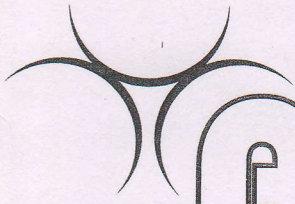
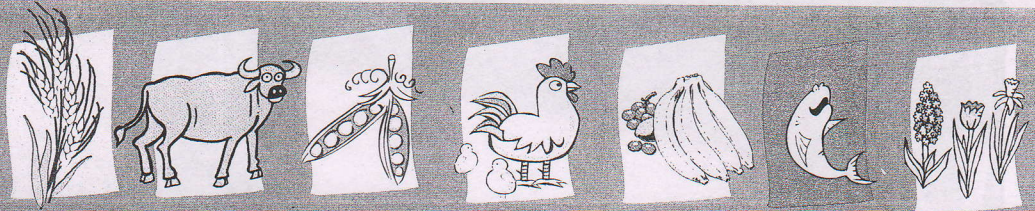


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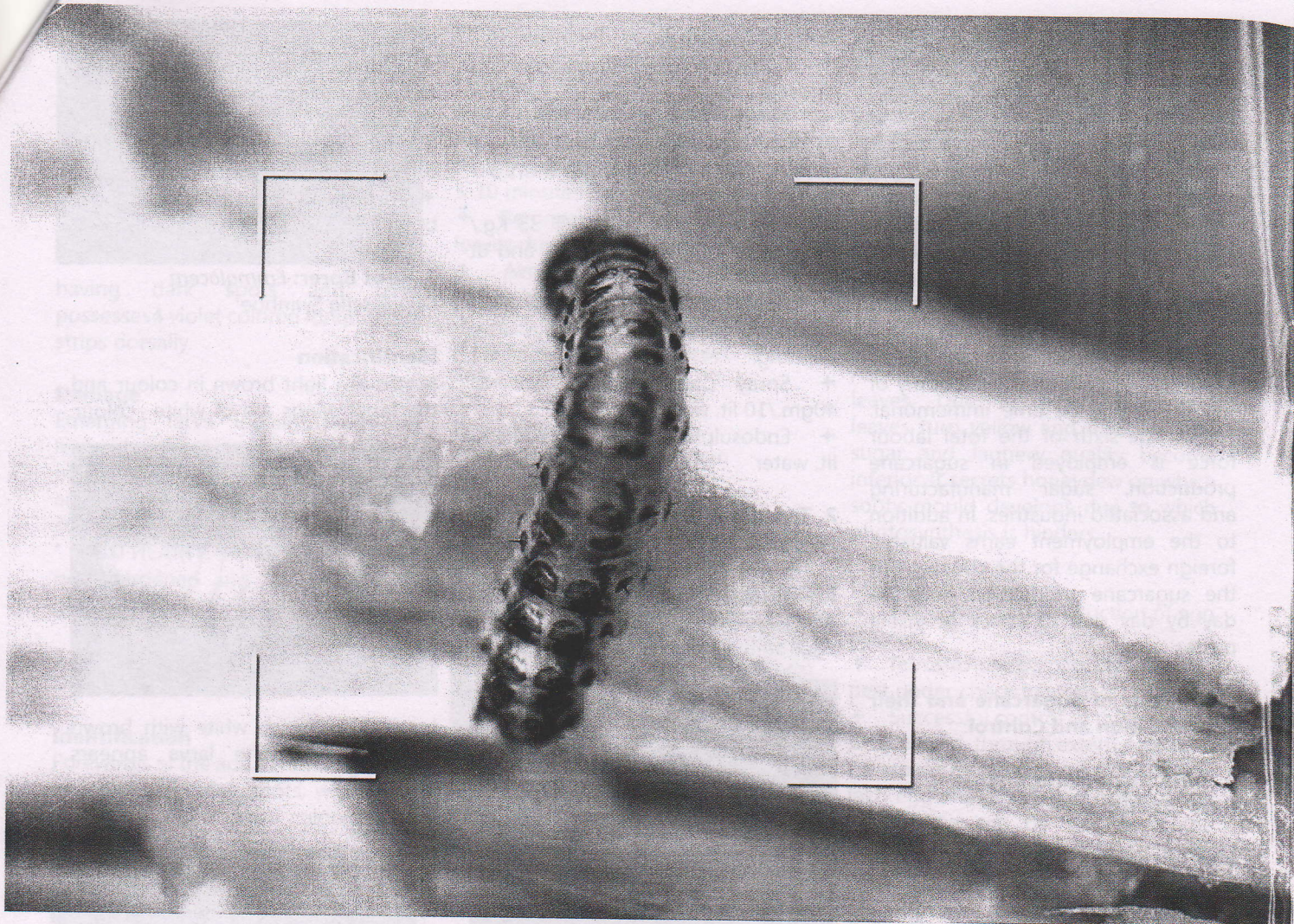
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Important Pests of Sugarcane & their Management

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Introduction:

Sugarcane is one of the most important commercial crops grown in India as well as in Haryana state. The sugarcane and sugar production in

India typically follow a 6 to 8 year cycle, wherein 3 to 4 years of higher production are followed by 2 to 3 years of lower production. After two consecutive years of declining sugar production India's total centrifugal sugar production in 2010/11 is forecast at 24.7 million tons (including 435,000 tons of khandsari sugar up 27 percent from the 2009/10, on expected improved sugarcane supplies due to higher cane planting and yields. Gur production is forecast lower at 5.6 million tons compared to 6.6 million

tons last year on expected weak prices. cent) Sugarcane production in Haryana is expected to fall to around



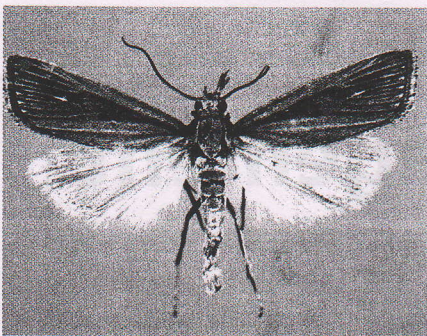
490 lakh quintals in 2009-10 (October-September), around 4.5% less than last year, maintaining a trend that started two years back as farmers shifted from cane to more remunerative crops like wheat and paddy. Sugarcane output in 2007-08 was 886 lakh quintals, which declined to 513 lakh quintals in 2008-09 seasons. A big reason for drop in cane output has been fall in acreage, which shrunk to around 75,000 hectares this year from 90,000 hectares in 2008-09. Sugarcane has an important impact on the economy of the country since time immemorial. About one-sixth of the total labour force is employed in sugarcane production, sugar manufacturing and associated industries. In addition to the employment earns valuable foreign exchange for the country. But the sugarcane production decrease day by day due to attack of insect pests.

Main Pests of Sugarcane and their Identification and Control:

1. Early shoot borer *Chilo Infuscatellus* Snell.

Identification

Moths are straw colored, while larvae are light white in colour. Larva having



five violet colored strips on its body, starting from 2nd abdominal segment to 8th abdominal segment

Damage

Emerging larvae bore the hole just above the ground level on the plant. It feeds on the internal content of the tissue due to which central shoot dries up causing "Dead heart" It can be easily pulled off and on smelling it gives bad odour.

Control Measures

- ✦ Collection and destruction of egg masses.
- ✦ Release *Trichogramma chilonis* @ 2 Tricho cards/ha at 15 days interval during morning/evening hours, 6-7 times during the season.
- ✦ Apply Carbofuran 3G @ 33 Kg./ha. one month after planting and at the time of earthing up.
- ✦ Application of Phorate 10 G @ 10 Kg./ha. At 30, 90, and 150 days after planting.
- ✦ Spray Carbaryl 50% W.P. @ 40gm./10 lit. water.
- ✦ Endosulphan 35 EC @ 21 ml./10 lit. water.

2. Top Borer: *Scripophaga Excerptalis* Wlk.

Identification

Adult are white colored. Female lays eggs at the under surface of the leaves.



Larva is yellowish white in colour and 25-30 mm. in length.

Damage

Emerging larva bores the midrib and enters the central shoot. Due to the feeding on central shoot content "

Dead Heart" is caused, but the dead heart formed by this pest can not be pulled out easily. When the central shoot leaves are fully opened up we can able to see 4-5 parallel holes which is the confirmation of larval entry. If the infestation occurs at the later stage of the crop, from the top internode outer growth develops which gives the appearance of **Bunchy Top**.

Control

- ✦ Collection and destruction of egg masses and keeping them in to Bamboo boaster so that emerging

egg parasite can be preserved.

- ✦ Destroy damage suckers along with larva.
- ✦ Application of 2 Tricho cards/ha. at 15 days interval for 6-7 times during the crop season.
- ✦ Chemical control same as Shoot borer

3. Root Borer: *Emmalocera Depressella* Swinhoe

Identification

Moths are light brown in colour and the inner wings are of white colour.



Larva is yellowish white with brown head capsule. The larva appears shriveled.

Damage

Female lays eggs singly on leaves, stem or on soil. The emerging larva feeds upon underground parts of the stem. It enters the stem by making holes and due to feeding, the top 4-5 leaves turn yellow. If the crop is attacked at later stage of the crop the damage can not be identified by external symptoms. The damage facilitates the entry of causal organism of RED ROT and WILT.

Control

- ✦ Application of Phorate 10 G granular insecticide @ 10 kg/ha
- ✦ Carbofuran 3G granular insecticide @ 33 kg/ha.
- ✦ Quinalphos 5% granular insecticide @ 20 kg/ha.
- ✦ Nimark 15% granular insecticide @ 20 kg/ha. At the time of earthing up of crop.

4. Internode Borer: *Chilo Sacchariphagus Indicus* Kapur

Identification

Adult are straw colored. Fore wings



having dark spots and larva possesses 4 violet colored longitudinal strips dorsally.

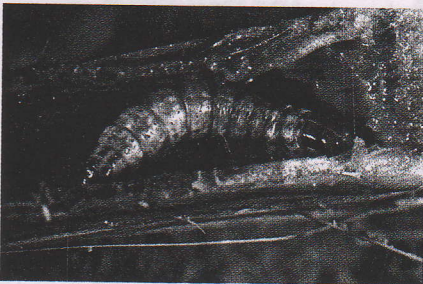
Damage

Emerging larva initially feeds on leaf sheath by scrapping, later on it enter the top internodes and feed upon internodes content resulting in formation of "DEAD HEART". Damaged internodes gets hardened and the length and girth of internodes is reduced.

5. Stalk Borer: *Chilo Auricilius* Dudgeon

Identification

Forewings of the adult is straw colored and having golden spots, while hind wings are light straw colored with



silvery fringed. Fully grown larva is 25-30 mm. long, and creamy white in colour. The larva possesses 5 violet strips along the length of body

Damage

Upon hatching the larva scraps the inner surface of leaf sheath, later it bores the internodes and feeds on internal content of the cane, due to which "DEAD HEART" develops. The entry holes can be seen only after removing the cane sheath. The damage by stalk borer resembles the damage of Early shoot borer *C.infuscatellus*. The infested cane

emits rancid odour.

Control

- + Use insect free sets for planting.
- + The planting sets are dipped in Malathion 50 EC, 0.1% solution for 5-10 minutes before planting.
- + Removal of trashes of Sugarcane leaves during May-June.
- + Avoid ratooning, as ratoon crop has higher incidence this pests.
- + For ratoon crop, pour Malathion 0.1% near the base of the sets @ 1000 lit/ha.

6. Scale Insect:

Melanaspis Glomerata Green

Identification

Adult female is wingless, oval in shape



and yellow in colour. The body is covered with waxy layer. Female is ovoviviparous and usually give birth to young once. 1st instar nymph are light yellow with two whitish posterior filaments.

Damage

Nymph and adult remain under the leaf Sheath, congregate near the internodes and suck the cell sap. Due to excessive feeding cane looks like shriveled and stunting of the cane. The sucrose content is reduced and quality of sugar juice is inferior.

7. Sugarcane Pyrilla: *Pyrilla Perpusilla* Wlk

Identification

Adult are straw colored, fore wings remain roof like on abdomen. Mouth parts are projected outward (snout like prolongation). Head look like beak of bird. Nymphs are dirty white and having feather like filament at the



end of abdomen.

Damage

Adult and nymph suck the sap from leaves. Due to heavy infestation leaves turn yellow and dries up. The sugar and Jaggery quality become inferior. It secretes honeydew on which sooty mould develops due to which photosynthesis is hinders.

Control

- + Collection and destruction of egg masses.
- + *Tetrastichus* egg parasite keep this pest under check naturally.
- + Successful control of this pest can be achieved through external parasite *Epiricania melanoleuca* F. Usually one lakh eggs/ha (250 egg masses) and 2000 pupa can be stapled in the infested field can keep the pest under check.

Biocontrol of Pyrilla

- + The field having large number of *Epiricania* is observed and collects the egg masses/pupae along with leaf. Cut the leaves in small pieces of having 1-2 pupa/e or egg masses on it. Put them in to plastic tray so that it cannot be damaged while shifting. Such leaves pieces are stapled in the pyrilla infested field.
- + For 1 ha. area one lakh eggs (250 egg masses) and 2000 pupae are stapled. Such fields are not to be sprayed with insecticides.

8. Sugarcane Whitefly: *Aleurolobus Barodensis* Maskel

Identification

Adult are small with white wings. Nymph are pale yellow in color, oblong & flat in shape, which turns black later on. It is surrounded by white waxy boarder.



Damage

Large number of nymphs settled on leaves and suck the sap. The infested plant initially turn yellow and later on turn black due to which plant growth is hinders.

Control

- ✦ In the water logging condition the infestation is more, so manage good drainage.
- ✦ Avoid ratooning.
- ✦ Avoid excessive fertilizer application.
- ✦ *Serangium parcesetosum* is effective predator of whitefly.
- ✦ For preservation of *Encarsia acroptera* put 40 mesh cages @ 10-20/ha. & change the leaves having pupa at 10-20 days interval.

9. Sugarcane White Woolly Aphid, *Caratovacuna Lanigera* Zhntner

Identification

Aptea small to medium size, pale green to brown, covered with white



woolly wax, forming dense colonies on the under surface of the leaves.

Damage

The nymphs and adults of sugarcane woolly aphid congregate on the central surface of leaves along midrib and de sap resulting in drying up of leaves besides excreting honey dew

on the upper surface of the lower leaves on which fungus develops quickly resulting in 'sooty mould' showing complete blackening of leaves, Sooty mould affect photosynthesis, resulting quality and quantity. Favourable climatic conditions enhance the reproduction capacity and in a short period a huge population is reproduced. During severe infestation on an average 1600 nymphs may be found on a single leaf to a maximum of 8000 nymphs. The winged female of woolly aphid can fly with wind to a distance of 1.5 km to 2.0 km. This facilitates further spread of the pest. The life cycle of this aphid is completed in a period of one month depending on the climatic conditions and sugarcane varieties.

Control

- ✦ Adopt proper water management practices and avoid excess irrigation. If possible adopt drip irrigation.
- ✦ Select seed material with care



from pest free areas and uninfested fields.

- ✦ Destroy affected leaves when the pest problem is initially noticed in a limited area, which helps prevent the spread of the pest.
- ✦ Utilise sugarcane varieties less susceptible to the woolly aphid.
- ✦ Adopt crop habitat diversity through intercropping in sugarcane ecosystem to reduce the pest population.
- ✦ In summer treat the epicenters of woolly aphid infestation with dichlorvos to prevent further population build up. If natural enemies like *Dipha*, *Micromus* etc are seen, chemicals should not be sprayed.
- ✦ Integrated nutrient management incorporating organic manures

like FYM / vermicompost, etc., @ 20 t/ha and avoiding excess application of nitrogen. The fertilizer recommendations vary from state to state.

- ✦ Regular surveillance and monitoring of sugarcane woolly aphid for timely forewarning and adoption of BIPM measures.

Biological Control

- ✦ Conserve and augment natural enemies like *Dipha aphidivora*, *Micromus igorotus*, *syrphids*, etc. by avoiding the use of chemical pesticides whenever natural enemy activity is seen.
- ✦ Ensure that no chemical pesticides are used in at least 1 % of the sugarcane field to serve as a refuge for the build - up of natural enemies.
- ✦ Set up *Dipha aphidivora* and *Micromus igorotus* nurseries under shade nets and augment their population in woolly aphid - infested areas by periodic releases especially during June - July. Augmentation may also be effected during this period from fields where *Dipha* is present to fields where it is absent

Chemical Control

- ✦ The pesticides endosulfan , malathion , chlorpyriphos, acephate, methyl demeton, dichlorvos, phorate or carbofuron, dimethoate and metasystox have been recommended for the management of the sugarcane woolly aphid by different agencies
- ✦ Soil application of granular insecticides will be less harmful to the predators but sufficient waiting period of at least 60 days should be allowed before harvest.

