Rainfed Conditions

Key Pests and Diseases

Cotton jassid (Amrasca biguttula), whitefly (Bemisia tabaci), thrips (Thrips tabaci), spotted bollworm (Earias insulana and E. vittella), pink bollworm (Pectinophora gossypiella), American bollworm (Helicoverpa armigera), and tobacco caterpillar (Spodoptera litura).

IPM Approach

- Treat seed with Imidacloprid and use Bt cotton (MECH - 184) as a resistant cultivar for the management of Bollworms.
- Plant border row of maize + cowpea as a cover crop and one row of setaria as a source of food and perch for birds in between each 10th and 11th row of cotton.
- Release Trichogramma chilonis @ 1.5 lakhs/ha when American bollworm eggs are seen and spray HaNPV @ 250 ml/ha (2 x 10^6 POB/ml), when the small larvae of American bollworm are seen.
- Spray 5% Neem Seed Kernel Extract for the management of sucking pests and bollworms and repeat HaNPV spray @ 250 ml/ha (2 x 10^6 POB/ml), if required. Also spray Endosulfan 35 EC, if required.

RICE (BASMATI)

Basmati rice is high value crop with great potential of export. Thus the farmers often use excessive fertilizers and chemical pesticides. The development of IPM practices not only help to sustain soil fertility but also in crop quality improvement.

Key Pests and Diseases

Yellow stem borer, leaf folder, brown plant hopper, Gandhi bug, blast or bacterial diseases.

IPM Approach

- Treat seed with Trichoderma @ 4 g/kg and Carbendazim/ Bavistin @ 5 g/kg seed.
- Monitor for appearance of eggs of stem borer on the leaf from the very beginning. Use Trichocards (fix small pieces of Trichocards at several places in the fields).
- Fix five pheromone traps/ha.
• To control leaf folder, spray neem based pesticides like Neegark/Nimbefadin or use Monocrotophos or Phosphamidon (mix 500 ml in water sufficient for spray in one hectare).

• In case of attack of false smut, use Dithane-M-45 (0.25%) or Copper oxychloride (2 g/ lit)

**CHICKPEA**

Pulses are suitable crops for crop diversification and are a major source of protein. Gram, pod borers, pod fly, sterility mosaic virus, phytophthora blight are biotic stresses in chickpea and lower the yield significantly. Fusarium wilt, yellow mosaic virus and pod borers also cause around 15-20% losses in chickpea and other pulses.

**Key Pests and Disease**

Fusarium wilt (Fusarium oxysporum f sp. ciceris), dry root rot (Rhizoctonia solani), botrytis grey mold (Botrytis cinerea), cutworm (Agrotis ipsilon) and gram caterpillar (Helicoverpa armigera).

**IPM Module**

• Use tolerant variety like RSG-44.

• Treat seed with *Rhizobium* culture @ 600 g/ha and also seed treatment with *Trichoderma harzianum* / *Trichoderma viride* @ 4 g plus Vitavax @ 2 g/kg seed for the control of collar rot.

• Adopt seed rate of 80 kg/ha and increase plant to plant distance of 30 cm instead of 22.5 cm usually recommended.

• Apply pre-emergence spray of Alachlor @ 2 kg/ha for the management of weeds.

• Monitor presence of *Helicoverpa* through pheromone trap @ 3-4/ha starting from 30 Days After Sowing.

• Install T-shaped perches for birds @ 25-30 /ha, 20-30 cm above crop height for natural control of insects.

• Spray *HaNPV* @ 250 ml/ha (2 x 10^5 POB/ml) + 0.01% fabric whitener + 0.5% gur, when the small larvae of American bollworm are seen. After next seven days, spray Neem Seed Kernel Extract @ 5% or 1500 ppm as Azadirachtin solvent base.

For more details contact:
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Pheromone traps and perches installed in Chickpea field