SOUTH AFRICAN SUGAR INDUSTRY AGRONOMISTS' ASSOCIATION

3300/43 BAYLETON SETT DIP CONCENTRATIONS

Catalogue: 1194

Object: To determine the optimum concentration of Bayleton (triadimefon) as a sett dip for the control of smut in inoculated seedcane.

This crop: Plant Age: 11,9 months (7.9.78 to 4.9.79)

Location: RSA Experiment Station, Kudu Block H14-15

Soil type: P.1 sandy loam derived from gneiss

Design: Randomised blocks, 4 replications

Variety/Spacing: NCo 376 in 1,5 m rows

Fertiliser: (kg/ha)

N	P_2O_5	K_2O
120	100	60

Rainfall: 707 mm Irrigation: 880 mm

Treatments: Three concentrations of Bayleton were compared with an untreated control as a cold water sett dip for the control of smut in seedcane. The Bayleton was used to treat setts which had either been inoculated with smut or uninoculated, the former treatment being included to simulate severe soil infection.

The Bayleton concentrations tested were as follows :

1. Control - no Bayleton
2. Bayleton @ 0,0125% a.i. ($\frac{1}{2}$ x recommended conc.)
3. Bayleton @ 0,025% a.i. (recommended conc.)
4. Bayleton @ 0,050% a.i. (2 x recommended conc.)

Conduct:

(a) A Bayleton 25% E.C. formulation was used as a cold water one-minute dip.

(b) Inoculated setts were dipped in a fresh smut spore suspension after treatment with Bayleton.

(c) Nett plots were separated by three guard rows of N 52/219 to act as a smut-free barrier between plots.

RESULTS:

The effects of treatments on smut development in the plant crop were as follows:-

	Smut whips per ha	
	Inoculated seedcane	Uninoculated seedcane
No Bayleton dip	37 821	1 346
Bayleton @ 0,0125% a.i.	1 667	0
Bayleton @ 0,025% a.i.	1 090	0
Bayleton @ 0,050% a.i.	321	1 218
Means	10 225	641

Seedcane inoculation caused a severe incidence of smut in the plots grown from inoculated seedcane, whereas smut incidence was normal in those plots which had been grown from uninbculated seed.

Even the lowest concentration of Bayleton had a marked effect in controlling smut development in cane grown from inoculated setts, and increasing concentrations had a linear effect in reducing smut incidence. Using Bayleton at 0,050% a.i. (= 500 p.p.m. a.i.) reduced smut by over 99% in the seedcane inoculation treatments.

In the plots grown from uninoculated seedcane, which represented normal planting conditions using certified seed, the fungicide had the effect of completely eliminating smut even when used at half-strength. The presence of smut in the double-strength treatment was anomalous and cannot be explained; it was probably due to some fault in the conduct of the experiment at the time of planting.

The effects of treatments on yield and quality are summarised in the following table :-

	Cane t/ha	ERC% cane	TERC per ha
Inoculated			
Control - no Bayleton	138,74	13,08	18,26
Dipped in Bayleton	163,70	12,30	20,13
Significance	**	*	*
Uninoculated			
Control - no Bayleton	158,30	12,30	19,46
Dipped in Bayleton	162,43	12,50	20,35
Significance	N.S.	N.S.	N.S.
Interaction	N.S.	N.S.	N.S.
Trial mean	159,43	12,47	19,89
S.E. plot ±	15,22	0,59	2,29
S.E. mean ±	7,61	0,30	1,14
C.V.%	9,55	4,74	11,49

The different Bayleton concentrations had no effect on yield or quality, and they have been meaned in the above table for comparison with controls.

Results clearly showed the effect of severe smut infection in reducing cane yields, and also showed the benefit derived from dipping in Bayleton, which increased yields by 25 t/ha. The relatively low level of infection in the cane grown from normal uninoculated setts reduced yields by a small and non-significant amount, but even so there was evidence of an improvement from the Bayleton dip as a result of complete smut control.

Heavy smut infection improved ERC% cane, but not to the extent that it compensated for loss in cane yield.

Bayleton treatment increased sugar yields by 1,87 TERC/ha and 0,89 TERC/ha in cane grown from inoculated and uninoculated seed respectively.

KEC/October, 1979.

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

3300/43 BAYLETON SETT DIP CONCENTRATIONS

Catalogue: 1194

Object : To determine the optimum concentration of Bayleton (triadimefon) as a sett dip for the control of smut in seedcane.

This crop : First ratoon Age : 12:1 months (4.9.79 to 8.9.80)

Location : ZSA Experiment Station, Kudu Block H14-15

Soil Type : P.1 sandy loam derived from gneiss

Design : Randomised blocks, 4 replications

Variety/spacing : NCo 376 in 1,5m rows

Fertiliser (kg/ha) :

	N	P_2O_5	K_2O
P	120	100	60
1R	180	100	60

Rainfall : 774 mm Irrigation : 968 mm

Treatments : Three concentrations of Bayleton were compared with an untreated control as a cold water sett dip for the control of smut in seedcane. The Bayleton was used to treat setts which had either been inoculated with smut, or uninoculated, the former treatment being included to simulate severe soil infection.

The Bayleton concentrations tested were as follows :

1. Control - no Bayleton
2. Bayleton @ 0,0125% (125 ppm) a.i. ($\frac{1}{2}$ x rec. conc.)
3. Bayleton @ 0,025% (250 ppm) a.i. (recommended conc.)
4. Bayleton @ 0,050% (500 ppm) a.i. (2 x rec. conc.)

Conduct :

(a) Bayleton 25% E.C. formulation was used as a cold water one-minute dip.

(b) Inoculated setts were dipped in a fresh smut spore suspension after treatment with Bayleton.

(c) Nett plots were separated by three guard rows of N 52/219 to act as a smut-free barrier between plots.

RESULTS : Harvest data from the first ratoon crop are shown in the attached table, together with smut records.

(a) Smut incidence. No smut roguing was undertaken in any of the treatments throughout the course of the trial, with the result that the increase in smut incidence from plant to first ratoon was considerably greater than would normally be experienced.

In the plant crop, even the lowest concentration of Bayleton had a marked effect in controlling smut development in cane grown from inoculated setts, and increasing concentrations had a linear effect in reducing smut incidence.

In the first ratoon crop there was a relatively greater increase in smut incidence in the treated plots, as opposed to the control. However, the trends recorded in the plant crop were still clearly evident, although the effects were less pronounced. Treatment of inoculated seedcane with Bayleton at 0,05% (500 ppm) a.i. reduced smut incidence by 99% in the plant crop, and by 88% in the first ratoon.

In the plots grown from uninoculated seedcane, which represented normal planting conditions using certified seedcane, the fungicide had the effect of completely eliminating smut in the plant crop even when used at half strength. This effect had disappeared in the first ratoon, however, when similar smut levels were recorded in the treated and the untreated plots.

(b) Cane yields. The main effects on yield are shown in the following table, in which data for the three concentrations of Bayleton have been meaned.

	Yield t/ha		TERC/ha	
	P	1R	P	1R
Inoculated seedcane				
Control - no Bayleton	138,74	101,57	18,26	14,54
Dipped in Bayleton	163,70	143,86	20,13	20,62
Significance	**	***	*	***
Uninoculated seedcane				
Control - no Bayleton	158,30	144,20	19,46	19,51
Dipped in Bayleton	162,43	153,56	20,35	21,82
Significance	N.S.	*	N.S.	*
Trial mean	159,43	142,25	19,89	20,17

Results clearly showed the effect of severe smut infection in reducing cane yields. Dipping inoculated setts in Bayleton increased yields in the plant crop by an average of 25 t/ha, and in the first ratoon by an average of 42 t/ha, these benefits being entirely due to reduced smut levels.

In the case of cane grown from normal uninoculated setts, the low level of smut infection in the plant crop reduced yields by a small and non-significant amount (4 t/ha), but in the first ratoon the benefit of Bayleton treatment was reflected by an average increase in yield of 9 t/ha from the treated plots. Because smut levels were similar in all treatments in the first ratoon, it was thus apparent that the effect of smut in the plant crop was carried forward to affect ratoon yields also.

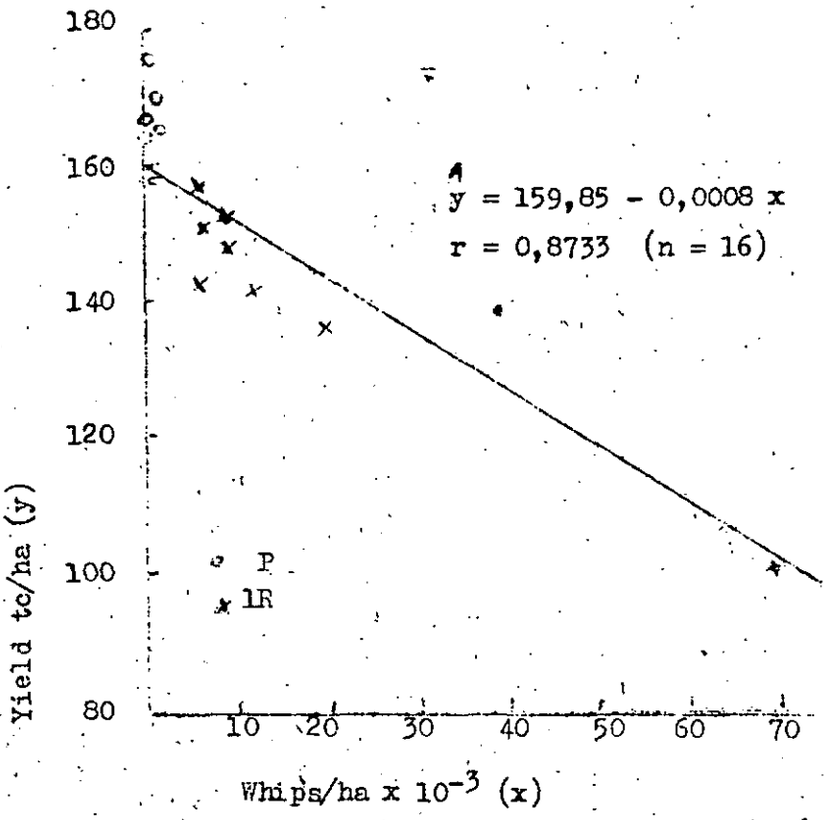
(c) ERC % cane. Heavy smut infection in the plant crop significantly improved ERC % cane, but not to the extent that it compensated for loss in cane yield None of the treatments affected quality in the first ratoon.

(d) TERC/ha. Due to the lack of ERC % cane effects, TERC/ha responses to treatments followed the same trends as those recorded for cane yields.

The effect of Bayleton treatment on inoculated setts was to increase sugar yields by 1,87 and 6,08 TERC/ha in the plant and first ratoon crops respectively. Responses were smaller in the case of uninoculated setts, with

Bayleton treatment improving yields by 0,89 and 2,31 TERC/ha in the two seasons.

(e) Effect of smut on yield. The wide range of smut levels and yields recorded in the plant and first ratoon crops made it possible to establish an overall relationship between yield (y) and whip counts (x). The correlation between these two factors was significantly linear (r = 0,87) as shown in the following graph :



The average loss in yield caused by smut was 0,8 tc/ha per 1 000 whips, or 1,2 tc/ha for every 1 per cent infection.

KEC/Sept. '80.
rw.

3300/43 BAYLETON SETT DIP CONCENTRATIONS

YIELD DATA, FIRST RATOON

Treatments	Yield t/ha	ERC % cane	TERC per ha	Smut whips/ha P	Smut whips/ha 1R
Inoculated seedcane					
Control - no Bayleton	101,57	14,36	14,54	37 821	68 718
Dipped in Bayleton	143,86	14,34	20,62	1 026	13 269
Significance	***	N.S.	***	-	-
Bayleton @ 125 ppm a.i.	136,27	14,61	19,89	1 667	19 038
" @ 250 ppm a.i.	142,53	14,16	20,17	1 090	12 692
" @ 500 ppm a.i.	152,77	14,25	21,79	321	8 077
Significance	*	N.S.	*	-	-
Uninoculated seedcane					
Control - no Bayleton	144,20	13,61	19,51	1 346	6 474
Dipped in Bayleton	153,56	14,22	21,82	0	7 265
Significance	*	N.S.	*	-	-
Bayleton @ 125 ppm a.i.	153,44	14,31	21,95	0	6 923
" @ 250 ppm a.i.	148,80	14,14	21,02	0	8 462
" @ 500 ppm a.i.	158,43	14,21	22,50	(0)	6 410
Significance	N.S.	N.S.	N.S.	-	-
No Bayleton					
Inoculated	101,57	14,36	14,54	37 821	68 718
Uninoculated	144,20	13,61	19,51	1 346	6 474
Significance	***	N.S.	***	-	-
Dipped in Bayleton					
Inoculated	143,86	14,34	20,62	1 026	13 269
Uninoculated	153,56	14,22	21,82	0	7 265
Significance	*	N.S.	*	-	-
Interaction	*	N.S.	N.S.	-	-
Trial mean	142,25	14,20	20,17	5 281	17 099
S.E. mean ±	6,44	0,30	0,88	-	-
C.V. %	9,05	4,18	8,74	-	-

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Title: BAYLETON SETT DIP CONCENTRATIONS 3300/43

TERMINAL REPORT

Cat No.: 1194

Object : To determine the optimum concentration of Bayleton (triadimefon) as a sett dip for the control of smut in inoculated seedcane.

Planted : 7th September, 1978

Terminated : 17th September 1981, after the second ratoon crop.

Harvest dates and ages :

	Harvest	Age
P	4.9.79	11,9 months
1R	8.9.80	12,1 "
2R	17.9.81	12,3 "

Location : ZSA Experiment Station, Kudu Block H 14-15

Soil type : PE.1 sandy clay loam derived from gneiss

Design : Randomised blocks, 4 replications

Variety/spacing : NCo 376 in 1,5m rows

Fertiliser (kg/ha) :

	N	P_2O_5	K_2O
P	120	100	60
1R	180	100	60
2R	180	100	60

Irrigation and

	Irrig.(mm)	Rain (mm)
P	880	707
1R	968	774
2R	880	909

Treatments : Three concentrations of Bayleton were compared with an untreated control as a cold water sett dip for the control of smut in seedcane. The Bayleton was used to treat setts which had either been inoculated with smut or uninoculated, the former treatment being included to simulate severe soil infection.

The Bayleton concentrations tested were as follows :-

1. Control - no Bayleton
2. Bayleton @ 0,0125% (125 ppm) a.i. ($\frac{1}{2}$ x rec. conc.)
3. Bayleton @ 0,025% (250 ppm) a.i. (recommended conc.)
4. Bayleton @ 0,050% (500 ppm) a.i. (2 x rec. conc.)

Conduct :

(a) Bayleton 25% E.C. formulation was used as a cold-water one-minute dip.

(b) Inoculated setts were dipped in a fresh smut spore suspension after treatment with Bayleton.

(c) Nett plots were separated by three guard rows of N 52/219 to act as a smut-free barrier between plots.

2./ RESULTS....

RESULTS

It was originally intended to measure treatment effects in the plant crop only, but because of large treatment differences the trial was carried through to the second ratoon to study residual effects. Relevant smut records and yield data for all 3 crop cycles are given in the attached tables.

(a) Smut incidence. No smut roguing was undertaken in any of the treatments throughout the course of the trial, with the result that the increase in smut incidence from plant to second ratoon was considerably greater than would normally be experienced.

The most important treatment effects were recorded in the plant crop. In the case of inoculated seedcane severe smut incidence was recorded in the untreated cane and the overall effect of Bayleton was to reduce smut levels by 97%. Even the lowest concentration of Bayleton had a marked effect in controlling smut development, and increasing concentrations had a linear effect in reducing smut incidence.

In the plots grown from uninoculated seedcane, which represented normal planting conditions using certified seed, the fungicide had the effect of completely eliminating smut even at the lowest concentration.

High smut incidence levels were recorded in the ratoons. In spite of this, however, the effects of Bayleton in reducing smut incidence in cane grown from inoculated seedcane were evident through to the second ratoon, although treatment differences were less pronounced. Treatment effects on uninoculated seedcane were recorded in the plant crop only, and no residual effects were evident in the ratoons.

(b) Yield effects. Plant crop results clearly showed the effect of smut infection in reducing cane yields, and also showed the benefit derived from dipping in Bayleton, which increased yields by 25 t/ha (18%) in the case of the inoculated treatments. This effect was even more pronounced in the ratoons, with yield gains of 42% and 21% being recorded in the first and second ratoons respectively. Although the three Bayleton concentrations did not cause meaningful yield effects in the plant crop, in both the ratoons there were significant linear increases in yield associated with increasing concentrations.

In the uninoculated treatments Bayleton did not cause a significant yield gain in the plant crop, but it did in both ratoons with an average increase of $\pm$ 7,5 t/ha. There was no yield response to increasing concentrations of Bayleton.

There were no cane quality responses so the effects of treatments on TERC/ha followed the same trends as for cane yields. The average effect of Bayleton treatment on inoculated setts was to increase ERC yields by 3,68 t/ha, and by 1,16 t/ha in the case of the uninoculated treatments.

The direct effect of severe smut incidence was an average loss of 3,22 t/ha ERC. The use of Bayleton to control smut reduced this loss to 0,70 t/ha.

3./ (c) .....

(c) Stalk counts. Millable stalk counts recorded at the three harvests were as follows :-

Treatments	Stalks/ha x 10^{-3}			
	P	1R	2R	Means
Inoculated seedcane				
Control - no Bayleton	174,3	124,8	125,5	141,5
Dipped in Bayleton	165,1	150,6	146,8	154,2
Uninoculated seedcane				
Control - no Bayleton	156,6	150,4	150,4	152,5
Dipped in Bayleton	162,4	157,0	158,6	159,3

Plant crop data showed that high smut levels in the inoculated control treatment caused an increase in stalk population, followed by a pronounced decrease in the ratoons as would be expected.

Bayleton treatment of uninoculated seedcane caused a small but consistant increase in stalk counts. It was apparent that the effects of smut on yield were primarily due to reduced millable stalk populations.

CONCLUSIONS

The inoculation treatments were included to simulate conditions of severe soil infection, and plant crop results showed that a short-duration cold-water Bayleton dip was successful in reducing smut incidence under such conditions, even at low fungicide concentrations.

Results showed that smut suppression by Bayleton was of short duration and that disease incidence increased rapidly in the ratoons, although evidence of treatment residual effects were maintained until the second ratoon.

Yield data clearly showed the benefits of using Bayleton for smut control, with untreated controls giving considerably reduced yields through to the second ratoon, largely because of reduced millable stalk populations.

KEC/Oct. '81.
rw

3300/43 BAYLETON SETT DIP CONCENTRATIONS

SMUT RECORDS - PLANT TO SECOND RATOON

Treatment effects	Smut whips per ha		
	P	1R	2R
Inoculated Seedcane			
Control - no Bayleton	75 641	196 667	172 179
Dipped in Bayleton	2 051	28 932	59 017
Bayleton @ 125 ppm a.i.	3 333	41 410	74 103
" @ 250 ppm a.i.	2 179	28 077	52 564
" @ 500 ppm a.i.	641	17 308	50 385
Uninoculated Seedcane			
Control - no Bayleton	2 692	14 487	37 692
Dipped in Bayleton	812	15 128	45 299
Bayleton @ 125 ppm a.i.	0	14 744	38 846
" @ 250 ppm a.i.	0	17 179	53 462
" @ 500 ppm a.i.	(0)	13 462	43 590
No Bayleton			
Inoculated	75 641	196 667	172 179
Uninoculated	2 692	14 487	37 692
Dipped in Bayleton			
Inoculated	2 051	28 932	59 017
Uninoculated	812	15 128	45 299
Trial mean	10 865	42 917	65 353

3300/43 BAYLETON SETT DIP CONCENTRATIONS — YIELD DATA - PLANT TO SECOND RATOON

Treatments	CANE YIELD t/ha				ERC % CANE				TERC/ha			
	P	1R	2R	Means	P	1R	2R	Means	P	1R	2R	Means
Inoculated seedcane												
Control - no Bayleton	138,74	101,57	104,87	115,06	13,08	14,36	13,95	13,80	18,26	14,54	14,62	15,81
Dipped in Bayleton	163,70	143,86	126,78	144,78	12,30	14,34	13,99	13,54	20,13	20,62	17,72	19,49
Significance	**	***	**	-	N.S.	N.S.	N.S.	-	*	***	**	-
Bayleton @ 125 ppm a.i.	170,00	136,27	117,67	141,31	12,31	14,61	14,12	13,68	20.90	19,89	16,61	19,13
" @ 250 ppm a.i.	145,20	142,53	126,30	138,01	12,16	14.16	13.59	13,30	17,61	20,17	17,15	18,31
" @ 500 ppm a.i.	175,90	152,77	136,37	155,01	12,43	14,25	14,26	13,65	21,88	21,79	19,41	21,03
Significance	*	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	**	-
Uninoculated seedcane												
Control - no Bayleton	158,30	144,20	126,56	143,02	12,30	13,61	14,30	13,40	19,46	19,51	18,11	19,03
Dipped in Bayleton	162,43	153,56	136,09	150,69	12,50	14,22	13,51	13,41	20,35	21,82	18,39	20,19
Significance	N.S.	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	N.S.	-
Bayleton @ 125 ppm a.i.	165,77	153,44	140,47	153,23	12,50	14,31	13,62	13,48	20,76	21,95	19,11	20,61
" @ 250 ppm a.i.	153,94	148;80	136,87	146,54	12,50	14,14	13,57	13,40	19,32	21,02	18,60	19,65
" @ 500 ppm a.i.	167,57	158,43	130,93	152,31	12,51	14,21	13,34	13,35	20,96	22,50	17,46	20,31
Significance	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-
No Bayleton												
Inoculated	138,74	101,57	104,87	115,06	13,08	14,36	13,95	13,80	18,26	14,54	14,62	15,81
Uninoculated	158,30	144,20	126,56	143,02	12,30	13,61	14,30	13,40	19,46	19,51	18,11	19,03
Significance	**	***	***	-	N.S.	N.S.	N.S.	-	N.S.	***	**	-
Dipped in Bayleton												
Inoculated	163,70	143,86	126,78	144,78	12,30	14,34	13,99	13,54	20,13	20,62	17,72	19,49
Uninoculated	162,43	153,56	136.09	150,69	12,50	14,22	13,51	13,41	20,35	21,82	18,39	20,19
Significance	N.S.	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	N.S.	-
Interaction	N.S.	*	*	-	N.S.	N.S.	*	-	N.S.	N.S.	*	-
Trial mean	159,43	142,25	127,50	143,06	12,47	14,20	13,84	13,50	19,89	20,17	17,63	19,23
S.E. mean ±	7,61	6,44	5,04	-	0,30	0,30	0,20	-	1,14	0,88	0,70	-
C.V.%	9,55	9,05	7,91	-	4,74	4,18	2,93	-	11,49	8,74	7,93	-

Title: BAYLETON SETT DIP CONCENTRATIONS 3300/43

TERMINAL REPORT

Cat No.: 1194

Object : To determine the optimum concentration of Bayleton (triadimefon) as a sett dip for the control of smut in inoculated seedcane.

Planted : 7th September, 1978

Terminated : 17th September 1981, after the second ratoon crop.

Harvest dates and ages :

	Harvest	Age
P	4.9.79	11,9 months
1R	8.9.80	12,1 "
2R	17.9.81	12,3 "

Location : ZSA Experiment Station, Kudu Block H 14-15

Soil type : PE.1 sandy clay loam derived from gneiss

Design : Randomised blocks, 4 replications

Variety/spacing : NCo 376 in 1,5m rows

Fertiliser (kg/ha) :

	N	P_2O_5	K_2O
P	120	100	60
1R	180	100	60
2R	180	100	60

Irrigation and

	Irrig.(mm)	Rain (mm)
P	880	707
1R	968	774
2R	880	909

Treatments : Three concentrations of Bayleton were compared with an untreated control as a cold water sett dip for the control of smut in seedcane. The Bayleton was used to treat setts which had either been inoculated with smut or uninoculated, the former treatment being included to simulate severe soil infection.

The Bayleton concentrations tested were as follows :-

1. Control - no Bayleton
2. Bayleton @ 0,0125% (125 ppm) a.i. ($\frac{1}{4}$ x rec. conc.)
3. Bayleton @ 0,025% (250 ppm) a.i. (recommended conc.)
4. Bayleton @ 0,050% (500 ppm) a.i. (2 x rec. conc.)

Conduct :

(a) Bayleton 25% E.C. formulation was used as a cold-water one-minute dip.
(b) Inoculated setts were dipped in a fresh smut spore suspension after treatment with Bayleton.
(c) Nett plots were separated by three guard rows of N 52/219 to act as a smut-free barrier between plots.

2./ RESULTS....

RESULTS

It was originally intended to measure treatment effects in the plant crop only, but because of large treatment differences the trial was carried through to the second ratoon to study residual effects. Relevant smut records and yield data for all 3 crop cycles are given in the attached tables.

(a) Smut incidence. No smut roguing was undertaken in any of the treatments throughout the course of the trial, with the result that the increase in smut incidence from plant to second ratoon was considerably greater than would normally be experienced.

The most important treatment effects were recorded in the plant crop. In the case of inoculated seedcane severe smut incidence was recorded in the untreated cane and the overall effect of Bayleton was to reduce smut levels by 97%. Even the lowest concentration of Bayleton had a marked effect in controlling smut development, and increasing concentrations had a linear effect in reducing smut incidence.

In the plots grown from uninoculated seedcane, which represented normal planting conditions using certified seed, the fungicide had the effect of completely eliminating smut even at the lowest concentration.

High smut incidence levels were recorded in the ratoons. In spite of this, however, the effects of Bayleton in reducing smut incidence in cane grown from inoculated seedcane were evident through to the second ratoon, although treatment differences were less pronounced. Treatment effects on uninoculated seedcane were recorded in the plant crop only, and no residual effects were evident in the ratoons.

(b) Yield effects. Plant crop results clearly showed the effect of smut infection in reducing cane yields, and also showed the benefit derived from dipping in Bayleton, which increased yields by 25 t/ha (18%) in the case of the inoculated treatments. This effect was even more pronounced in the ratoons, with yield gains of 42% and 21% being recorded in the first and second ratoons respectively. Although the three Bayleton concentrations did not cause meaningful yield effects in the plant crop, in both the ratoons there were significant linear increases in yield associated with increasing concentrations.

In the uninoculated treatments Bayleton did not cause a significant yield gain in the plant crop, but it did in both ratoons with an average increase of ± 7,5 t/ha. There was no yield response to increasing concentrations of Bayleton.

There were no cane quality responses so the effects of treatments on TERC/ha followed the same trends as for cane yields. The average effect of Bayleton treatment on inoculated setts was to increase ERC yields by 3,68 t/ha, and by 1,16 t/ha in the case of the uninoculated treatments.

The direct effect of severe smut incidence was an average loss of 3,22 t/ha ERC. The use of Bayleton to control smut reduced this loss to 0,70 t/ha.

3./ (c) .....

(c) Stalk counts. Millable stalk counts recorded at the three harvests were as follows :-

Treatments	Stalks/ha x 10^{-3}			
	P	1R	2R	Means
Inoculated seedcane				
Control - no Bayleton	174,3	124,8	125,5	141,5
Dipped in Bayleton	165,1	150,6	146,8	154,2
Uninoculated seedcane				
Control - no Bayleton	156,6	150,4	150,4	152,5
Dipped in Bayleton	162,4	157,0	158,6	159,3

Plant crop data showed that high smut levels in the inoculated control treatment caused an increase in stalk population, followed by a pronounced decrease in the ratoons as would be expected.

Bayleton treatment of uninoculated seedcane caused a small but consistant increase in stalk counts. It was apparent that the effects of smut on yield were primarily due to reduced millable stalk populations.

CONCLUSIONS

The inoculation treatments were included to simulate conditions of severe soil infection, and plant crop results showed that a short-duration cold-water Bayleton dip was successful in reducing smut incidence under such conditions, even at low fungicide concentrations.

Results showed that smut suppression by Bayleton was of short duration and that disease incidence increased rapidly in the ratoons, although evidence of treatment residual effects were maintained until the second ratoon.

Yield data clearly showed the benefits of using Bayleton for smut control, with untreated controls giving considerably reduced yields through to the second ratoon, largely because of reduced millable stalk populations.

KEC/Oct. '81.
rw

3300/43 BAYLETON SETT DIP CONCENTRATIONS

SMUT RECORDS - PLANT TO SECOND RATOON

Treatment effects	Smut whips per ha		
	P	1R	2R
Inoculated Seedcane			
Control - no Bayleton	75 641	196 667	172 179
Dipped in Bayleton	2 051	28 932	59 017
Bayleton @ 125 ppm a.i.	3 333	41 410	74 103
" @ 250 ppm a.i.	2 179	28 077	52 564
" @ 500 ppm a.i.	641	17 308	50 385
Uninoculated Seedcane			
Control - no Bayleton	2 692	14 487	37 692
Dipped in Bayleton	812	15 128	45 299
Bayleton @ 125 ppm a.i.	0	14 744	38 846
" @ 250 ppm a.i.	0	17 179	53 462
" @ 500 ppm a.i.	(0)	13 462	43 590
No Bayleton			
Inoculated	75 641	196 667	172 179
Uninoculated	2 692	14 487	37 692
Dipped in Bayleton			
Inoculated	2 051	28 932	59 017
Uninoculated	812	15 128	45 299
Trial mean	10 865	42 917	65 353

3300/43 BAYLETON SETT DIP CONCENTRATIONS

YIELD DATA - PLANT TO SECOND RATOON

Treatments	CANE YIELD t/ha				ERC % CANE				TERC/ha			
	P	1R	2R	Means	P	1R	2R	Means	P	1R	2R	Means
Inoculated seedcane												
Control - no Bayleton	138,74	101,57	104,87	115,06	13,08	14,36	13,95	13,80	18,26	14,54	14,62	15,81
Dipped in Bayleton	163,70	143,86	126,78	144,78	12,30	14,34	13,99	13,54	20,13	20,62	17,72	19,49
Significance	**	***	**	-	N.S.	N.S.	N.S.	-	*	***	**	-
Bayleton @ 125 ppm a.i.	170,00	136,27	117,67	141,31	12,31	14,61	14,12	13,68	20.90	19,89	16,61	19,13
" @ 250 ppm a.i.	145,20	142,53	126,30	138,01	12,16	14.16	13.59	13,30	17,61	20,17	17,15	18,31
" @ 500 ppm a.i.	175,90	152,77	136,37	155,01	12,43	14,25	14,26	13,65	21,88	21,79	19,41	21,03
Significance	*	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	**	-
Uninoculated seedcane												
Control - no Bayleton	158,30	144,20	126,56	143,02	12,30	13,61	14,30	13,40	19,46	19,51	18,11	19,03
Dipped in Bayleton	162,43	153,56	136,09	150,69	12,50	14,22	13,51	13,41	20,35	21,82	18,39	20,19
Significance	N.S.	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	N.S.	-
Bayleton @ 125 ppm a.i.	165,77	153,44	140,47	153,23	12,50	14,31	13,62	13,48	20,76	21,95	19,11	20,61
" @ 250 ppm a.i.	153,94	148;80	136,87	146,54	12,50	14,14	13,57	13,40	19,32	21,02	18,60	19,65
" @ 500 ppm a.i.	167,57	158,43	130,93	152,31	12,51	14,21	13,34	13,35	20,96	22,50	17,46	20,31
Significance	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-	N.S.	N.S.	N.S.	-
No Bayleton												
Inoculated	138,74	101,57	104,87	115,06	13,08	14,36	13,95	13,80	18,26	14,54	14,62	15,81
Uninoculated	158,30	144,20	126,56	143,02	12,30	13,61	14,30	13,40	19,46	19,51	18,11	19,03
Significance	**	***	***	-	N.S.	N.S.	N.S.	-	N.S.	***	**	-
Dipped in Bayleton												
Inoculated	163,70	143,86	126,78	144,78	12,30	14,34	13,99	13,54	20,13	20,62	17,72	19,49
Uninoculated	162,43	153,56	136.09	150,69	12,50	14,22	13,51	13,41	20,35	21,82	18,39	20,19
Significance	N.S.	*	*	-	N.S.	N.S.	N.S.	-	N.S.	*	N.S.	-
Interaction	N.S.	*	*	-	N.S.	N.S.	*	-	N.S.	N.S.	*	-
Trial mean	159,43	142,25	127,50	143,06	12,47	14,20	13,84	13,50	19,89	20,17	17,63	19,23
S.E. mean ±	7,61	6,44	5,04	-	0,30	0,30	0,20	-	1,14	0,88	0,70	-
C.V.%	9,55	9,05	7,91	-	4,74	4,18	2,93	-	11,49	8,74	7,93	-