

## Questionnaires for top shoot borer in Sugarcane

1. What's the colour of Top shoot borer adult moth?  
**Moths of this insect are silvery white in color.**
2. Presence of shot holes in the emerging leaves, reddening, tunnels in the midribs of leaves and bunchy top are the symptoms caused by -**Top shoot borer**
3. Bunchy top appearance in sugarcane is due to damage by -**Top shoot borer(*Scirpophaga excerptalis*)**
4. What's the difference in Male and female moth of sugarcane top shoot borer moth?  
**Male moths are comparatively shorter than female moths. Female moths are bigger in size with brown tuft of hairs on the tip of abdomen.**
5. The adult of which of the shoot borers of sugarcane is a white coloured moth with a buff coloured anal tuft in the abdominal tip of female. – **Top shoot borer**
6. Ichneumonid parasitoid, *Isotima javensis* is used against which pest of sugarcane –**Top shoot borer**
7. Pre-pupal parasitoid used for control of top shoot borer -***Isotima javensis***
8. Top shoot borer occurs in sugarcane which parts damage caused?  
**Emerging leaf and grown up cane.**
9. Resistant varieties –**Co-419, Co-745, Co-6516**
10. Tolerant varieties- **Co-859, CO-1158, CO-7224, CoH 128, CoOr 03151(Sabita), CoH 119 (Haryana Ganna - 119), Co 89029 (Gandak), CoLk 07201 (Ikshu-1)**
11. Egg mass available in which part of plant?  
**Eggs are laid on the lower surface of top leaves in clusters particularly near midribs. The clusters are covered with buff coloured hairs.**
12. CIBRC approved pesticide for top shoot borer in sugarcane?

S.No	Chemical Name	Active ingredient (gram)	Formulation (gm/ml)	Dilution in Water (Liter)	Waiting Period (days)
1	Carbofuran 03 % CG	2000	66600	-	-
2	Chlorantraniliprole 18.50 % SC	75	375	1000	208
3	Chlorantraniliprole 00.40 % GR	75	18.75	-	147
4	Monocrotophos 36 % SL	600-800	1500-2250	500-1000	-

13. Alternate host for top shoot borer pest?  
**Maize and pearl millet**
14. What are the Natural enemies for Top shoot borer?  
**Prepupal parasitoid: *Isotima javensis***  
**Egg parasitoids: *Telenomus beneficiens*, *Tetrastichus schoenobi*, *Trichogramma japonicum***  
**Larval parasitoids: *Goniozus indicus*, *Chelonus* sp.**  
**Pupal parasitoid: *Tetrastichus ayyari***
15. In One egg mass how much egg present?  
**10-80 present in one single egg mass.**

16. Top shoot borer Life cycle complete in how many days?

**Egg to larvae- 7-11 days, Larva to Pupa- 5-7 days, Pupa to Adult- 7-10 days**

17. Pupation of top shoot borer occurred in which place?

**Pupation takes place within the larval tunnel in a chamber with an exit hole constructed by the caterpillar.**

18. How many days take to hatch from egg to larvae?

**Egg to larvae- 7-11 days**

19. Which stage of Top shoot borer make economic loss to sugarcane crop?

**1 to 3 month old crops**

20. Dead heart symptoms easily pulled or not?

**Dead heart in grown up canes, which cannot be easily pulled.**

21. Egg lay in single or group?

**Eggs are laid on the lower surface of top leaves in clusters particularly near midribs.**

22. Bore holes made by top shoot borer in which plant part?

**Bore holes at the top of the shoot and shows bunchy top appearance.**

23. Favourable condition for heavy top shoot borer infestation?

**Dead heart arises on after sixth month grown up canes.**

24. In sugarcane crop which stage Dead heart symptom easily identify?

**Heavy infestations are favoured by poor irrigation, scanty rain fall, high temperature and low humidity.**