

FACTORS AFFECTING THE RESPONSE OF SUGARCANE TO TREATMENT WITH NEMATICIDE

VW SPAULL

South African Sugar Association Experiment Station, Mount Edgecombe, 4300, South Africa.

Results from a number of trials on winter- and early spring-ratooned sugarcane conducted over three seasons were used to identify factors that might be used to predict yield loss from nematodes. The trials were on Cartref and Kroonstad form loamy sands and sandy loams with a clay content of about 10%. Treatments comprised an untreated control and aldicarb at 16,8 g/10 m row applied as a split application.

The nematode fauna in both soils was dominated by *Helicotylenchus dihystra*, *Pratylenchus zae* and species of *Xiphinema* and *Paratrichodorus*. The response to treatment (yield increase), in tons cane/ha, varied from about 11% in a dry season to 32% in a wet season. In the Kroonstad soils the responses were related to the initial population density (Pi) of *P. zae* ($R^2=0,71$, $p<0,001$). In both types of soil the response to treatment was correlated with rainfall in one or more months in spring and early summer (Table 1), but less well correlated with the rainfall in the first few months after the start of the crop. The R^2 values increased when the spring and early summer rainfall was multiplied by the Pi for *P. zae* in the Kroonstad soils and, to a lesser extent, by the Pi for *Xiphinema* in the Cartref soils.

It is deduced from the results that on Kroonstad soils *Pratylenchus zae* is more active if good rains fall in spring and early summer and that under these conditions this species is able to cause root damage and thus contributes to the loss in yield. A similar situation occurs with *Xiphinema* on Cartref soils except that the association is less pronounced.

Table 1.

Correlation of spring and early summer rainfall and the product of this rainfall and the initial population densities (Pi) of *Pratylenchus zae* and species of *Xiphinema* with the response to treatment with aldicarb in two soils.

Independent variable	R ² values for the dependent variable, t cane/ha/annum response, versus rainfall or rainfall x nematode Pi.			
	Rain in Sept	Rain in Sept+Oct	Rain in Sept + Oct +Nov	Rain in Sept + Oct +Nov+Dec
CARTREF (n=28)				
Rainfall	0.41	0.54	0.42	0.55
Rainfall x <i>P. zae</i> Pi	0.30	0.34	0.27	0.35
Rainfall x <i>Xiphinema</i> Pi	0.54	0.59	0.55	0.56
KROONSTAD (n=13)				
Rainfall	0.69	0.73	0.53	0.65
Rainfall x <i>P. zae</i> Pi	0.82	0.79	0.80	0.79
Rainfall x <i>Xiphinema</i> Pi	0.51	0.38	0.16	0.33