



# Integrated Pest Management in Castor

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## Integrated Pest Management in Castor

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Castor crop is damaged by an array of insect pests of which semilooper (*Achaea janata*), tobacco caterpillar (*Spodoptera litura*), shoot and capsule borer (*Conogethes punctiferalis*), leafhopper (*Empoasca flavescens*), thrips (*Retithrips syriacus*) and whitefly (*Trialeurodes ricini*) are of greater economic importance. Besides, several hairy caterpillars (*Spilarctia obliqua*, *Euproctis* spp., *Pericallia rioini*, *Amsacta albistriga*, *A. moorei*) and castor slug caterpillar (*Parasa lepida*) are also assumed regional importance and are sporadic pests. The magnitude of the insect pests problem is quite high in Southern India where castor is grown mainly as rainfed crop, while it is low in Gujarat and Rajasthan under irrigated conditions. The following Integrated Pest Management (IPM) practices are suggested for effective management of the insect pests in castor

- Deep summer ploughing to expose the hibernating pupae to predatory birds or hot sun.
- Select triple or double bloom castor cultivars viz., DCH-519, GCH-4, GCH-5, GCH-7, YRCH-1 which are tolerant to leafhopper.
- Castor varieties/hybrids with non-spiny capsules (Jwala) or semi-compact spike (GCH-4, GCH-7) are less damaged by capsule borer.
- In areas where red hairy caterpillar (RHC) is a problem, set up light trap (200 watt mercury lamp covers 10 ha area) on community basis with the first monsoon rains to attract and kill the adult moths. In situations, where operating electric light trap is not feasible, a petromax light of 200 candle power is also effective in attracting moths, covering 4-6 ha area. The peak emergence of RHC moths need to be ascertained before operating light trap. The arrangement of light trap should be in such a way that majority adults attracted must be trapped.
- Sowing cucumber along field borders preferably before sowing of castor attracts the migrating caterpillars of RHC and facilitates mechanical killing in areas where RHC is endemic.
- Use vegetative twig traps (*Jatropha* or *Ipomoea* or *Calotropis*) for collection and killing of migrating larvae of red hairy caterpillars in endemic areas.
- Kill the migrating caterpillars of red hairy caterpillar congregated on the trap crop (cucumber).
- Install sex pheromone trap for *Spodoptera litura* @ 10 traps/ha for monitoring and implementing timely control measures.
- Hand picking and destruction of gregarious stages of *Spodoptera litura* and hairy caterpillars along with damaged leaves are effective for the management of defoliators in castor, which keep the defoliation level usually less than 25%.
- Collect and destroy the shoots and capsules infested by capsule borer, wherever feasible.

- Manipulate parasitoid activity by avoiding spraying of insecticides, when 1-2 cocoons of larval parasitoid (*Microplitis maculipennis*) observed per plant.
- If defoliation is less than 25% and 1-2 semilooper larval parasitoids (*Microplitis maculipennis*) per plant are observed, do not spray any insecticide for the control of semilooper.
- Avoid use of insecticides if the damage levels are below the economic threshold levels (ETL). The ETLs for major insect pests are given below

Pest	Economic threshold levels
Defoliators (semilooper/spodoptera/hairy caterpillars)	25% defoliation
Capsule borer	10% capsule damage
Leafhopper	10% of leaves in a plant show curling symptom

- If the damage by the insect pests exceeds ETL, spray any of the following insecticides: Spray *Bacillus thuringiensis* var. *kurstaki* @ 1g/l or profenofos 50EC @ 1ml/l or flubendiamide 39.35SC @ 0.2ml/l, if foliar damage due to semilooper and hairy caterpillars exceeds 25%; Spray thiodicarb 75WP @ 1g/l or flubendiamide 39.35SC @ 0.2ml/l or chlorantraniliprole 18.5 SC @ 0.3ml/l or profenofos 50EC @ 1ml/l, if foliar damage due to spodoptera exceeds 25%; Spray spinosad 45SC @ 0.2ml/l or profenofos 50EC@1ml/ha or thiodicarb 75WP@ 1g/l, if at least 10% capsules are damaged due to capsule borer; Spray dimethoate 30EC @ 1.7ml/l or acetamiprid 20SP @ 0.2g/l or profenofos 50EC @ 1ml/l against sucking pests.

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