file 2 of 3

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: BT12/79/R1

Cat. No.: 1150

Title: Trash blanket vs burnt tops raked off vs burnt tops left scattered

1. Particulars of the project

This crop	:	1st ratoon
Site	:	Helmsley Est. Umhlali
Region	:	Coastal Hinterland
Soil system	:	Umzinto
Soil form/series	:	Longlands/Waldene
Design	:	Latin square
Variety	:	NCo 376
Fertilizer/ ameliorants	:	N 134, P 27, K 134

Dolomitic lime at 2 000 kg/ha broadcast as some plots were low in Ca & Mg.

Soil analysis: Date: 5.11.79

pH	O.M.%	Clay %	P.D.I.
5,3	-	12	-

ppm

P	K	Ca	Mg	Zn	AT
17	52	152	34	-	16

Age: 19,9 months Dates: 5/11/79-1/ 7/81

Rainfall: 1 477 mm L.T.M: 1 831 mm

Irrigation: Nil

2. Objective

To evaluate the effects of a trash blanket, raking burnt tops off or leaving the burnt tops scattered over the plots.

3. Treatments

1. Trash blanket.
2. Burnt and tops raked off the plots.
3. Burnt and tops left scattered on the plots.

Note: The previous crop was droughted so burnt tops afforded a ground cover of only about 25% and trash blanket was thin.

1979/80	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	39	117	69	23	26	48	16	5	9	13	243	52	117	74
L.T.M.	117	118	139	128	118	86	52	28	27	49	88	102	121	121

1981	Jan	Feb	Mar	Apr	May	Jun	Total
Rainfall	226	136	46	22	177	24	1 477
L.T.M.	138	124	112	81	55	27	1 831

4. Results

4.1 Yield

Treatments	Cane t/ha	Ers % cane	Sucrose % cane	Ers t/ha	Sucrose t/ha
Trash blanket	74	8,9	10,7	6,7	8,0
Burnt tops raked off the plots	67	8,9	10,6	6,0	7,1
Burnt tops left scattered on the plots	72	9,2	10,9	6,7	7,9
Mean	71	9,0	10,7	6,5	7,7
C.V. %	7,8	5,9	3,5	12,4	10,4
S.E. of treatment mean ±	2,26	0,22	0,15	0,33	0,33
L.S.D. (0,05)	7,11	0,69	0,48	1,04	1,03

4.2 Harvested crop characteristics and yield/100 mm rainfall

Treatments	Stalk counts $x10^{-3}$/ha	Stalk length (cm)	kg/ stalk	t/ha/ 100 mm	ters/ha/ 100 mm
Trash blanket	112	175	0,65	5,01	0,45
Burnt tops raked off the plots	116	166	0,57	4,54	0,41
Burnt tops left scattered on the plots	115	172	0,62	4,87	0,45
Mean	115	171	0,62	4,81	0,44

4.3 3rd leaf values at 3 months

Treatments	D.M.% N	P	K	Ca	Mg
Trash blanket	2,21	0,22	1,17	0,25	0,16
Burnt tops raked off the plots	2,29	0,22	1,20	0,22	0,15
Burnt tops left scattered on the plots	2,34	0,24	1,21	0,24	0,17

5. Comments

5.1 The crop was severely droughted for the first nine months and was also stressed prior to harvest so cane yields on the shallow soil are understandably low (mean 3,6 tc/ha/month).

The harvested crop comprised:

40% bullshoots

60% old stalks.

The crop had been heavily infested with eldana borer and counts indicated that stalks damaged were:

bullshoots 70% damaged

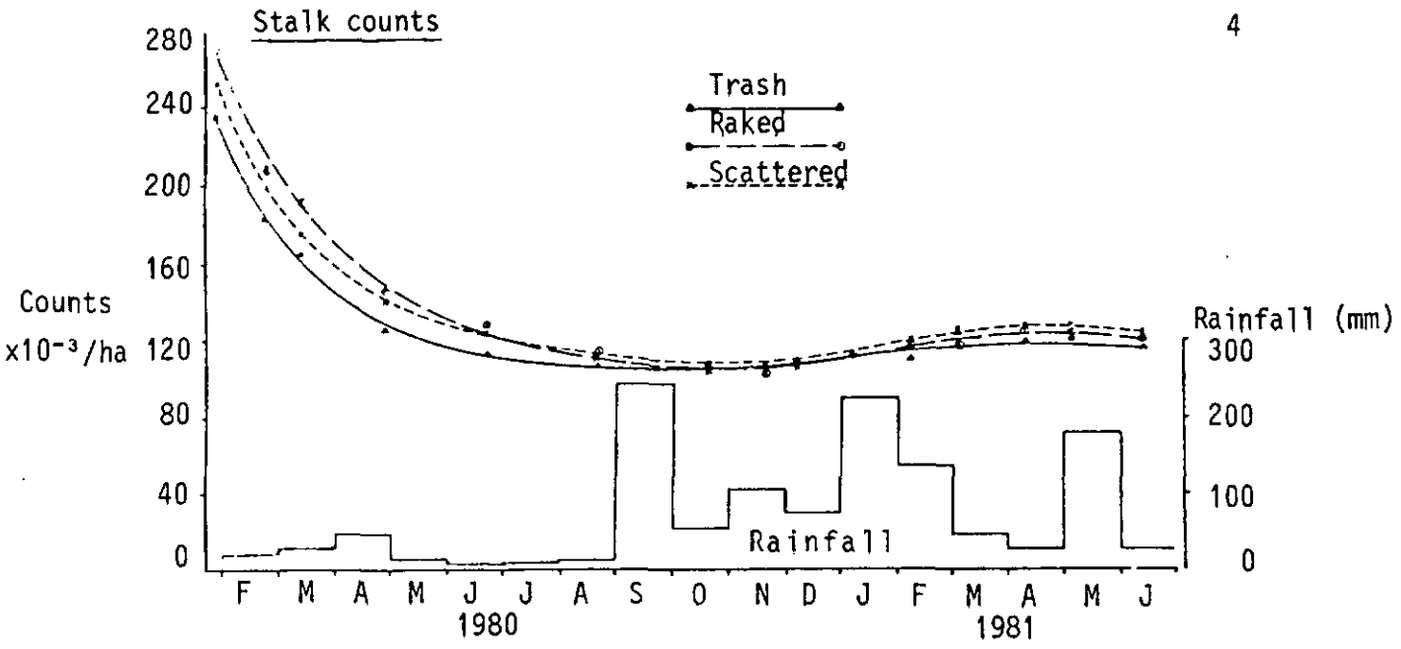
old stalks 84% damaged.

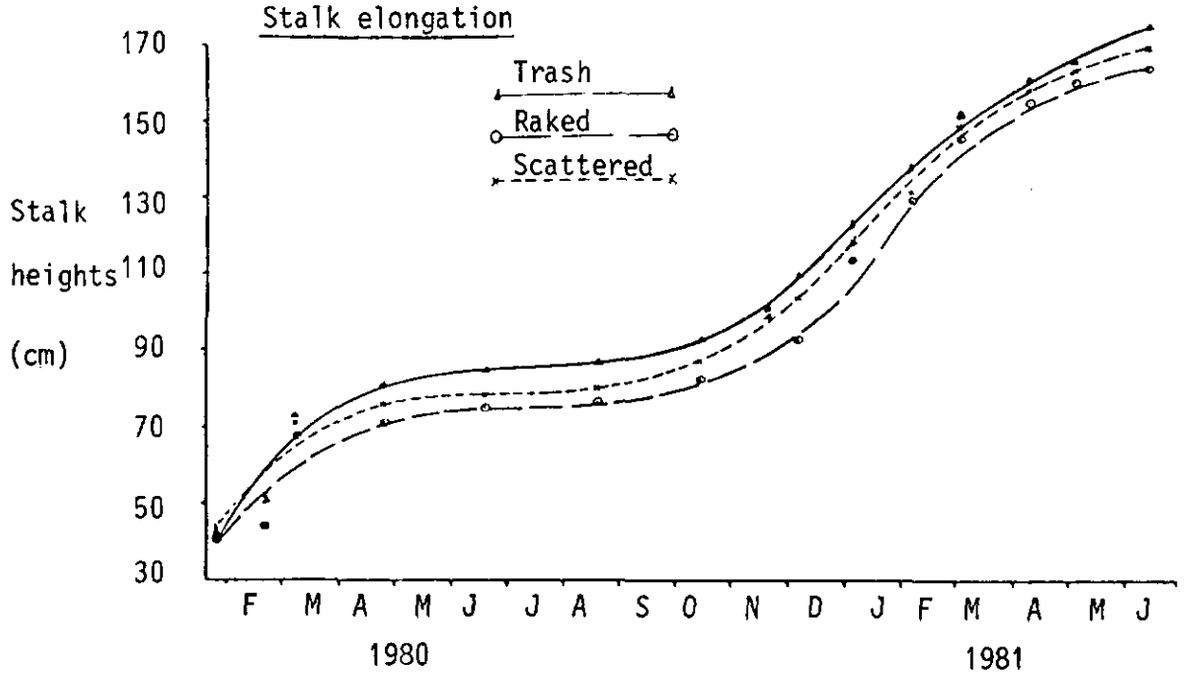
5.2 The trash blanket increased yield (n.s.) by 10% or the equivalent of 4 tc/ha/annum whereas the burnt tops left scattered increased yield by 7% or by about 3 tc/ha/annum.

5.3 Stalk populations were relatively low throughout because of the high stalk mortality due to the drought (see graph). Stalk length and mass were increased slightly by the mulch treatments.

5.4 The responses to a mulch were due presumably to reduced evaporation from the soil and not to any reduction in run-off.

PKM/VJ
10 August 1981


Stalk counts
Trash
Raked
Scattered
Counts
x10⁻³/ha
280
240
200
160
120
80
40
0
Rainfall (mm)
300
200
100
0
Rainfall
F M A M J J A S O N D J F M A M J
1980
1981


Stalk elongation
Trash
Raked
Scattered
Stalk heights (cm)
170
150
130
110
90
70
50
30
F M A M J J A S O N D J F M A M J
1980
1981

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code : BT 12/79/R2

Cat. No.: 1150

TITLE: Trash blanket versus burnt tops raked off versus burnt tops left scattered.

1. Particulars of the project

This crop : 2nd ratoon

Site : Helmsley Estate Umhlali

Region : Coastal Hinterland

Soil system : Umzinto

Soil form/series: Longlands/Waldene

Design : Latin square

Variety : NCo 376

Fertilizer/ Ameliorants : N P K
: 150 30 150

Aspect : East

Soil Description: Shallow grey loamy sand topsoil ± 400 mm deep.

Soil analysis: Date: 1/7/81

pH	O.M.%	Clay %	P.D.I
6,07	-	12%	-

ppm

P	K	Ca	Mg	Zn	Al
20	35	172	64	0,6	

Age: 14,1 m Dates: 1/7/81 - 3/9/82

Rainfall: 1139 mm L.T.M. 1117 mm (Frasers)

Irrigation: NIL

2. Objectives:

To evaluate the effects on cane yield of a trash blanket, burnt tops left scattered or burnt tops raked off the plots.

3. Treatments

1. Trash blanket
2. Burnt tops left scattered
3. Burnt tops raked off

3.1 Notes on treatments

- Trash blanket fairly thin following a 70 tc/ha crop
- The cane was cut green and the tops were burnt eight days later on the appropriate plots
- The scattered burnt tops covered about 40% of the soil surface.

Rainfall (mm)

Month	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	TOTAL
81/82	54	149	118	72	201	54	178	74	112	73	19	13	4	9	9	1139
LTM	26	48	79	96	115	120	137	131	118	83	54	28	26	48	8 (79)	1117

4. Yield and crop characteristics at harvest

Treatments	Cane t/ha	Sucrose % cane	Sucrose t/ha	Cane t/ha/ 100 mm	Stalk counts $x10^{-3}$/ha	Stalk length (cm)	Stalk mass (kg)
Trash blanket	60	17,0	10,3	5,3	107	158	0,55
Burnt tops scattered	66	16,4	10,9	5,8	124	163	0,53
Burnt tops raked off	64	16,3	10,4	5,6	129	160	0,49
Mean	63	16,6	10,5	5,6	120	161	0,53
CV %	8,1	6,9	11,5	-	5,8	3,2	-
SE of treatment means	2,1	0,5	0,5	-	2,8	2,1	-
LSD (0,05)	6,5	1,5	1,6	-	8,9	6,6	-
(0,01)	9,3	2,1	2,2	-	12,7	9,4	-

5. Comments on results

5.1 The rainfall recorded was 102% of the LTM; good spring and summer rains were recorded but the crop was stressed prior to harvest. The mean yield was 5,5 tc/ha/100 mm of rain and 4,5 tc/ha/month.

5.2 The crop started in winter and the trash blanket severely reduced stalk population, an effect which persisted through to harvest (P=0,01) and which was the main cause of the yield depression.

5.3 The trash blanket depressed cane yield (ns) by 9% or 5 tc/ha/annum. In the previous ratoon crop which was harvested in summer, the trash blanket increased yields by 10%.

5.4 The scattered tops marginally inproved yields (ns) because stalk population was not reduced and stalk heights were slightly superior compared with the crop in plots with no mulch.

5.5 The cane in the trial was burnt in the devastating runaway fire in the Umhlali area and the trial has been terminated.

Summary of the results of the two successive ratoon crops (1R and 2R)

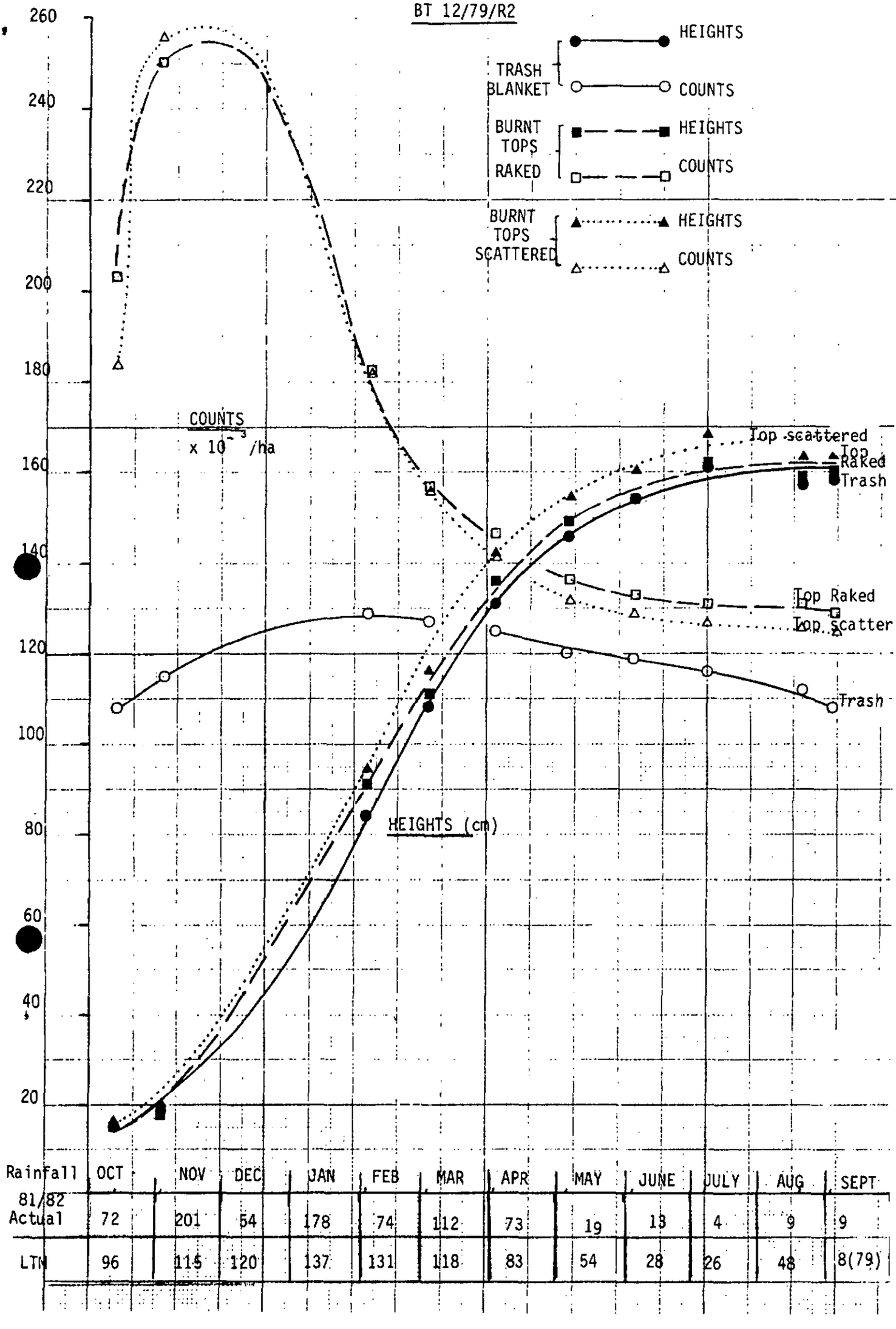
Treatments / Ratoons	Trash blanket		Burnt tops scattered		Burnt tops raked off	
	tc/ha	tc/ha	tc/ha	tc/ha	tc/ha	tc/ha
First ratoon Summer start - low rainfall	74	8,0	72	7,9	67	7,1
Second ratoon Winter start - average rainfall	60	10,3	66	10,9	64	10,4
Mean	67	9,2	69	9,4	66	8,8

The mean yield from the two crops in tons cane and tons sucrose expressed as a percentage of the yield from the plots with a trash blanket.

	Trash blanket	Burnt tops scattered	Burnt tops raked off
Tons cane/ha	100	103	99
Tons sucrose/ha	100	102	96

RKMcI/IS
3 August 1983

BT 12/79/R2



Rainfall	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
81/82 Actual	72	201	54	178	74	112	73	19	13	4	9	9
LTN	96	115	120	137	131	118	83	54	28	26	48	8(79)