

## **IPM Package of Practices for Management of Hairy caterpillar in Soybean**

Soybean (*Glycine max* (L.) Merrill) has been the number one oilseed crop in India in terms of area and production both. The feasibility of growing soybean crop with minimum input management lead to the rapid expansion in area and production, resulting India now ranks 4<sup>th</sup> in terms of global soybean area sown and 5<sup>th</sup> in terms of soybean production after USA, Brazil, Argentina and China. In India, soybean is mainly grown in the states of Madhya Pradesh, Maharashtra, Rajasthan, Karnataka, Telangana, Chhattisgarh, Nagaland and Gujarat as a rainfed crop during the rainy (Kharif) season.

Soybean crop is infected by several insects, diseases and weeds. Bihar hairy caterpillar (*Spilosoma obliqua*) is polyphagous and sporadic in terms of infestation in the Soybean crop in different areas.

**Major states affected:** Madhya Pradesh, Maharashtra, Karnataka

### **Occurrence:**

Hairy caterpillar (*Spilosoma obliqua*) is a pest of regional significance in Soybean especially in western Madhya Pradesh (Jhabua, Alirajpur Districts) and sometimes becomes a major limiting factor in soybean production. It is polyphagous and sporadic in nature, attacking nearly 126 plants species including Soybean. It is also a significant pest of Sesame and Groundnut in West Bengal, Bihar, Uttar Pradesh, Punjab, Madhya Pradesh, Manipur and some other states in India. When favourable condition prevails, this pest also causes severe damage to crops such as oilseeds, pulses, vegetables, fodder, fibre crops, and fruit trees. The larvae are voracious feeders and its population often reaches epidemic level during that time they completely defoliate the plants and move from one field to another field, feeding up all the vegetation of that area.

### **Damage Symptoms**

- Young larvae feed gregariously on chlorophyll mostly on the under surface of the leaves, due to which the leaves look like brownish-yellow in colour.
- The final instar larvae feed on the leaves from the margin.
- The damaged leaves of the plant appear in skeletonised/ net/ web form.



Skeletonised leaf

**Identification of the pest:**

**Eggs:** Lay in clusters of 600-700 under the surface of the leaves.

**Larva:** Orange coloured with broad transverse band with tufts of yellow hairs that are dark at both ends.

**Pupa:** Forms a thin silken cocoon by interwoven shed hairs of the larvae

**Adult:** Crimson coloured moth with black dots and a red abdomen. Pinkish wings with numerous black spots



**Bihar hairy caterpillar egg mass**



**Bihar hairy Caterpillar Larva**



**Bihar hairy caterpillar Pupa**



**Bihar hairy caterpillar Adult**

## **Management Practices**

### **Pre-sowing stage:**

- Pre-monsoon deep ploughing (two/three times) will expose the hibernating pupae to sunlight and predatory birds.
- Maintain the field bunds clean and hygiene.

### **Sowing and post sowing Stage:**

- Avoid pre monsoon sowing.
- Use optimum seed rate.
- Adequate plant spacing should be provided
- Intercrop soybean either with (early maturing) pigeon pea variety or maize or sorghum in the sequence of 4:2.
- Removal and destruction of alternate wild hosts and weeds which harbour the hairy caterpillars
- Grow trap crops like cowpea, castor and jatropha on field bunds to attract the caterpillar

### **Seedling (Nursery) to Vegetative stage:**

- Collect & destroy infested plant parts, egg masses and young larvae.
- Field Sanitation in order to remove the infested plant parts at least once in 10 days and bury them in compost pit to monitor and reduce the population.
- Removal and destruction of alternate wild hosts and weeds which harbour the hairy caterpillars
- Install one light trap (i.e., 200Wats mercury vapour lamp) per hectare to catch the adults of hairy caterpillar (positively phototropic).
- Setting of bonfires to kill migrating larvae
- Digging of bunds & Trenches to kill migrating larvae

- Conserve the bio control population of spiders, long horned grasshoppers, praying mantis, robber fly, ants, green lace wing, damsel flies, dragon flies, flower bugs, shield bugs, lady bird beetles, ground beetle, predatory cricket, Braconids, Trichogrammatids.
- Spraying of *Bacillus thuringiensis* Krustakii, Serotype H-3a, 3b, Strain Z-52 @ 750 g/ha in 500-700 Ltrs water.

Note: No chemical pesticide is registered for the management of Bihar Hairy Caterpillar.

### **General Use of local plant materials for management at farmers level:**

Mahogany and Karanja leaf extract in neem oil has tremendous potential for the management of *Spilosoma obliqua* in the field. The efficacy of Botanical Extract Preparation from the powdered leaves of respective plants (mahogany and karanja) individually and in combination by equal amount (1:1) with water and boiled for 30 minutes to make 100% solution stock solution. Crude leaf extracts of the (Mahogany and Karanja) have highly adverse effects in neem oil suspension on the survival of *S. obliqua* larvae which might be due to the presence of different active secondary metabolites of the respective plants. The larvae had apparent adverse effect on their feeding and survival for longer duration due to the presence of feeding deterrent and toxic component in the mixture.