

PEST INSECT POPULATIONS ON NORMAL AND NECTARILESS COTTON ISOLINES

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Introduction

Numerous studies on the effect of the nectariless gene on insect pests of cotton have been carried out both overseas and in Australia. However, most of the latter studies have been conducted under small plot conditions which are not really suitable for assessing the effects of this character. This trial measured pest populations on large plots of normal and nectariless cotton isolines grown under standard commercial management practices. It was also designed to study any possible differences in the ovipositional responses of the two Heliothis spp. (H. armigera and H. punctigera) to these lines: an area of research which had been neglected in previous studies.

Materials and Methods

Two blocks of the cotton isolines N73 normal and N73 nectariless, (each two and a half hectares), were sown at Narrabri in late October 1983. Both blocks were managed identically (cultivations, irrigations, fertiliser, insecticide applications etc.). The nectariless block was located about 300 metres from the normal block and was situated as far from alternate nectar sources as possible. The following pest species were sampled every 2 to 3 days (Heliothis spp. eggs and larvae, tipworm, mites and aphids). Eggs were collected during periods of heavy egg lays and reared through to the 3rd instar to determine the species of Heliothis.

Results and Discussion

There were no differences in the populations of tipworm, mites or aphids on the two blocks. There was only one significant H. armigera egg lay experienced during the season (December 14) with the normal block receiving more eggs than the nectariless. There were four H. punctigera peak egg lays experienced and in three of these (December 23, January 17 and 25), there were no differences in the egg lays between the two blocks. However, in the fourth (December 14), the normal block received more eggs than the nectariless.

Thus on the limited data available, it would seem that on most occasions, H. punctigera shows no preference for either normal or

nectariless cotton. However, it also has the ability to discriminate between the two types, in this case, laying more eggs on the nectaried cotton. The reason for this difference in ovipositional behaviour is unknown, but may be linked to nectar consumption prior to migration into the crops. The situation with H. armigera is unclear as there was only one peak egg lay encountered during the season. However, on this occasion H. armigera also displayed the ability to discriminate preferentially for the nectaried crop.

In conclusion, the nectariless character did not affect tipworm, aphid or mite populations nor, on most occasions, H. punctigera egg lays. H. armigera and H. punctigera both possessed the ability to discriminate preferentially for nectaried cotton but the significance of this could not be ascertained from this trial.

Table 1 Relationship between species of Heliothis and oviposition preference on normal and nectariless isolines at Narrabri, 1983/84.

Date of Peak Egg Lay	<u>H.armigera</u> eggs/metre		<u>H.punctigera</u> eggs/metre	
	Normal	Nectariless	Normal	Nectariless
Dec 14	3.6 ^a	0.4 ^b	3.6 ^a	0.7 ^b
Dec 23	0.3 ^a	1.0 ^a	5.4 ^a	3.9 ^a
Jan 17	0.9 ^a	1.1 ^a	7.6 ^a	5.5 ^a
Jan 25	0.8 ^a	1.0 ^a	19.7 ^a	19.5 ^a

Means in the same row, followed by the same letter are not significantly different at the 5% level