



Information Sheet

4. HUSBANDRY

4.2 Cane stool eradication

Total eradication of the old crop is essential if sugarcane diseases such as ratoon stunting disease (RSD), smut and mosaic are to be controlled. The advantages of using disease free seedcane are lost if the field into which it is being planted is contaminated with volunteers. Considering that millions of Rands are lost each year to RSD alone, the importance of this operation cannot be over-emphasised. Unfortunately, no single operation can be considered 100% effective, and follow-up operations are therefore essential.

Stool eradication methods

The four recommended methods of stool eradication are chemical, mechanical, hand hoeing and a combination of chemical and mechanical.

Time of year, land slope and soil type determine which method will be most effective. Ploughing and harrowing (maximum tillage) is by law restricted to flatter areas where the risk of erosion is not so great. Maximum tillage is the main cause of the decline in yield potential through degradation of soils in South Africa. This has led to increased run-off resulting in the silting up of streams, rivers and estuaries, which must be stopped.

Chemical method

(See Information Sheet 4.4 *Chemicals for cane eradication*.)

This is the only method permissible on slopes greater than 20% on clays, 15% on moderately erodible soils, and 10% on highly erodible soils.

Available chemicals: (1) Glyphosate, sold under trade names such as Roundup and Mamba, (2) sulfosate, sold as Touchdown Plus and (3) fluzifop-butyl, sold as Fusilade Super.

Spray equipment: Normal knapsack or tractor mounted boom sprayers fitted with nozzles that will give 200-400 litres/ha full cover, e.g. TK5 or equivalent for knapsacks.

Method: Nozzles should be held over the cane row so that the spray swath penetrates the base of cane lines on either side. Coverage can be improved by spraying each line twice with half the concentration of chemical, moving in opposite directions.

Timing: This method works effectively only in the hot summer months when the cane is actively growing.



Mechanical stool eradication using a mouldboard plough and disc harrow.

Excellent kill can be expected between December and March, good kill in November and April, and a fair amount of regrowth can be expected when spraying between September and October. Chemical eradication does not work during winter and early spring (see ‘Combination tillage’). In September to November, Fusilade Super normally gives better results than glyphosate or sulfosate.

Stage of growth: The cane should be 400 to 700 mm tall, fully tillered and actively growing, with no cane stalk present.

Days to reach knee height		
Region	Fields cut in mid-August	Fields cut in mid-December
North Coast	60	35
Midlands	80	48
Lowveld	50	32

Application rates: 8 to 10 litres per hectare for Roundup and equivalent products. The higher rate is recommended on heavy soils (more than 30% clay), on resistant varieties, and when spraying before December and in April. Six litres per hectare are recommended for Fusilade Super.

Check the label for the correct application rate for the product you are using.

Application volume: 200 to 400 litres per hectare of clean water. Note that low volume sprayers e.g. CDA applicators are not suitable for killing cane.

Water quality: Glyphosate and sulfosate are neutralised by soil, so the mixing water must therefore be free of mud. Do not use dirty river water. Saline water also reduces the efficacy of glyphosate and sulfosate. The addition of Bladbuff 5, Armoblen 650 or ammonium sulphate helps overcome this problem.

General hints

Dew: Do not spray onto wet foliage.

Dust: Because soil neutralises glyphosate and sulfosate, fields next to road sides should be sprayed soon after rain has washed the dust off. Fusilade Super needs only one hour for it to be effective.

Planting: If there was no RSD in the previous crop, and if glyphosate or sulfosate is used, the new crop can be planted immediately. If necessary, the new crop can be planted before spraying the old crop. It is, however, essential that spraying be done before shoots of the new crop emerge.

Fusilade Super requires a fallow of 28 days before re-planting. Only variety NCo376 should be planted following the use of Fusilade Super. The chemical is very volatile and should not be sprayed in windy conditions, as neighbouring crops will be affected.

Mechanical stool eradication

Objective: To lift the cane stool out of the ground, shake off surplus soil and leave it on the surface to be dried out by the sun.

Machinery: A mouldboard plough fitted with a depth wheel or skid, and a disc harrow.

Depth of operation: 80 to 120 mm. Please note that deeper ploughing will result in the cane stool being buried and thus transplanted.

Timing: Winter only. Ploughing should start in May and be completed by June.

Harrowing should follow about four weeks after ploughing, when shoots are emerging from the old stools. The field should be left for a further four weeks and then harrowed again. This delay greatly increases the effectiveness of mechanical stool eradication.

This method is totally unsuccessful when used during the wet spring and summer months. At least three months of dry weather are necessary to ensure an effective kill.

Note also that this method is not permissible on:

- slopes of >10% in erodible soils
- slopes of >15% in moderately erodible soils
- slopes of >20% in soils resistant to erosion.

Combination tillage

Excellent kill can be achieved by combining chemical and mechanical methods. A more effective kill is obtained at a lower cost with more flexibility than using either chemical or mechanical methods on their own. Roundup and Mamba are registered for combination tillage.

Method: The old crop is sprayed in the normal manner and, under ideal conditions, rates can be reduced to 4 litres/ha. Two weeks later a stool plough fitted with a depth wheel or skid is used to sever the stool from its root system at a depth of 80 mm. The soil is not turned and the old stool remains in place, helping to reduce the risk of soil erosion. During the cooler months, this method gives better results than chemicals alone.



Hand hoeing or chipping

Eradication of sugarcane before replanting, by digging out the stools with a chipping hoe, is a method of reduced tillage that has many advantages.

- It is particularly effective.
- There is a low risk of soil erosion.
- Slope is not a limiting factor.
- It can be done at any time of the year.
- When carried out over autumn and winter, production loss is minimal.
- Spring planting reduces the risk of mosaic infection.
- It provides employment for cane cutters when the mills are closed.

Method: Begin chipping about five weeks after harvesting, when all stools will have begun to tiller.

Equipped with chipping hoes, 35-50 labourers should be able to dig out the old stools from one hectare in a day. A task rate of 200-300 m/person/day is usually attained.

At 4-5 kg, chipping hoes are heavier than conventional hoes, and have a narrower blade backed by a longer and thicker spine.

Two follow-up operations are usually required to ensure complete eradication of the old crop. The task rate for these follow-up operations depends on the number of volunteers surviving, but should be 1000 to 2000 m/person/day.

Once the old crop has been killed, the old stools should be windrowed over the old cane line and the new crop may then be planted in the old interrow.

Timing: This method is most effective when done in winter, but is also successful at other times of the year. More follow-up operations may be required in summer.

Summary

The above methods seldom completely eradicate volunteers, and follow-up operations of either hand hoeing or spot spraying will be necessary until all volunteers are destroyed. Once this has been achieved, the field should be left fallow for a further three months. This is particularly important if RSD was present in the previous crop. The land could be used for a cash crop during this time.

The selection chart will help you choose the most appropriate method of stool eradication for your soil type, slope and season of the year.

Stool eradication selection chart

Soil type	Slope	Season	Method
*High erosion hazard <10% clay	0-20%	Winter Spring Summer	Chipping Chipping or Fusilade Super Chipping or Chemical
Moderate erosion hazard 10-20% clay	<15%	Winter Spring Summer	Chipping or Shallow mb plough/harrow Combination tillage or Fusilade Super Combination tillage or Chemical
	>15%	Winter Spring Summer	Chipping Combination tillage or Fusilade Super Combination tillage or Chemical
Low erosion hazard >20% clay	<20%	Winter Spring Summer	Plough/harrow Combination tillage or Fusilade Super Combination tillage or Chemical
	>20%	Winter Spring Summer	Chipping Fusilade Super Chemical

**Ploughing and harrowing are not recommended on highly erodible soils, and note also that no cultivation is allowed on slopes greater than 20% on highly erodible soils.*

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