. Late	1. Seedling and vegetative	1. Leaf tier, *E. critica* 2. Jassid, *Amrasca* spp. 3. Galerucid beetle, *Luperodes* sp.
	2. Flowering and podding	1. Pod fly, *M. obtusa* 2. Gram caterpillar, *Heliothis armigera* Hb. 3. Plume moth, *Exelastis atomosa W.* 4. Lycaenids, *Lampides boeticus* L.; *Catochrysops strabo* F. 5. Brown bug, *Clavigralla* sp.