




# Cotton bollworm

*Helicoverpa armigera*

	Prevention	Monitoring	Direct Control
 <p>Eggs on chickpea leaves (A.B.S. King)</p>  <p>Cotton bollworm larva on maize, with lighter colouring (left) and darker colouring (right). Feeds on maize cob (Léna Durocher-Granger, CABI)</p>  <p>Cotton bollworm larva on tomato (©Andrew B.S. King)</p>	<ul style="list-style-type: none"> <li>• Use resistant varieties if available (e.g. for cotton, pigeonpea, chickpea)</li> <li>• Sorghum: plant varieties with loose open heads</li> <li>• Reduce planting density</li> <li>• Plant trap crops at different times (before and/or during crop growth) and destroy before the larvae mature:             <ul style="list-style-type: none"> <li>• Cotton: trap crops include corn, okra or pigeon pea</li> </ul> </li> <li>• Provide habitats for natural enemies (e.g. flowering plants) such as: <i>Trichogramma</i> spp. (egg parasitoids), wasps, flies (larva parasitoids), ants, lacewings, ladybugs, assassin bugs, minute pirate bugs and birds</li> <li>• Rotating with non-host crops can prevent the population from building up but rotation must be used together with other prevention and control practices because the bollworm can attack and harbour on many species of plants</li> <li>• Avoid crop rotation with other plant hosts including soybeans, cotton, corn, beans, chickpea, flax, wheat, barley, oats and sorghum</li> <li>• Remove and destroy crop residues and voluntary plants</li> <li>• It is not recommended to apply insecticides as a preventative measure because the pest is often resistant to these</li> </ul>	<ul style="list-style-type: none"> <li>• Additional relevant crops: cotton, pigeonpea, chickpea, maize, sorghum, millet, wheat, okra, groundnut, brassicas, beans, tomato, cucurbits, citrus, mango. Attacks over 200 species of plants</li> <li>• Monitor the pest and symptoms 1-2 times/week from emergence until harvest</li> <li>• Adults: Moth wingspan is 35-40 mm wide. Forewings are yellowish-brown and hindwings are white             <ul style="list-style-type: none"> <li>• Use pheromone or light traps to detect adults</li> </ul> </li> <li>• Caterpillars: up to 35-40 mm long. Vary in colour: yellow/green/brown/red with greyish-black stripes along the body when fully grown. Feed on buds, flowers, grains, fruits, pods; sometimes leaves and stems. Found on:             <ul style="list-style-type: none"> <li>• Cotton: vegetative part and reproductive structures</li> <li>• Corn, millet and sorghum: attacks grain. Hides in grain heads during the day</li> <li>• Tomato and beans: bores into young fruits</li> <li>• Chickpea: attacks foliage. Large larva enters the sheath and consumes the developing seeds</li> </ul> </li> <li>• Caterpillars: shake plant parts over a bucket or sweep net to collect them</li> <li>• Eggs: 0.4-0.6 mm across, round and yellowish-white, but change to a dark-brown colour before hatching. Typically laid singly on plants that are flowering or about to flower</li> <li>• Pupae: 14-16 mm long, brown, and smooth on the surface</li> <li>• To monitor infestation, note the number of eggs, small and large caterpillars, and % defoliation of plant             <ul style="list-style-type: none"> <li>• It is necessary to open the fruits and flowers of plants often because the caterpillars are hidden within plant organs</li> </ul> </li> <li>• Apply curative measures if caterpillars are 1-2/m in the cotton, maize and sorghum or if there is 15-30% defoliation</li> </ul>	<ul style="list-style-type: none"> <li>• Remove and destroy crop residues and voluntary plants immediately after harvest</li> <li>• Plough the soil to expose the pupae to direct sunlight and natural enemies</li> <li>• Trapping adults in light traps offers partial control</li> <li>• For small plots, it is possible to hand pick and destroy the eggs and young caterpillars</li> <li>• Release natural enemies available in your country such as egg parasitoids (<i>Trichogramma</i> spp. and <i>Telenomus</i> spp.), larva parasitoid (<i>Cotesia</i> spp. and <i>Bracon</i> spp.) or predators (<i>Chrysopa</i> spp.)</li> <li>• Remove any fallen fruit or infested plant parts and destroy or feed to livestock</li> <li>• Apply neem products on small caterpillars (e.g. neem oil 40ml/20L water)</li> <li>• Apply a solution of virus nuclear polyhedrosis (VNP) if it is locally available</li> <li>• Place traps (5/ha) baited with synthetic sex pheromone <i>Helicoverpa armigera</i> to trap and monitor adults</li> </ul>

Note: Pesticides may be available to control this pest. Please check with the Ministry of Agriculture in your country to find out which pesticides are registered in your country and the local restrictions for their use.