

Name of the project	Evaluation of Chlorantraniliprole 0.4%G against insect- pests of sugarcane
Funding agency	FMC Pvt. Ltd. India, Lucknow.
Year of start	2018-19
Year of completion	2018-19
Name of PI and Co-PI	Dr.Gaje Singh
Total budget	2.60 lakhs

Significant achievements:

Top borer (*Scirpophaga excerptalis*) of Sugarcane

30 days after application

The result indicated that population of *Scirpophaga excerptalis* was significantly reduced in treated plots as compared to untreated plot after 30 DAA. The minimum infestation (1.89 %) was recorded in Chlorantraniliprole 0.4 % GR @100gai/ha followed by Chlorantraniliprole 0.4 % GR @75 gai/ha (2.09 %) (CIL sample) and Chlorantraniliprole 0.4 % GR @75 gai/ha (2.13%) (Market Sample). These treatments were found at par with each other and significantly superior over rest of the treatments. The maximum (3.13%) infestation was observed with Chlorpyriphos 20% EC @ 300 gai/ha.

45 days after application

The observation recorded on 45 DAA showed that all the treatments maintained their better efficacy over control. The most effective treatment for the control of top borer (1.57 %) was Chlorantraniliprole 0.4 % GR @100gai/ha.

60 days after application

Chlorantraniliprole 0.4 % GR @100gai/ha has lowest infestation (1.24%) and it was at par with Chlorantraniliprole 0.4 % GR @75 gai/ha (1.36%) (CIL sample) and Chlorantraniliprole 0.4 % GR @75 gai/ha (1.38%) (Market Sample). The maximum (2.61 %) infestation was observed with Chlorpyriphos 20% EC @ 300 gai/ha .

90 days after application

Data recorded on 90 DAA of treatments revealed that all the treatments were found significantly superior over control and population of top borer varies from 1.14 to 4.15 percent.

120 days after application

The statistically analysed data revealed that after 120 DAA Chlorantraniliprole 0.4 % GR @100gai/ha again showed lowest infestation (1.08 %) and it was at par with Chlorantraniliprole 0.4 % GR @75 gai/ha (CIL sample)

Height and Girth of the cane

The statistically analysed data revealed that maximum height (205.8 cm) and girth (2.76 cm) was recorded at the time of harvesting in Chlorantraniliprole 0.4 % GR @100gai/ha but it was significantly at par with Chlorantraniliprole 0.4 % GR @75 gai/ha (CIL sample) and Chlorantraniliprole 0.4 % GR@75 gai/ha (Market Sample) with 204.9, 204.8 and 2.73, 2.72 cm, respectively.

Number of millable cane

At the time of harvesting maximum number of millable cane (541) was recorded in

Chlorantraniliprole 0.4%GR @100gai/ha and it was at par with Chlorantraniliprole 0.4%GR @75 gai/ha (CIL sample) and Chlorantraniliprole 0.4%GR @75 gai/ha (Market Sample) with 539 and 536 number of canes, respectively. These all three treatments were significantly superior over all other treatments.

Yield

Highest yield of 74.76 MT/ha were recorded from Chlorantraniliprole 0.4 % GR @100gai/ha treated plots and it was statically similar with Chlorantraniliprole 0.4 % GR @75 gai/ha (CIL sample) and Chlorantraniliprole 0.4 % GR @75 gai/ha (Market Sample) with 73.93 and 73.86 MT/ha, respectively and were found significantly superior over all the other treatments including untreated control.

Phytotoxicity effect of Chlorantraniliprole 0.4%GR on Sugarcane

The phytotoxicity of Chlorantraniliprole 0.4%GR @ 75 and 150 gai/ha on sugarcane, indicated no phytotoxicity symptoms such as leaf epinasty, leaf hyponasty, leaf necrosis. Chlorosis was observed at 30, 40, 60, 90 and 120 days after application when Chlorantraniliprole 0.4%GR was applied 150 gai/ha. The result indicated that Chlorantraniliprole 0.4%GR is not phytotoxic to sugarcane

CONCLUSION

It was concluded from experiment for bio-efficacy study against top borer that the Chlorantraniliprole 0.4%GR @ 100 gai/ha broadcasted near the cane in furrow before 1st irrigation was found at par with Chlorantraniliprole 0.4%GR@ 75 gai/ha and gave best control on top borer larvae populations as compared to the standard check and untreated control. The Chlorantraniliprole 0.4%GR did not produce any phytotoxic symptoms on sugarcane crop even at maximum higher dose *i.e.* 150 gai/ha.

Early shoot Borer (*Chilo infuscatellus*) of Sugarcane

30 days after application

The result indicated that all the treatments were significantly superior over control while Chlorantraniliprole 0.4%GR @ 100 gai./ha applied after 30 DAA has lowest (2.22%) infestation and statistically at par with Chlorantraniliprole 0.4%GR@ 75 gai./ha (CIL sample) and Chlorantraniliprole 0.4%GR@ 75 gai./ha (Market Sample) with 2.46 and 2.47 percent, respectively. The maximum infestation (10.49%) was recorded in Fipronil 0.3% GR @ 100 gai./ha.

45 days after application

The same pattern was observed again. Chlorantraniliprole 0.4% GR@100 gai/ha had lowest (2.03%) infestation and it was statistically at par with the Chlorantraniliprole 0.4% GR@ 75 gai./ha (CIL sample) and Chlorantraniliprole 0.4%GR@ 75 gai./ha (Market Sample) with 2.12 and 2.25 percent, respectively and was significantly superior over all the treatments. Maximum infestation (15.36%) was again observed in Fipronil 0.3% GR @ 100 gai./ha.

60 days after application

Minimum (1.49%) infestation was recorded with the treatment Chlorantraniliprole 0.4% GR@100gai/ha and it was statistically at par with the Chlorantraniliprole 0.4% GR@ 75 gai./ha (CIL sample) and Chlorantraniliprole 0.4% GR@ 75 gai./ha (Market Sample) with 1.64 and 1.61 percent, respectively.

90 days after application

The same pattern was recorded. Chlorantraniliprole 0.4%GR @100 gai/ha had lowest infestation (1.26 %) and it was at par with Chlorantraniliprole 0.4%GR@ 75 gai./ha (CIL

sample) and Chlorantraniliprole 0.4% GR@ 75 gai./ha (Market Sample) with 1.37 and 1.32 percent, respectively. All these three treatments were found significantly superior over all the treatments including untreated control.

120 days after application

The observation recorded on 120 DAA showed that all the treatments maintained their better efficacy over control. The most effective (1.13 %) treatment for the control of ESB was Chlorantraniliprole 0.4%GR @100 gai/ha followed by Chlorantraniliprole 0.4% GR @75 gai/ha (1.19 %) (CIL sample) and Chlorantraniliprole 0.4% GR @75 gai/ha (1.21 %) (Market Sample)

Height and Girth of the cane

At the time of harvesting maximum height (206.1 cm) and girth (2.65 cm) was recorded in Chlorantraniliprole 0.4% GR@100 gai/ha but it was significantly at par with Chlorantraniliprole 0.4% GR@75 gai/ha (CIL sample) and Chlorantraniliprole 0.4%GR @75 gai/ha (Market Sample) with 205.2, 204.9 and 2.62, 2.61 cm respectively.

Number of millable cane

At the time of harvesting maximum number of millable (553) cane was recorded in Chlorantraniliprole 0.4% GR @100 gai/ha which was at par with Chlorantraniliprole 0.4% GR @75 gai/ha (CIL sample) and Chlorantraniliprole 0.4% GR @75 gai/ha (Market Sample) with 550 and 545 number of cane, respectively.

Yield

The highest yield of 74.35 MT/ha were recorded with Chlorantraniliprole 0.4% GR @100 gai/ha treated plot and it was found statistically at par with Chlorantraniliprole 0.4% GR@75 gai/ha (CIL sample) and Chlorantraniliprole 0.4%GR @75 gai/ha (Market Sample) with 73.71 and 73.50 MT/ha respectively.

Phytotoxicity effect of Chlorantraniliprole 0.4% GR

Phytotoxicity study of Chlorantraniliprole 0.4% GR @75 and 150 gai/ha on sugarcane indicated no phytotoxicity symptoms such as leaf epinasty, leaf hyponasty, leaf necrosis. Chlorosis was observed at 30, 45, 60, 90 & 120 days after application when Chlorantraniliprole 0.4%GR was applied @ 75 and 150 gai./ha. Data indicated that Chlorantraniliprole 0.4%GR is not phytotoxic to sugarcane.

CONCLUSION

It was concluded that the Chlorantraniliprole 0.4% GR @ 100 gai/ha was broadcasted over the cane setts in furrow at planting time and was found at par with Chlorantraniliprole 0.4%GR @ 75 gai/ha. This gave best control on ESB larvae populations as compared to the standard check and untreated control. The Chlorantraniliprole 0.4%GR did not produce any phytotoxic symptoms on sugarcane crop even at maximum higher dose *i.e.* 150 gai/ha.