SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW182/79

Cat. No.: 1297

TITLE: Chromolaena odorata Control

1. Particulars of the project

This crop : Weeds only

Site : Shakaskraal F. Stn.

Region : N. Coast Coastal

Soil system : Umzinto. Coast Lowlands

Soil form/series: Longlands/Waldene

Design : Random

Rainfall (mm) :

	1977	1978	1979	1980	1981
		1249	1040	756	777	1052

	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	De
1979	92	89	60	36	29	15	47	50	59	116	48	11
1980	64	16	37	37	22	7	8	12	351	48	108	6

2. Objectives

To tests methods of Chromolaena removal from natural bush, and methods of maintaining acceptable control of this weed.

3. Treatments

1. Mature Chromolaena slashed back.
2. Mature Chromolaena slashed back and destumped.
3. Mature Chromolaena sprayed with Roundup in winter.
4. Mature Chromolaena sprayed with Roundup in summer.

Slashing and destumping treatments were subsequently followed up by spot spray applications on regrowth and new seedling growth. Chemicals used were Actril DS and Roundup, both at rates of 0,5 and 1%. Details of dates and treatments are indicated below.

Date	Months after slashing	Treatments
13 June 79	-	Plots slashed or slashed and destumped.
19 July 79		Mature Chromolaena plots sprayed with Roundup
1 October 79	3,5	Regrowth from slashed plots sprayed with Roundup and Actril DS.
		Other mature Chromolaena plots sprayed with Roundup.

14 January 80 7 Regrowth in slashed plots retreated with Actril DS at 1% or seedlings hand pulled. A portion of each plot only was treated.

Note on application.

Spot spraying was carried out using a lever-operated knapsack sprayer fitted with a spraying systems 8004-E fanjet. Regrowth was 50-500 mm high at the time of spray (1 October 1979).

Spraying of mature Chromolaena was carried out using a lever-operated knapsack Sprayer with an extended lance. This was fitted with an Albuz fanjet. Due to the dense growth of Chromolaena it was only possible to spray the edges of the plant. The system was thus totally inadequate from a practical point of view.

Weather conditions at the time of applying each treatment and before or after treatment are indicated in table 1.

Table 1 Weather conditions at, before and after each spraying date

Spray date	Rainfall (mm)					Sunshine hours	Temperature °C		Rel. Humidity %	
	2 weeks prior to spray	On the day of spray	Days to first rain after spray	Amount	2 weeks after spray		8am	2pm	8am	2pm
19 July 79	0	0	1	1,6	10,4	1	15,4	19,6	91	72
1 October 79	34,4	0	1	9,4	85,4	9,8	19,6	31,4	87	22
14 January 80	36,7	0	9	13,6	20,3	0	23,0	24,8	73	60

Concurrent with this experiment all Chromolaena odorata infesting natural bush on the Shakaskraal Field Station farm was manually removed, (slashing and destumping and follow up operations were carried out to maintain the bush free from Chromolaena. These consisted of handpulling seedling growth or where necessary destumping regrowth.

Results.

1. Slashed and destumped plots.

Observation 2,5 months after slashing showed some regrowth in both slashed only and slashed and destumped plots. A lower infestation occurred where destumping had been carried out. Regrowth was ± 5-10 cm high.

Regrowth was sprayed ± 4 months after slashing. Observation 6 weeks later

showed unacceptable regrowth. This could be due to plants not being seen and therefore missed during spot spraying.

Subsequent observation one month later showed little Chromolaena but fairly extensive growth of other broadleaf species. Abrus precatorius, Solanum nigrum and one other species (unidentified) were dominant.

A second application of Actril DS at 1% solution was applied along one edge of the plots. Hand weeding of Chromolaena was carried out along the second edge. Observation 6 weeks later indicated that both treatments had worked very well. No regrowth was present from handweeded or sprayed areas.

2. Mature Chomolaena sprayed in Winter and Summer.

In both instances adequate coverage with the extended lance was not possible because of the dense growth.

Visual observations indicated a slightly better effect from summer treatment.

3. Field scale removal.

The area covered by bush is alongside streams (fairly steep) and over one very steep hillside. The approximate area is 7,5 hectares.

The first clearing operation involved removal of most plants beneath the canopy but this constituted + 80% Chromolaena. The number of man days required is indicated in Table 2.

Follow up handpulling of seedling growth and regrowth was carried out 2-3 months after the first treatment. Subsequent operations were conducted annually to maintain the natural bush free of Chromolaena

Table 2. Labour use for Chromolaena odorata removal by hand.

Year	Months/No. of man days											
	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1979	-	-	-	-	-	-	108	162	-	33	28	-
1980	-	6	2	58	14	-	-	-	-	-	-	-
1981	-	-	38	130	-	-	-	-	-	-	-	-
1982	-	-	-	-	10	13	-	-	-	-	-	-

NB. The operation in 1981 included removal of Solanum mauritianum (Bug Tree) and all other undesirable brush.

Comments on results.

1. Spot spraying of Chromolaena seedlings and their regrowth killed plants at both spraying dates and with both rates of Actril DS or Roundup. January spray was however better than October with Actril DS, and the 1% concentration was better than 0,5% for both chemicals.

2. Regrowth of other broadleaf species hampered identification of Chromolaena seedlings and was the cause of missing some plants.

3. Figures from field scale removal indicate that approximately 36 man days per hectare were required for the initial clearing operation with only an early follow up of 8 man days per hectare. Annual effort subsequently has been 10 man days/ha in the first year after initial clearing, 22 in the second and 3 in the third year.

4. A fairly severe drought in 1979 and 1980 may have been responsible for a low amount of seedling and regrowth in the first two seasons.

5. Some other species have developed a problem in the cleared areas. A creeper, Abrus precatorius and Melia azadarach (Seringa Berry) are two such examples.

6. A desirable grass species Oplismenus hirtellus has begun to provide a cover on the forest floor which has been exposed by removal of undergrowth.

Conclusions.

1. After an intensive removal operation, relatively low labour numbers were required to maintain this area free from Chromolaena odorata. Follow up treatments were all conducted in Autumn and before flowering.

2. Adjacent property severely infested with Chromolaena odorata did not appear to have any adverse effect on the control achieved.

3. Removal of Chromolaena od rata from natural brush may support the invasion of other undesirable species which would also have to be removed.

PETT/IS

30 July 1982.