

RELEVANCE OF HELICOVERPA EMERGING FROM BT CROPS

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A major threat to the longevity of Bt cotton is *Helicoverpa*'s ability to develop genetic resistance to high doses of Bt toxins. To counter this threat, refuges are planted to produce large numbers of moths to dilute any moths emerging from Bt crops which could be carrying Bt resistant genes. Using cages (Fig. 1), we compared the number of moths emerging from Bt cotton and productive refuges and their levels of resistance.

We found that relatively high numbers of moths emerged from Bt crops in comparison to their refuges. When these numbers were amplified to represent the amount of land planted in Bt cotton and refuge crops (90-95% and 10-5% respectively) they showed that about half the moths could have originated from Bt cotton (Fig. 2).

Field moths from Bt crops and refuges tested for genetic resistance to Bt toxins showed no difference in levels of resistance. However (in comparison to laboratory moths) the field moths were more tolerant to low levels of Cry1Ac, but not Cry2Ab Bt toxins.

Low level tolerance of *Helicoverpa* to Cry1Ac and low expression of Bt toxins by parts of the plant (particularly if under stress) may partially explain how susceptible *Helicoverpa* were able to survive on Bt cotton. These findings illustrate the pressure on Bt cotton and emphasise the importance of maintaining healthy refuges and a strong RMP.



FIGURE 1.

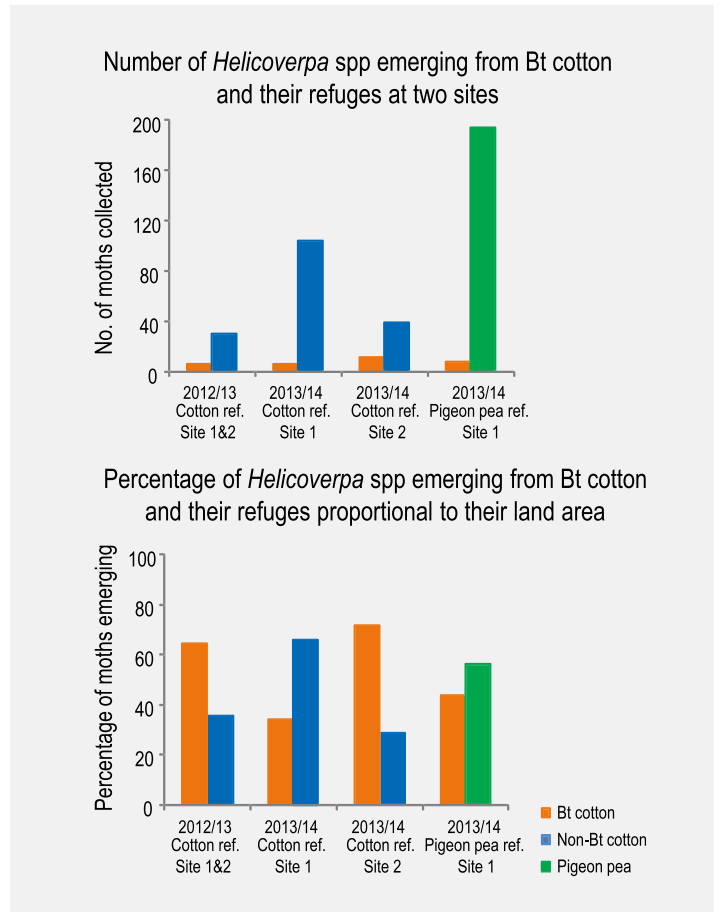


FIGURE 2.