

A PROPOSAL FOR INTEGRATED CONTROL OF COWPEA INSECT PESTS

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The insect pests of cowpeas and time of occurrence of the pests in relation to plant growth stage have been determined (Table 1), as well as the nature of the damage by these pests (Table 2). Based on such studies, a strategy for integrated control of these pests is proposed. It consists of utilization of host plant resistant to insect pests and cowpea mosaic virus, timing and minimum application of insecticide and possibility of mixed cropping with maize.

Cowpea cultivars TVu 1190E and TVu 4557 have been identified at IITA that have field resistance to E. dolichi, S. occipitalis and cowpea mosaic virus. Under normal conditions, these cultivars can be grown without any insecticide application up to 35 or 40 days after planting (DAP). It was observed that O. mutabilis and L. lineata are more important as vectors of cowpea mosaic virus than as foliage feeders. Presence of even few beetles in the field spreads the cowpea mosaic virus rapidly. The cowpea plant can withstand considerable loss in foliage without any effect on yield. Unless there is a severe outbreak of pests, there is practically no need of insecticide application in the case of resistant cultivars.

The first insecticide application is recommended at 35 or 40 DAP, aimed at control of T. sjostedti in flower buds and flower and initial infestation of M. testulalis on tender parts of stem, peduncles and foliage buds. TVu 4557 helps to reduce the insecticide dosage or permits application of otherwise less effective insecticides which are commonly available at cheaper price (e.g. Gammalin).

The second insecticide application is recommended at 50 or 55 DAP. It is aimed to control of T. sjostedti, M. testulalis and the initial infestation of the coreid bugs, A. curvipes, A. horrida and R. dentipes. Resistance to coreid bugs has not yet been identified, but it has been noticed that pods which mature in comparatively shorter time are less damaged. Similarly it has been observed that if a pod touches any other part of the plant, M. testulalis normally damages that part of the pod, so that pods held on longer peduncles are less damaged. If two or more pods per peduncle are held closely, the infestation by M. testulalis tends to be higher. By avoiding these pod characters, the pest infestation can be reduced. Data obtained by Ochieng (see paper, this Section) with A. curvipes egg laying behaviour indicates a possibility of reducing the future populations of the coreid by planting maize along with cowpea. For control of C. maculatus in storage, preliminary results indicate that mixing the cowpea seeds with edible groundnut oil (5 ml per kg) gives adequate protection with no bad effect on germination or cooking.



INSECT SPECIES

PRE - FLOWERING	POST - FLOWERING
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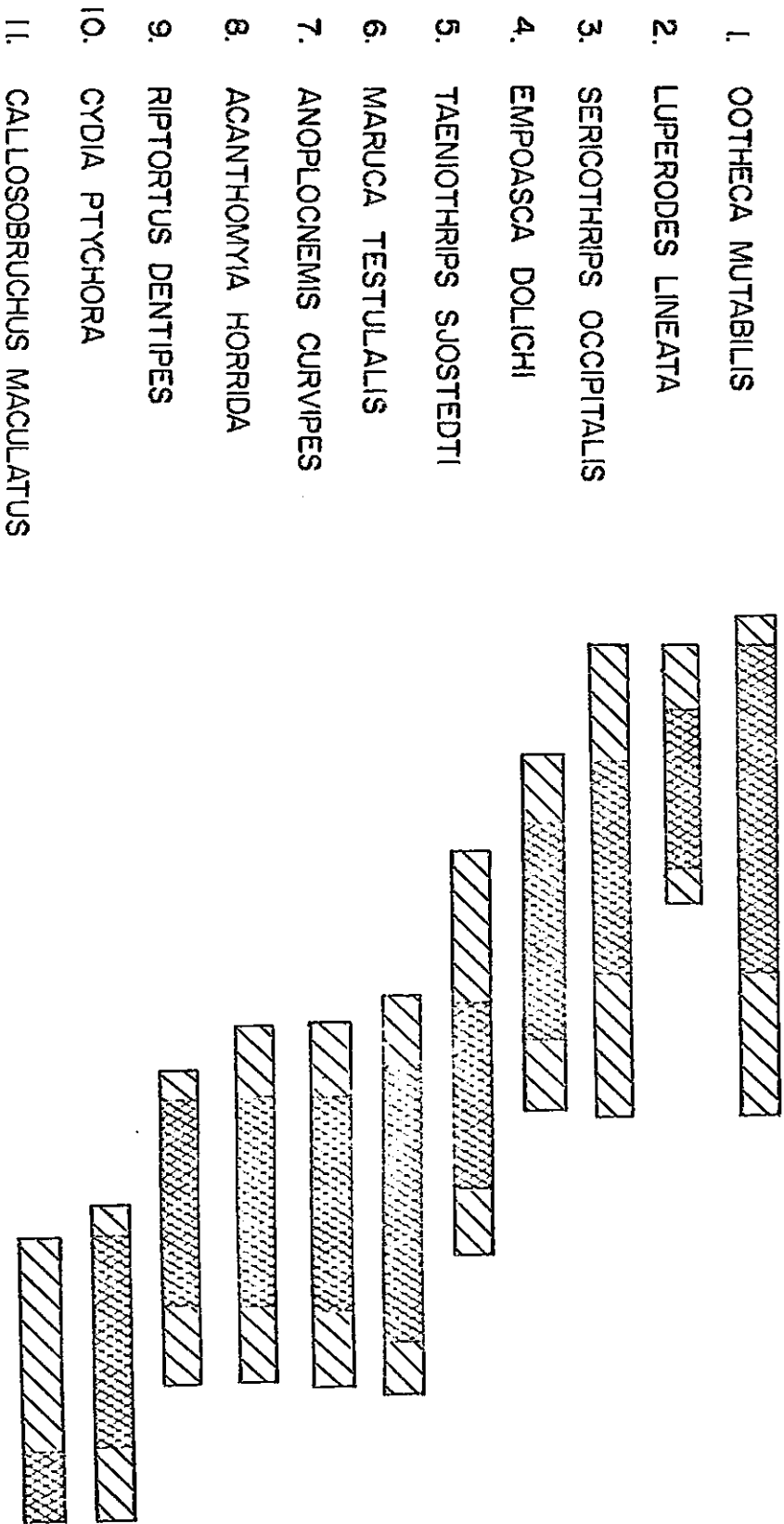


Table 1. Diagrammatic Representation of Cowpea Insect Pest Complex, Time of Occurrence and Peak Activity on Prima Cowpea.

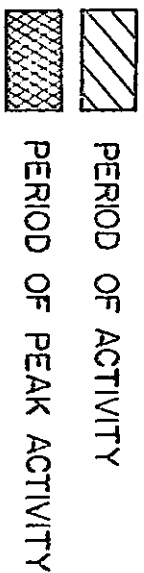


Table 2. Cowpea insect pests and their damage to the cowpea plants

Insect Pest	Nature of Damage
1. <u>Ootheca mutabilis</u>	Important cowpea mosaic virus vector. Feeds on cowpea by chewing leaves.
2. <u>Luperodes lineata</u>	Cowpea mosaic virus vector. Feeds on cowpea by chewing tender leaves and stem.
3. <u>Sericothrips occipitalis</u>	Feeds on foliage by rasping and sucking plant sap. Does more damage to plant under drought stress and high temperature. Leaves become distorted, plant is stunted and loses vigour. Is cowpea mosaic virus vector and is suspected as vector for other foliage diseases.
4. <u>Empoasca dolichi</u>	Feeds on foliage by sucking the plant sap; leaves curl and dry. Suspected as a vector for foliage diseases.
5. <u>Taeniothrips sjostedti</u>	Feeds on flower buds and flowers. Causes distortion of flower buds and flowers effecting in reduced flowering and flower drop.
6. <u>Maruca testulalis</u>	Early generations feed on tender stems and peduncles, later feed on flowers and pods. Younger pods are completely damaged by the larva feeding on pods near peduncles. On older green pods, the larva feeds on a few developing seeds, leaving feeding holes and grass on the pods which attracts fungus on pods.
7. <u>Anoplocnemis curvipes</u>)	These coreids feed on green pods by sucking the sap.
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8. <u>Acanthomyia horrida</u>)	Pods shrivel and die prematurely or few seeds develop in the pods.
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9. <u>Riptortus dentipes</u>)	
10. <u>Cydia ptychora</u>	Attacks pods near maturity stage. The larva feeds inside the pod and destroys the seeds.
11. <u>Callosobruchus maculatus</u>	Infests pods in the field and is active as a storage pest. The larvae feed on dry cowpea seeds in storage.