



Information Sheet

12. RIPENING

12.4 Registered chemicals for ripening sugarcane: FUSILADE FORTE

This Information Sheet provides important information and recommendations for the correct and optimal use of fluazifop-p-butyl (FUSILADE FORTE) as a sugarcane ripener.

Product information and mode of action

FUSILADE FORTE (contact company: Syngenta South Africa (Pty) Ltd.) is an emulsifiable concentrate containing 150 g of the active ingredient, fluazifop-p-butyl, per litre of product. After absorption by the green leaves, fluazifop-p-butyl is converted by esterase enzymes to a more active acid form and then translocated to the stalk apical meristem (growing point) where it disrupts further stalk growth. FUSILADE FORTE is used as a selective graminicide, killing many grass species and related plants without affecting broadleaf plants. It is a Group III poison (slightly hazardous) which is toxic to fish, and contaminated water flowing into rivers and dams could kill fish. It is important that the recommendations for handling the chemical are enforced (see Information Sheets 11.1 and 11.2).

At low doses, FUSILADE FORTE arrests elongation of sugarcane stalks by disrupting membrane formation in the apical meristem (Figure 1; page 3). The new leaves in the spindle will desiccate following application (Figure 2; page 3). Necrotic rings also often develop on one or more of the elongating internodes (Figure 3; page 4). Buds below the stalk apex will develop into short sideshoots (Figure 4; page 4). The severity of these symptoms progresses with time and carry-over of ripened crops should be avoided at all cost.

Recommendations

Which cane will respond to FUSILADE FORTE?

Refer to Information Sheet 12.1 for detailed guidelines for selecting cane suitable for chemical ripening. FUSILADE FORTE is effective on relatively mature cane and good responses can be expected when the whole-stalk juice purity of cane is below 85% at the time of application. Responses become inconsistent when juice purities rise above this level.

Juice purity can be determined in a laboratory from stalk samples collected from the target field a week or less before spraying. Sixteen randomly selected stalks (of uniform length), collected from a number of positions within the field, must be stripped of all leaves, topped at the natural breaking point, and bundled together into a single sample. These samples should be submitted to the Cane Testing Service (CTS) at the mill, or submitted to your local Extension Specialist, who will make arrangements for testing at

the SASRI millrooms (Pongola or Mount Edgecombe). Alternatively, a quick method is to determine Brix% along the length of stalks from the target field with a portable refractometer and to use these values to estimate juice purity with the smartphone app **PurEst™**. Refer to SASRI Information Sheet 12.2 that explains how to estimate whole-stalk juice purity on the farm with **PurEst™**.

It is essential that the cane is growing vigorously and that the supply of moisture to the cane is sufficient to maintain growth for at least 35 days after spraying. Available evidence indicates that stressed cane produces less esterase enzymes, which inhibits conversion of fluazifop-p-butyl to its more active acid form, thus lowering the efficacy of FUSILADE FORTE. To achieve maximum chemical efficacy it is recommended that the ripened crop be irrigated for as long as possible after product application, yet allowing enough time without irrigation to avoid complications during harvesting (stool damage and poor burning efficiency).

Will all varieties respond to FUSILADE FORTE?

Yes, all released varieties have been shown to respond. However, a higher rate is required for N14.



Typical effects of spraying with FUSILADE FORTE - death of the spindle and one or two associated leaves.

Rates and times for spraying FUSILADE FORTE.

N14 should be sprayed with 333-367 mL per hectare. The high rate (367 mL) should be used when the chemical is applied by aircraft. All other varieties should be sprayed as indicated in the table below:

Application rates for Fusilade Forte (excluding N14)

Application method	Dosage	Remarks
Ground application	200 to 250 mL/ha	Apply in 50 to 200 L water/ha
Aerial application	225 to 275 mL/ha	Apply in 30 to 35L water/ha

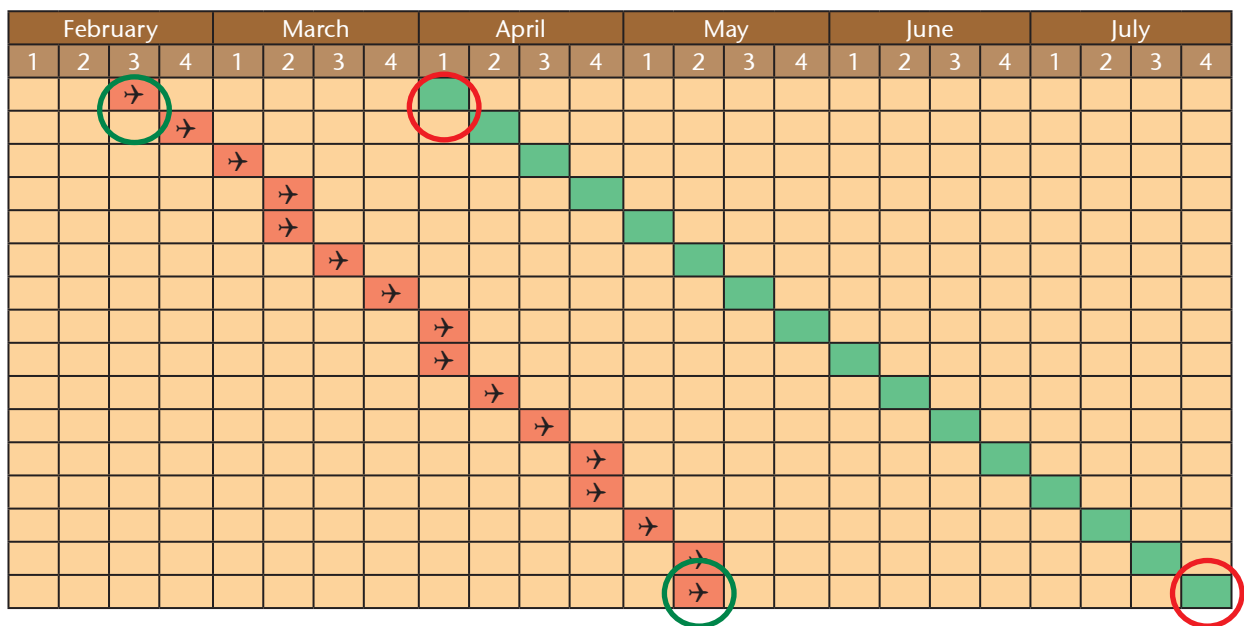
FUSILADE FORTE can be applied in autumn, winter and summer provided there is vigorous growth (see spraying and harvesting schedules below). Cane harvested in August and September is likely to have ripened naturally due to lack of moisture and low temperatures. However juice purity testing can be used to confirm the maturity status of these crops.

The start of spraying after winter should be based on the resumption of vigorous growth and subsequent reduction of juice purities below the 85% threshold. Schedules to help growers determine the optimal time of FUSILADE FORTE application for the different harvest months are provided below. Spray-to-harvest intervals in the schedules lengthen with the anticipated reduction in growth rate during the cooler winter months. These intervals shorten as the anticipated growth rate increases during the warmer summer months. The example below is used to illustrate this concept:

Timing of FUSILADE FORTE application

EARLY SEASON

→ Week of spraying Scheduled week of harvesting



LATE SEASON

→ Week of spraying Scheduled week of harvesting



For a crop harvested during the first week of April (top red circle on schedule), FUSILADE FORTE should be applied during the third week of February (top green circle on schedule); i.e. 6 weeks before harvest. However, for a crop harvested during the last week of July (bottom red circle on schedule), application should occur during the second week of May (bottom green circle on schedule), i.e. 10 weeks before harvest. However, these schedules are not cast in stone and optimal spray-to-harvest intervals might very well vary from season to season (due to varying climatic conditions). Hand-held refractometers can be used to assess how quickly the chemical is ripening the crop and the spray-to-harvest interval shortened or lengthened accordingly. Refer to SASRI Information Sheet 12.2 that explains how to fine-tune spray-to-harvest intervals from Brix% readings taken with hand-held refractometers.

Note:

- The first spraying will be determined by the opening date of the mill. After the final spray in mid-May, conditions are unlikely to be suitable for chemical ripening until the resumption of vigorous growth during summer. Juice purity testing can be done to confirm this on a seasonal basis.
- The first spraying after winter will be determined by the resumption of vigorous growth and juice purities below 85%.
- The last spraying will be governed by the mill closure date. Care must be taken to avoid carry-over of ripened

crops at all cost.

Does FUSILADE FORTE affect the growth of the following crop?

Published evidence does not support the presence of negative effects on ratoon re-growth in crops where fluazifop-p-butyl application occurred under conditions that are regarded as favourable for the use of chemical ripeners (i.e. conditions conducive to good crop growth). There is some evidence of increased tillering in the following ratoon crop, but this apparently does not translate into higher yields. From limited cases where fluazifop-p-butyl did cause adverse residual effects it appears that there were some common factors involved. The likely scenario that could lead to adverse residual effects appears to be when fluazifop-p-butyl is applied at higher than recommended rates under cold and cloudy conditions in soils saturated with water. FUSILADE FORTE is a very effective chemical ripener for enhancing cane quality of vigorously growing, well-managed, sugarcane crops. When applied correctly to such crops, at recommended application rates and spray-to-harvest intervals, the probability of any negative after-effects in the following crop is very small.

Can cane which has been sprayed with Fusilade Forte be used for seedcane?

No. Because FUSILADE FORTE is translocated through the stalk, it may retard the growth of any buds which break dormancy.

Typical symptoms that develop in sugarcane following application of FUSILADE FORTE.



1
Termination of stalk apical meristem; Left: unsprayed control; Right: FUSILADE FORTE treatment.



2
Desiccation of spindle and youngest leaf, but without affecting fully-expanded green leaves.



Black necrotic ring(s) on elongating internodes.



Side-shoot development due to loss of apical dominance.

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