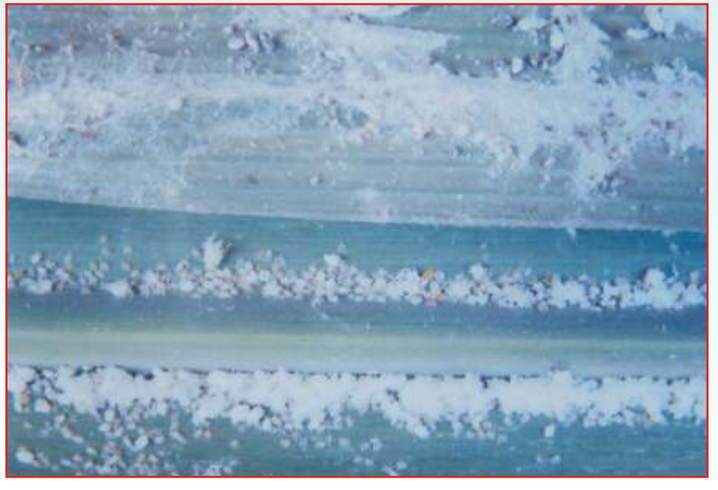
November till harvesting	1. Woolly aphid infested crop should be harvested on priority for crushing in mills. 2. Affected canes should not be used as seed or transported to pest-free areas. 3. After harvesting, crop debris should be burnt immediately.
Ratoon initiation	1. Further ratoonig of a ratoon crop may be avoided and crop rotation should be followed. 2. If preceding crop was infested with aphid and carried predator population, no insecticide should be sprayed during whole crop period.



Woolly Aphid of Sugarcane and its Management

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The problem of woolly aphid in sugarcane cultivation emerged only recently in 2002 when the insect-pest assumed serious proportion in Maharashtra and Karnataka. Besides these two states, woolly aphid has now spread to Tamil Nadu, Andhra Pradesh, Kerala and Gujarat in tropical India and Uttar Pradesh and Uttaranchal in sub-tropical India. In Bihar, W. Bengal and N. East States, occurrence of woolly aphid has been observed for the last 50 years

The aphid population is observed on the undersurface of leaves along the midrib or the entire under surface is covered with white flocculent, waxy secretion. The aphid excretes honey dew which covers entire upper surface of lower leaves followed by growth of sooty mould which imparts black colour to leaf surface.

The losses are due to continuous sap sucking and reduction in photosynthesis owing to growth of sooty mould. As a result, canes become stunted and sucrose content is reduced even up to 53.0 per cent.

The pest population is influenced by weather parameters and cultural operations. High humidity coupled with intermittent rains and moderately high temperature favour the build up of pest population. Dry and hot summer days are unfavounable for the pest.

The optimum temperature for aphid development ranges from 20-23^{0}C. Temperature below 15^{0}C or above 28^{0}C makes the aphid inactive.

Dense crop canopy, high rate of nitrogen and irrigation water application promote aphid development. High wind velocity helps the winged-female to migrate to other locations.

There are a number of natural enemies of woolly aphid. Of these, the predator *Dipha aphidivora* and *Micromus igorotus* are most promising. The pest is easily killed by the insecticides which also act against the natural enemies.

Woolly aphid of sugarcane can be managed by adopting measures recommended in the Table 1.

Table 1. Management of woolly aphid in plant and ratoon crops of sugarcane.

Stage	Management
Seed Selection	Seed should not be taken from woolly aphid infested crop. Use certified seed preferably of aphid resistant variety.
Sett treatment	Setts should be dipped in Malathion (0.1%) or Dimethoate (0.08%) for 15 minutes before planting (In case seed is taken from crop with stray incidence of the pest)
At planting	1. Wide row spacing (120 or 150 cm) should be followed. 2. Intercropping with suitable crop is preferred to reduce pest spread. 3. Use of biofertilizers and organic manures should be maximized with reduction in chemical nitrogen – fertilizers. 4. Soil application of granular insecticides is less harmful to predators of woolly aphid
Emergence till June	1. Intensive survey should be done for locating woolly aphid infestation especially near water sources (river, pond, marshy land). Alternative hosts should also be searched. In case, of mild infestation, affected leaves should be stripped and burnt followed by spray with insecticide like Metasystox (0.05%) or Endosulfan (0.05%) 2-3 times at 15 days interval. 2. Reduction of dose of chemical N-fertilizer is required as much as possible. 3. Removal of grasses and weeds around sugarcane field should be regularly done. 4. Avoid excess irrigation and stagnation of water.
July to October	1. No insecticidal spray should be undertaken in order to allow bioagents to grow and multiply. 2. Intensive search for predators of woolly aphid in infested fields. Two predators viz., *Dipha (Conobathra) aphidivora* and *Micromus igorotus* are most effective and should be collected from infested fields where their population is high and released in fields where population is absent or low. 3. Agencies should come forward for conservation and mass multiplication of predators of woolly aphid in net house and their distribution in predator-free fields. 4. Propping (tying) of canes should be done to avoid lodging and allow unrestricted movement of air. 5. Avoid excess irrigation and humidity to build up in crop canopy.