

Pink Bollworm Management in Cotton – Timely Identification and Effective Management for Better Yield

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Cotton is an important commercial crop in Telangana. Effective management of insect pests at different crop stages is essential for obtaining higher yields and good fibre quality. Among the major insect pests of cotton, pink bollworm (*Pectinophora gossypiella*) is one of the most destructive pests. Pink bollworm larvae enter cotton bolls and feed on the developing seeds and lint, resulting in yield loss and deterioration of fibre quality. The initial damage is often difficult to detect because the larvae quickly enter the boll. Once the larva enters the boll, chemical insecticides become much less effective. Therefore, regular monitoring, early detection and timely management based on the economic threshold level (ETL) are essential.



Life Cycle and Damage

The adult pink bollworm is a small moth that is mainly active during the night. Female moths lay eggs on flowers, flower parts and young green bolls. The eggs hatch and the newly emerged larvae enter the flower or green boll at an early stage. Inside the boll, the larvae feed on the developing seeds and lint. As a result, affected bolls may fail to develop properly, seeds may be damaged and fibre quality may deteriorate. One of the major difficulties in pink bollworm management is that once the larva enters the boll, it is protected from insecticide sprays. Hence, control measures should be targeted at the egg and newly hatched larval stages, before the larvae enter the boll.

Stage-wise Management of Pink Bollworm

30–45 Days After Sowing (DAS) – Vegetative Stage

During this stage, pink bollworm infestation is generally low. However, preventive monitoring should be initiated.

- Install pheromone traps as per recommendation.
- Regularly monitor the traps and crop.

- Inspect the crop for any early signs of infestation.
- Chemical spraying for pink bollworm is generally not required at this stage.

45–60 DAS – Square and Flower Initiation Stage

With the beginning of flowering, the risk of pink bollworm infestation gradually increases.

- Regularly inspect flowers and young bolls.
- Look for **rosette flowers**, which can be an early symptom of pink bollworm infestation.
- Monitor pheromone traps regularly.
- Chemical control should be initiated **only when the recommended ETL is reached**.

60–120 DAS – Peak Flowering to Green Boll Formation

This is the **most critical protection period** for pink bollworm management.

During this period, cotton plants have abundant flowers and green bolls, providing suitable sites for egg laying. Newly hatched larvae are vulnerable before they enter the boll. Therefore, timely monitoring and intervention are very important.

Farmers should:

- Regularly inspect flowers and green bolls.
- Monitor pheromone traps.
- Look for rosette flowers and damaged bolls.
- Take control measures when the recommended ETL is crossed.
- Use recommended insecticides by rotating different modes of action rather than repeatedly using the same insecticide.

120–140 DAS – Boll Maturity Stage

At this stage, continue regular monitoring of the crop.

- Look for fresh infestation and newly damaged flowers or bolls.
- Chemical control should be considered only when fresh infestation is observed and the recommended ETL is crossed.
- Avoid unnecessary pesticide applications.

After 140 DAS – Boll Opening and Harvest Stage

Generally, **pink bollworm sprays are not recommended after 140 DAS**, particularly when bolls have started opening. Larvae that have already entered mature bolls are difficult to control with insecticides.

At this stage, emphasis should be given to:

- Timely picking of opened cotton.
- Avoiding prolonged retention of mature bolls in the field.
- Removing and destroying leftover cotton bolls and crop residues after harvest.
- Maintaining field sanitation to reduce carry-over of the pest to the next crop.

Integrated Management of Pink Bollworm

Pink bollworm cannot be effectively managed by chemical control alone. An **Integrated Pest Management (IPM)** approach should be followed.

Important practices

1. Use **pheromone traps** for monitoring adult moth activity.
2. **Regularly inspect the crop**, particularly during flowering and boll formation.
3. Identify and remove **rosette flowers and severely infested plant parts** wherever practical.
4. Follow the recommended **ETL-based approach** rather than calendar-based spraying.
5. Avoid unnecessary and repeated insecticide applications.
6. **Rotate insecticides with different modes of action** to delay development of insecticide resistance.
7. Complete cotton picking on time.
8. After harvest, destroy leftover cotton bolls and crop residues to break the pest's life cycle.
9. Avoid leaving cotton stalks and unopened bolls in the field for prolonged periods.

Chemical Management

Chemical control should be adopted **only when the recommended ETL is reached**. Spraying should be timed to target eggs and newly emerged larvae before they enter the boll.

The following insecticides/dosages may be used **only when they are currently recommended and registered for pink bollworm in cotton by the relevant agricultural authorities:**

- Quinalphos 25 EC – **2.0 ml/litre of water**
- Chlorpyrifos 20 EC – **2.5 ml/litre of water**
- Profenofos 50 EC – **2.0 ml/litre of water**
- Thiodicarb 75 WP – **1.5 g/litre of water**

Important: Do not repeatedly use the same insecticide. Rotate products with different modes of action according to the latest university/agriculture department recommendations and the product label.

Why Timely Management is Important

The effectiveness of pink bollworm management depends largely on timing. Spraying after the larva has entered the boll gives poor control because the insect is protected inside the boll. Therefore, farmers should not wait until severe boll damage becomes visible. Regular monitoring should begin early and continue throughout the flowering and boll formation period. The 60–120 DAS period is particularly important, but crop stage is more important than a fixed number of days because the actual flowering and boll formation period can vary with variety, sowing date and weather conditions.

Conclusion

Pink bollworm is a serious pest of cotton that can cause considerable losses in yield and fibre quality. Effective management requires early detection, regular monitoring, pheromone traps, ETL-based decision making, timely insecticide application and proper field sanitation. The 60–120 DAS period is the critical protection window, particularly from peak flowering to green boll formation. However, management should always be based on actual crop stage and pest incidence rather than relying only on crop age. By adopting an integrated and timely management approach, farmers can reduce pink bollworm damage, minimize unnecessary pesticide use and protect cotton yield and fibre quality.