

Study of Sugarcane Pests, Uses of Management Practices and Other Information of Sugarcane (*Saccharum officinarum* L.) Growers of the Bihar

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Abstract: There are 140.08 hectares (346 acres) of land. Farmers of the adjacent locality received leased of that land and cultivate sugarcane. Data collected from those farmers (50 farmers) during 02.02.14 to 30.03.14 from Rampur-rudra village . Farmers informed that stem borer (*Chilo tumidicostalis*), early shoot borer (*Chilo infuscatellus*), top shoot borer (*Scirpophaga incertulus*), root borer (*Emmalocera depressela*), termite (*Odontotermies obsesus*), mealy bug (*Saccharicoccus sacchari*) and scale insect (*Melanapis glomerata*) were major pest, respectively; even after application of insecticides (Furadan 5G). Moreover, 77.27% farmers informed that they used only Furadan 5G for the control of all type of stem borers; 54.54% farmers informed that they used losburn for control of termite. But removal of stem borer infested plant parts and killing of early shoot borer larvae by removal of soil was followed 21% farmers. In addition, the highest 77.27% farmers were acknowledged that those received information from the ‘Sugarcane development assistance’ followed by ‘Center in charge (13.63%)’. Additionally, 814.82% farmers said that they cultivated Isd 37 sugarcane variety followed by Isd-21 (40.91% farmers), and Isd 26 (27.27% farmers). Furthermore, 63.63% farmers informed that those cultivated chili *Capsicum annum* as relay crops followed by potato *Solanum tuberosum* 54.54% (farmers), tomato *Solanum lycopersicum* 18.18% (farmers) and cucumber *Cucumis sativus* 13.63% (farmers).Those farmers claimed that they suffered various problems for sugarcane cultivation such as lack of marketing facilities (late purchase of sugarcane by the sugarcane mill, when it reduced its weight due do dry) and stem borer insect infestation.

Keywords: Insect Pest, Insecticides, Mechanical Control, Sugarcane Variety, Relay Crops, Problems.

1. INTRODUCTION

Sugarcane (*Saccharum officinarum* L.) is one of the most important cash-cum-industrial crops in Bihar. It is the 6th position in India. The average yield of sugarcane in Bihar is very low compared to other sugarcane growing countries. Insect pests alone cause damage ranging from 20-60% . Among various factors of yield reducing; insect pests inflicts considerable losses, which are estimated to be around 20% in cane yield and 15% in sugar recovery [5]. However, so far about 70 species of the insect pests have been identified to feed on sugarcane in Bihar. It is also reported that the most important pests of Bihar.

Sugarcane are:

- i) Early shoot borer

- ii) Top shoot borer
- iii) Stem borer
- iv) Rootstock borer
- v) Mealy bug
- vi) Scale insect and
- vii) White grubs

The yield losses due to those sugarcane pests were estimated to be 22-33% by early shoot borer ; 21-48% by top shoot borer ; 8.2-12.6% by stem borer ; and 8.55 - 10% by root stock borer ; 1. 43% by scale insect, 24.1% by mealy bug and 23.0738.17% by white grubs . Various techniques such as cultural, mechanical, biological and chemical methods have been recommended to control those pests . An understanding of insect pest attack and the associated factors would be helpful to planners and extension workers to devise strategies and courses of actions for effective control of the insect pests (Ahad and Haque, 1993). Sugarcane is very important crop of this area. But literatures reveal that information about major insect pests and other problems related to sugarcane (*Saccharum officinarum* L.) Cultivation is about scanty, especially in Bihar. But it does not fulfill the overall need.

A research program was under taken whose objectives are:

- i) To know different insect pests of sugarcane,
- ii) Different problems faced by sugarcane growers,
- iii) Pest management practice they use,
- iv) The different varieties of sugarcane they cultivate,
- v) Different sources they use to take advice for management of insect pests and other purposes,

The research would be helpful to the researchers such as to agriculturists, entomologists, agriculture extortionists, sociologists, psychologists and also those who are interested to conduct a research based on interview schedule.

2. MATERIALS AND METHODS

The methodology was followed according to Ahad and Haque [17] and Ahad et. al. [18]. Based on the literature, it was first surveyed how many insect pests attacked in the sugarcane crop in Bihar . Based on those data, an interview schedules was set for the collection of required data that mention in the objectives. A colour photograph (laminated) also prepared about the nature of damage and the insect pests of sugarcane. Then, it showed to the farmers and explains clearly and then asked those farmers, whether those insect pests are major, minor or absent. Besides, other questions (those mentioned in the objectives) were also asked. Finally, the obtained data were converted into percentages and compiled in various tables for illustration in the result and discussions.

3. RESULTS AND DISCUSSIONS

Major Insect Pests of Sugarcane

Seven insect species were noted to attack sugarcane. However, 90.50% farmers claimed that sugarcane stem borer (*Chailo tumidicostalis*) was a serious insect pest. Whereas 40.98, 40.98, 50.48, 17.80, 20.50, 7.30 and 25.20% farmers (Table-1) claimed that sugarcane early borer (*C. infuscatellus*), termite (*Odontotermies obsesus*), mealybug (*Saccharicous sacchari*), scale insect (*Melanapis glomerata*) were damaged sugarcane crop, respectively. Consequently, those were major pest, respectively. It was seen that major% of farmers claimed that sugarcane stem borer was the major pests. So, stem borer was the serious pest even after application of insecticides. But insecticides reduced the damaged of sugarcane early borer (*C. infuscatellus*), termite (*Odontotermies obsesus*) scale insect and mealy bug. Patil and Hapase [21], Ahad et al. [2], Ahad [3] reported that the most important pests of sugarcane were early shoot borer, top shoot borer, stem borer, rootstock borer, mealy bug, scale insect and white grubs, which more or less supports the result of the present study.

Table 1. Comments of sugarcane farmers (%) about major insect pests.

Sugarcane Insect Pests	Family	Comments of farmers(%)about infestation of major/minor insect pests		
		Major	Minor	Not found
i) Sugarcane Stem borer (<i>Chailo tumidicostalis</i>) *	Pyralidae	90.50	9.50	0.0
ii)Sugarcane top shoot borer(<i>Scirpophaga incertulus</i>)	Pyralidae	40.98	54.57	4.45
iii)Sugarcane early borer(<i>C.infuscatellus</i>)	Pyralidae	50.48	47.02	2.50
iv) Sugercane root borer (<i>Emmalocera depressela</i>)	Pyralidae	17.80	18.08	36.36
v) Termite (<i>Odontotermies obsesus</i>)	Termitidae	20.50	45.45	47.02
vi) Scale insect (<i>Melanapis glomerate</i>)	Coccidae	7.30	42.24	5.46

*Serious pest.

Use of Insecticides and Other Management Practices Used by the Sugarcane Farmers

Farmers used seven types of insecticide but total 77.27% (highest%) farmers used Furadan 5G insecticide followed by Loss burn (54.54%), Ad furan (13.63%), and Briefer (9.09%), Karate (9.09%), lime (9.09%), respectively (able 2). Ahad et al. [4] showed that sugarcane farmers mainly use Furadan 5G for the control about all insect pest and Heptachlor for the control of termite. Here farmers use Loss burn instead of Heptachlor, as it is banned by the government of Bihar. This result supports the result of the present research. In addition, total 72.72% farmers remove the infested sugarcane shoot borer, stems and thrown into the water; killing of early shoot borer larvae by removal of soil is 410 Md. Abdul Ahad et al.: Survey of Major Insect Pests, Uses of Management Practices and Other Related Information of Sugarcane (*Saccharum officinarum* L.) Growers of the Bihar also done by some farmers i. e. they use mechanical method of pest control (Table-2).

Table 2. Use of insecticides and other management practices used by the sugarcane farmers.

Insecticides	% Farmers use
Furadan 5G (Carbofuran)	77.27
Lorsban (Clorpyrephos group)	54.54
Agrofuran (Carbofuran group)	13.63
Breffer(Carbofuran group)	9.09
Karata(Carbofuran group)	4.44
Azodrin (organophosphorus)	4.44
Lime	4.44
Avastan (Fungicide) Others management practices	40.05
Removal of insect infested sugarcane by stem borer and it was thrown into the water	72.72
Killing of early shoot borer larvae by removal of soil 31%	31

Use of Source Advice for the Insect Pest Control

It was observed that farmers took advice for management of sugarcane pest mainly from the cane development assistance (77.27%) followed by Center in charge (13.63%), own experience (9.09%), friends (9.09%), Assistant manager (9.09%), SCI (9.09%) and relatives (04.45%), respectively.

Percentages of Sugarcane Farmers Cultivate Relay Crop

It was seen that 100% farmers cultivate relay crops after harvesting of sugarcane and when sugarcanes were very young. However, highest 63.63% farmers cultivate chili (63.63%) as relay crop followed by potato (54.54%), tomato (18.18%)

and cucumber (13.63%). Moreover, very minor% farmers (4.45% farmers) were also cultivated onion, tobacco, mustard, coriander, and mung bean (Table - 3) as relay crop.

Table 3. Percentages of sugarcane farmers cultivate relay crop.

Name of relay crop	Farmer (%)
Chili (<i>Capsicum annuum</i>)	63.63
Potato (<i>Solanum tuberosum</i>)	54.54
Tomato (<i>Solanum lycopersicum</i>)	18.18
Cucumber (<i>Cucumis sativus</i>)	13.63
Onnion (<i>Allium cepa</i>)	4.45
Tobacco (<i>Nicotiana tabacum</i>)	4.45
Mustard (<i>Brassica juncea</i>)	4.45
Coriander (<i>Coriandrum sativum</i>)	4.45
Mung bean (<i>Vigna radiata</i>)	4.45

Problems of Sugarcane Farmers

Correct identification of any problem makes it easy to solve. Sugarcane farmers were mostly illiterate. So, not all farmers were able to express their problem correctly but those who (a few) somewhat literate expressed their problem very effectively, but their percent was less. Consequently, the problems are summarized as rank (according to the highest% of farmers claim) wise in table-4.

Table 4. Problems of sugarcane farmers.

Problems	Rank (on the basis of descending %)
Lack of marketing facilities, late purchase of sugarcane by the sugarcane mill, when it losses its weight due do dry	I
Stem borer insect infestation	II
Newly adopted tender process taking of land for sugarcane cultivation instead of leach method	III
Have to take loan from the sugarcane mill though no need of loan	IV
Lack of irrigation facilities	V
Lack of organic manure	VI
No problem	VII

4. CONCLUSION

Sugarcane stem borer is the serious pests of sugarcane; it reduce yield seriously through the boring of stem. This pest is uncontrollable by using insecticides and it a major problem of sugarcane cultivation. So, it is necessary to develop integrated pest management to control the pests. In addition, other main problems of the sugarcane farmers are marketing facilities; the sugarcane mills purchase the sugarcane when it loses its weight due does dry. So, for the save of nation and sugar mills for sugar production as well as supply of sugarcane, the mills would take a suitable process to purchase sugarcane from the farmers in due does dry.

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