RAMA UNIVERSITY

www.ramauniversity.ac.in

FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Lecture 16

PESTS OF TOBACCO

Pests of Tobacco :: Major Pests

Major Pests			
Tobacco caterpillar	*Spodoptera litura*	Noctuidae	Lepidoptera
Gram Pod Borer	*Helicoverpa armigera*	Noctuidae	Lepidotera
Cutworms	*Agrotis ipsilon*	Noctuidae	Lepidoptera
Stem Borer	*Scrobipalpa heliopa*	Gelechiidae	Lepidoptera
Ground Beetles	*Mesomorphus villiger* *Seleron latipes* *Opatroides frater*	Tenebrionidae	Coleoptera
Whitefly	*Bemisia tabaci*	Aleyrodidae	Hemiptera
Aphid	*Myzus nicotianae*, *Myzus persicae*	Aphididae	Hemiptera

1. **Tobacco caterpillar:**

Spodoptera litura (Noctuidae: Lepidoptera)

Distribution and status: India, Sri Lanka, Indonesia, Bangladesh, Pacific Islands, China, Pakistan, Korea and Japan. It is a regular pest and has potential to be a serious pest.

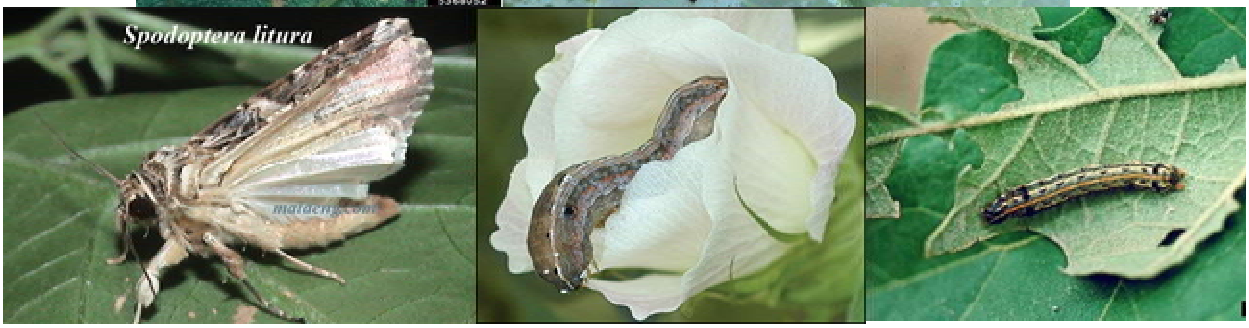
Host range: Groundnut, citrus, soybean, cotton, tobacco, castor, pulses, millets, safflower, banana, cabbage, tomato, sweet potato, bhendi, chillies, etc.

Damage symptoms: The first instar larvae feed gregariously on the leaf, on which the egg mass is laid by scrapping the epidermal layer, leaving the skeleton of veins. The skeletonized leaf may dry up. Then, the larvae move to other leaves and feed by making small holes. In later stages, they consume most of these leaf tissues and because of severe attack, only the stem and side shoots will be standing in the field without any leaf or bolls. Once squares, flowers and bolls develop, they prefer these better than leaves. They bore into them, feed on the internal content completely and cause shedding of squares and young bolls. This type of feeding is seen only

during early morning hours and night, and during hot sunny hours the caterpillars will be hiding in the flowers or in the cracks of the soil. This pest is found to cause damage in all stages of crop growth, but fleshy green leaves should be present for egg laying.

Bionomics: Larva: Pale greenish with dark markings; gregarious in the early stages. Adult: Moth with wavy white markings on a brown forewing. Hind wings white with a brown patch along the margin. Refer groundnut for further information on the duration of life stages.

Egg Mass *Early instar gregarious larvae*



Adult *Feeding on flower & leaves*

Management:

1. Use of light trap to monitor and kill the attracted adult moths or set up the sex pheromone trap Pherodin S.L. at 12/ha to monitor the activity of the pest and to synchronize the pesticide application, if needed, at the maximum activity stage.

2. Growing castor along border and irrigation bunds.

3. Removal and destruction of egg masses in castor and cotton crops.

4. Removal and destruction of early stage larvae found in clusters which can be located easily.

5. Collection and destruction of shed bolls and flowers.

6. Hand picking and destruction of grown up caterpillars.

7. Spray any one of the following insecticides using, a high volume sprayer covering the foliage and soil surface. Chlorpyriphos 20 EC 2.0 L/ha; dichlorvos 76 WSC 1.0 L;

8. Spraying Nuclear Polyhedrosis Virus at 1.5 x 1012 POB per ha or 200 larval equivalent (LE)/ ha.

9. Spraying of insecticide should be done either in the early morning or in the evening and NPV in the evening.

10. Use of poison bait pellets prepared with rice bran 12.5 kg, jaggery 1.25 kg, Carbaryl 50%WP 1.25 kg and water 7.5 L. This bait can be spread in the fields in the evening hours so that the caterpillars coming out of the soil, feed and get killed.

2. Stem borer:

Scrobipalpa (=Phthorimaea) *heliopa* (Gelechiidae: Lepidoptera)

Distribution and Status Malaya, Indonesia, Australia, New Guinea, Philippines. India especially of FCV tobacco and Natu tobacco in Andhra Pradesh, FCV tobacco in Karnataka State and bidi tobacco in Gujarat. Serious pest of both nursery and mainfield.

Host range: Tobacco, brinjal and solanaceous weeds

Damage symptoms: Tiny caterpillars mine along the leaf stalk into the stem and feed on the internal tissues. Due to larval feeding seedlings and young plants have stem galls and sprouted side branches; plants stunted, distorted and withered.

Bionomics: Larva small, whitish caterpillar, adult very small active brown moth. In bidi tobacco the female moth lays cylindrical eggs singly more on the upper surface than on lower and prefers laying towards the distal half of the upper surface and basal half of the lower surface. A female, on an average, lays 50- 80 eggs. Egg period 4 days, larval period 15-22 days. The full grown larva is pale white in colour, with head and thorax dark brown. The adults after emergence survive for 2-14 days. The total life-cycle extends over 4-5 weeks.

Management

• Grow resistant cultivars like Sumatra

• Stem borer affected seedlings should be removed and destroyed.

• In tobacco nurseries, spray chlorpyriphos 20 EC at 0.05% (20 ml in 10 L of water) at 30 and 40 days after germination. Final spray should be given before pulling out seedlings.

• In planted crop spray cholrpyriphos 20 EC 1.0 L in 500 - 800 L of water per ha at 20 and 30 days after planting.

• After completion of harvest, uproot and burn the stem borer affected plants to prevent carry over of the past to the next season.

3. Ground beetles:

Mesomorphus villiger, *Seleron latipes*, *Opatroides frater* (Tenebrionidae: Coleoptera)

Distribution and status: Widely distributed in tobacco growing region. Becomes serious occasionally.

Damage symptoms: Cut the stem of newly transplanted seedlings. This damage is usually noticed more in dry years and during prolonged hot spells immediately after planting. In some years the damage is so heavy that replanting becomes necessary.

Bionomics: Dirty grey or black, hard bodied insects. The female lays from 1 to l00 white oval eggs singly on the surface of the soil, under grass weeds near moist area. The egg and pupal periods are of only 2-10 days duration. A full-grown grub is about 25 mm in length and 1.2 mm in diameter. The larval and adult periods are long being 30 to 150 and 2 to 190 days respectively. Nearing pupation, the grubs become sluggish and slimy to touch, go into the soil at the depth of 15 to 30, cm and pupate. The total life period varies from 61 to 280 days. Eggs and larvae mainly occur in October-December, pupae only in December-May.

Management

• Protect the transplants till they establish and stems get hardened (4 weeks)

• Use endosulfan 35 EC @ 14 ml or chlorpyriphos 20EC 16 ml in 10 L of water @ 75 ml solution per plant in planting hole.

• Powder pongamia cake and mix in fine sand. Apply 5g of cake powder mixed in handful of sand (20-25g) at the base of seedling immediately after transplanting. (75 Kg pongamia cake is required per ha) or apply acephate 75 SP @ 10 gm in 10 L of water is applied @ 75 ml solution per plant in planting hole or mix chlorpyriphos 20 EC 1L with 16.5 kg jaggery and 66 kg rice bran (1:4 ratio) per ha and apply @ 5 g per plant at the plant base.

• Keep heaps of grass in between crop rows after sprinkling water on the soil at a distance of 6 m apart to attract the beetles and dust with 5% carbaryl D at10 kg/ha next day.

4. **Whitefly:**

Bemisia tabaci (Aleyrodidae: Hemiptera)

Distribution and status: India, Sri Lanka, Nigeria, Congo, West Africa, Japan and Europe

Host range: Cotton, tomato, tobacco, sweet potato, cassava, cabbage, cauliflower, melon, brinjal and bhendi.

Damage symptoms: These tiny white flies cause leaf curl disease in both nursery and mainfield. The leaves of curled plants are twisted, puckered and thickened with abnormally prominent veins. The plants show stunted growth and the yields are reduced.

Bionomics: Minute yellow adult covered with a white waxy bloom. Eggs laid on leaves, egg period 3 days. Nymph is greenish yellow oval in outline, along with puparia on the under surface of the leaves, nymphal period 5-33 days in summer, 17-73 days in winter. ETL: 5-10 nymphs / leaf or 100 whiteflies per sticky trap.

Management

• Avoid leaf curl affected seedlings while transplanting in the field.

• Remove and destroy alternate weed hosts.

• Do not grow crops like brinjal and sunflower in the vicinity of tobacco fields.

• If the population of leaf curls infested plants is less than 2% within one month after planting, remove and destroy them.

• Twelve yellow sticky (castor oil coated) traps per hectare are installed to monitor the white fly population.

• If the population of whitefly is 100 per each sticky trap, the following spray schedule of insecticides is given at weekly interval commencing from 4 weeks after germination. o 1st spray - Imidacloprid 200 S.L. @ 125 ml in 500-800 L of water per ha o 2nd spray - Chlorpyriphos 20 E.C. @ 1.25 L in 500-800 L of water per ha o 3rd spray - Thiamethoxam 25 WG @ 100 g in 500-800 L of water per ha o 4th spray - Acephate 75 S.P. @ 500 g in 500-800 L of water per ha

5. Aphid

Myzus nicotianae , Myzus persicae (Aphididae: Hemiptera)

Distribution and Status: Cosmopolitan, major pest

Damage symptoms: By constantly sucking the sap from leaves they make the plant pale and sick and thereby retard the growth. Sooty mould develops rendering the leaves unfit for curing. In addition they also transmit virus diseases like rosette or bushy top.

Bionomics: Aphids are pinkish to brown or green small louse-like insects. Both apterous (wingless) and alate (winged) forms pass through 4-5 nymphal instars in their development and the nymphal period ranges from 5-7 days. Both the forms mate within a day or two after the final moult and start reproducing young ones. The apterous forms produce significantly more number of young ones than alate but their lifeperiod is shorter than that of alate. In the field generally viviparous apterous forms are observed in large number. The winged forms are black or reddish with transparent wings. They are responsible for spreading the infestation from plant to plant and establish new colonies. Incidence of aphids reaches its peak from December and to first week of January.

Management:

Spray acephate 75 SP 500 g or imidacloprid 200 SL 125 ml or thiamethoxam 25 WG 100 g in 500-800 L of water per ha. Leave one week gap between last spray and harvesting of leaf. Spraying should be done preferably in the evening hours. After first spray, carry out subsequent sprays at 10- 15 days interval on the top 4-5 leaves of the infested plants only. It is necessary to leave a gap of two weeks between last spray and priming, otherwise the leaves will carry excess of insecticidal residues to the cured leaves.