

SHORT COMMUNICATION

Effect of Pressmud on the Incidence of Rootstock Borer and White Grubs in Sugarcane Cultivation

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The rootstock borer, *Emmalocera depressella* Swinhoe (Lepidoptera: Pyralidae) and white grubs, *Holotrichia selicollis*, *Anomala* sp. & *Brahmina* sp. etc. (Coleoptera: Scarabaeidae) are the most destructive pests of sugarcane in the greater Dinajpur district of Bangladesh and recently increasing in greater Rangpur, Rajshahi and Khustia districts of Bangladesh (Kundu and Biswas, 1993). In general, the northern and north-western part of this country can be considered as an RSB and WG prone area. Sugarcane rootstock borer infests shoots and grown up canes also. It is reported that 52% affected shoot produce no tillers, 30% produce only one tiller and 18% produce two tillers only (Cheema, 1953, Tondon, 1957). Gupta and avasthi (1952) reported yield loss up to 10% while recovery loss was only up to 0.3 units in Uttar Pradesh. Seventeen species of white grubs have so far been recorded in sugarcane fields in Bangladesh causing damage every year (SRTI, 1981; SRTI 1984). Among these, *Brahmina* sp., *Holotrichia* sp., *Anomala* sp. and *Adoretus versutus* are most damaging. Alam, et al. (1982) Heavy infestation may cause 50-60% damages, even total loss of canes. The grubs feed on the roots and underground portion of stalks rendering the plants looking pale and sickly. Affected shoot/cane dries up which can easily be pulled out. The canes from affected clumps become unfit for crushing and as seed materials. The yield loss due to white grubs was found to be 23.07 to 38.17 t ha⁻¹ (Miah et al., 1986).

Pressmud is a good source of organic matter, NPK and important micronutrients and has established its importance in improving fertility and productivity (Rangaraj et al., 2007; Kumar and Verma, 2002). Moisture content of fresh pressmud is around 60% and oven dried pressmud contained 20% Organic C (2.35%) N, (0.13%) P, (0.54%) K, (0.56%) S, (6.64%) Ca, (0.46%) Mg, (128 ppm) Cu, (6300 ppm) Fe, (308 ppm) Mn and (883 ppm) Zn (Bokhtiar and Sakurai, 2007). Pressmud has an potential to supply nutrients in addition to its favourable effects on physicochemical and biological properties of soil which might affect insect pests in soil. The present study was conducted to investigate the effects of pressmud on the incidence of rootstock borer and white grubs in sugarcane cultivation. The cane growing areas of the greater Dinajpur districts of Bangladesh (Thakurgaon sugar mills zone) was chosen as experimental area during the cropping season 2009-2010. The experiment was comprised of two treatments including one control viz. T0- control (untreated) and T1 – pressmud @ 15tha⁻¹ at planting. The plot

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size was 25m x 20m and plot to plot distance was 2 meter. The variety Isd 32 was used as planting material (sett) and was done through conventional sett placement end to end in the trenches in December 2009. Fertilizers were applied as per recommended dose, method and time (FRG, 2005). Intercultural operations were done as and when required (Rahman and Pal, 2003). Rootstock borer and white grub population were taken from randomly selected 10 clumps per plot. An area of 60 cm x 60 cm was up from the depth of 40 cm with spade. Rootstock borer infestation and white grub larval population counted by dissection were stubbles root and soils of these pits. Data were taken five times, first in May, June, July, August and finally in December.

Percent infestation by RSB was computed by counting total and infested canes for individual plot by using the formula:

$$\% \text{ RSB Infestation} = \frac{\text{Number of uprooting infested canes}}{\text{Total number of uprooting canes}} \times 100$$



Figure1. Rootstock borer infested cane (rootstock) and white grub infested clump (dug)

White grubs population in May, June, July, August and December (2010) was higher (39, 16, 32, 3 & 47) in treated plot than control plot (16, 18, 21, 2 & 33) as shown in figure 2, except in month of June infestation was lower white grubs population than control plot.

On the other hand as in Figure 3, the rootstock borer infestation August data showed that treated plot was less infestation 67.57 percent than control plot 70.27 percent. The treated plot cumulative percent infestation 87.23 percent and control plot percent infestation 86.05 percent in month of December. Deka *et al.* (1999) reported that sugarcane pressmud did not show a significant reduction of rootstock borer.

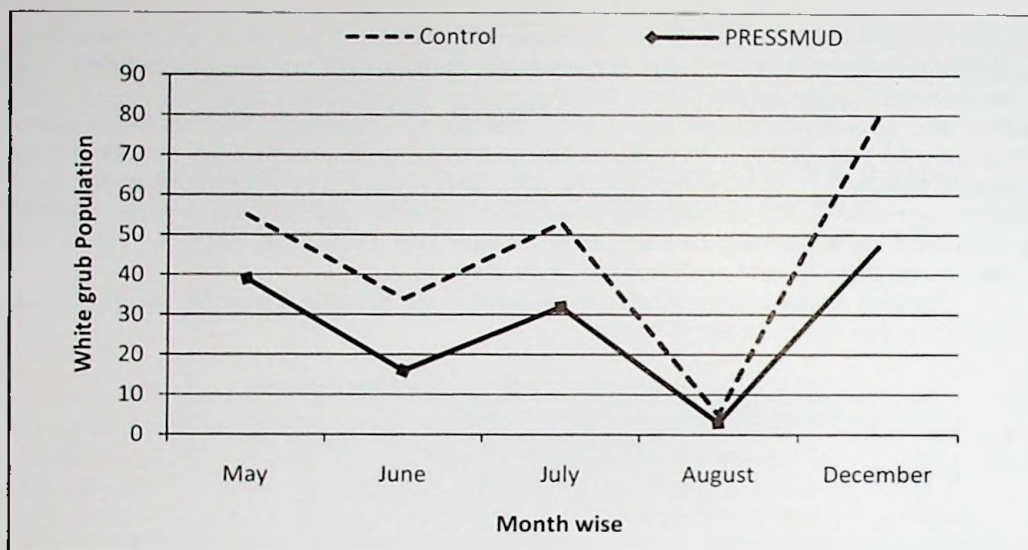


Figure 2. Effects of pressmud on the incidence of white grubs population in sugarcane at Thakurgaon, 2009-2010

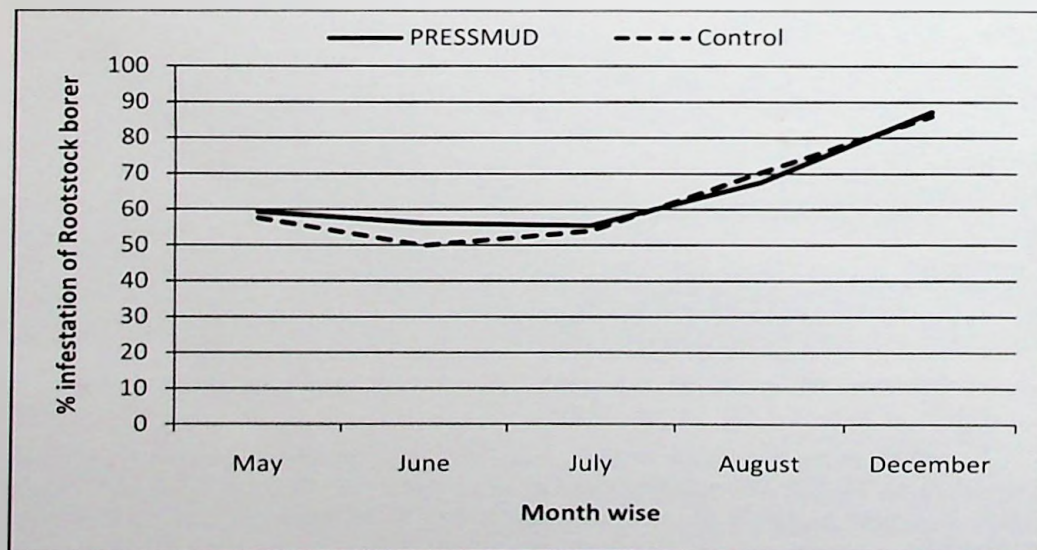


Figure 3. Effects of pressmud on the incidence of rootstock borer in sugarcane at Thakurgaon, 2009-2010

Month wise mean data has been shown in Table 1 and 2. Mean white grub population per 10 clumps was found to be 27.40 percent in treated plot and 18.00 percent

in control plot (Table 1) indicating increased population of white grubs in pressmud applied plots. On other hand monthly and mean infestation level of RSB (Table 2) was 63.95 percent in treated and 64.84 percent in untreated plot which revealed that RSB infestation was not much dependent on pressmud application specially at later stage of the crop.

Table 1. Effect of press mud on the incidence of white grubs in sugarcane cultivation at Thakurgaon, 2009-2010

Treatments	White grub population per 10 clump					Mean
	1 st data May/10	2 nd data June/10	3 rd data July/10	4 th data Aug/10	Final data Dec/10	
T ₁ . Pressmud @ 15 t ha ⁻¹ at planting	39.00	16.00	32.00	3.00	47.00	27.40
T ₀ - Control (No pressmud)	16.00	18.00	21.00	2.00	33.00	18.00

Table 2. Effect of press mud on the incidence of rootstock borer in sugarcane cultivation at Thakurgaon, 2009-2010

Treatments	% infestation rootstock borer					Mean
	1 st data May/10	2 nd data June/10	3 rd data July/10	4 th data Aug/10	Final data Dec/10	
T ₁ . Pressmud @ 15 t ha ⁻¹ at planting	59.38	56.25	55.56	67.57	87.23	63.95
T ₀ - Control (No pressmud)	57.58	50.00	54.05	70.27	86.05	64.84

So, in conclusion it can be noted from the result that application of pressmud increased white grub population but exerted no significant effect on rootstock borer infestation in sugarcane field.

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