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SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: Eldana Control (OBS)
Cat. No: 1579

Title: The effects of burning young cane for eldana control

1. Particulars of the project

Site: Experiment Station, Mount Edgecombe

	Fields 37	42
This crop	: 1st Ratoon	Plant
Varieties	: NCo310	NCo376

Region : North Coast Coastal
Soil system : Umzinto
Soil forms : Arcadia/Rydalvale (37)
Swartland/Rosehill (42)
Design : Not Randomised
Fertilizer/ Ameliorants : N P K Field practice

Soil analysis: Date: 06/12/85

	pH	OM%	Clay %
Field 37	7,03	-	30
Field 42	6,60	-	14

ppm

	P	K	Ca	Mg	Zn
Field 37	16	157	1800	220	2,1
Field 42	10	34	497	52	1,1

	Age	Dates:
Field 37	15,5	21/8/84-6/12/85
Field 42	15,2	1/9/84-6/12/85

Rainfall: 1 362 mm LTM: 1 328 mm

Irrigation: Nil

Soil description: *Field 37: Black Montmorillonitic clay top soil with tongues of clay merging with rocks.*

Field 42: Light brown sandy loam overlying a moderately structured clay sub-soil.

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2. Objectives:

Observation plots: To observe the effects of burning young (+ 6-7 months old) cane to remove trash compared with pre-trashing young cane to control eldana.

2.1 Motivation: It has been suggested that it would be possible to pre-trash young cane at (6-7 months old) by burning-off the trash, without too much damage or loss of yield when plants eventually mature.

3. Treatments:

Half each of selected areas in fields 42 (NCo376) and 37 (NCo310) were burnt. Four sample plots were marked out in each area, these being two rows by seven or six metres with a row spacing of 1,4 m.

Some details were:

Stalk length (cm)						
Site	Variety	Age (m)	Burnt	Unburnt	Crop	Comments
Field 37	NCo310	8,1	138	154	Ratoon	Good healthy cane
Field 42	NCo376	7,8	183	141	Plant	Poor in unburnt area

Rainfall (mm)

Months	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
1984-85	41	15	78	73	41	163	468	11	4	30	15	3
LTM	54	76	95	111	102	146	140	106	59	58	17	28
1985	3	62	240	92	23	Total = 1 362 mm						
LTM	54	76	95	111	-	Total = 1 328 mm						

4. Results

4.1 Yield and crop characteristics at harvest

Field	Variety	Treatments	t ha^{-1} cane	Sucrose % cane	t ha^{-1} sucrose	Kg stalk^{-1}	Stalk length (cm)	Stalk counts x10^{3}ha^{-1}
37	NCo310	Burnt	13	10,4	1,4	0,53	164	24
		Unburnt	67	14,8	9,9	0,73	186	92
42	NCo376	Burnt	63	13,2	8,3	0,71	189	89
		Unburnt	66	13,3	8,8	0,60	156	110

4.2 Burning effects : stalk mortality and eldana numbers

Field	Variety	Treatments	t ha^{-1} cane		Stalk counts x10^{3} ha^{-1}		Total eldana /100 stalks
			Green	Dead	Green	Dead	Green + Dead
37	NCo310	Burnt	13	8	24	43	22,0
		Unburnt	67	-	92	-	0,5
42	NCo376	Burnt	63	10	89	46	1,5
		Unburnt	66	-	110	-	12,0

4.3 Heights (cm) and stalk counts $x10^3$ ha^{-1}

Heights (cm) 1985												
Field	Variety	Treatment	25/4	3/5	10/5	29/5	7/6	28/6	12/7	26/7	2/8	30/8	15/11
37	NCo310	Burnt	138	147	143	142	145	150	154	156	156	160	164
		Unburnt	154	156	152	161	165	173	175	177	179	181	186
42	NCo376	Burnt	183	188	184	183	185	190	183	187	185	187	189
		Unburnt	141	142	135	138	141	142	144	147	146	153	156

Stalk counts x 10^3 ha^{-1}												
37	NCo310	Burnt Green	86	73	73	46	39	32	39	35	33	42	26
		Dead	-	-	-	35	40	38	29	31	35	34	40
		Unburnt	80	81	82	83	92	99	88	79	75	79	79
42	NCo376	Burnt Green	144	154	151	141	143	144	140	141	139	137	111
		Dead	-	-	-	-	-	-	-	-	-	-	15
		Unburnt	122	123	126	128	120	118	119	117	116	116	106

Comments

General

1. Crop measurements at the commencement of the trial indicate that at both sites there were fairly large differences in cane growth between sample plots in burnt and unburnt areas.

2. This was an observation trial with no randomisation and hence no statistical analysis could be performed.

Visual effects of burning

1. Burning caused the apparent death of many stalks of NCo310. However one month after burning growth began to resume from the top of about half the stalks and at harvest some stalks were growing actively. Many stalks and most tillers were however killed.

2. The effects on NCo376 were far less with fewer stalks being killed. Dead stalks had soft nodes at the base with apparently healthy nodes above. These were however pithy and had no juice.

Effect on yield and crop characteristics

1. Extremely severe and unacceptable effects occurred from burning on NCo310 while the effects on NCo376 were considerably less. Differences in growth between burnt and unburnt areas at the establishment of the trial probably exaggerated the yield difference in NCo310, while it would have tended to decrease the difference in NCo376.

2. Growth measurements on growing stalks in burnt and unburnt areas showed no obvious effect from burning in terms of stalk length. However, the number of dead stalks in burnt areas affected stalk population considerably in NCo310.

Effect on eldana

Eldana numbers were far higher in burnt cane of NCo310 than unburnt cane while the opposite was true of NCo376.

Conclusions

Burning cane at a young age to control eldana can have very severe effects on cane growth, although the degree of damage may vary considerably.

Variability at these sites makes an accurate assessment of the effects of burning impossible.

On the basis of these results burning could not be recommended as an alternative to pre-trashing for eldana control.

PETT/MG
13 May, 1987