

Information Sheet

4.9 Registered chemicals for cane quality management: FUSILADE FORTE (and other trade names)

This Information Sheet provides important information and recommendations for the correct and optimal use of fluazifop-p-butyl (FUSILADE FORTE and other trade names, hereinafter referred to as "this chemical") for cane quality management in sugarcane.

Chemical information and mode of action

This chemical is an emulsifiable concentrate containing 125 g or 150 g (depending on trade name) 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. This chemical is used as a selective herbicide, killing many grass species and related plants without affecting broadleaf plants. It is a Group III chemical (slightly hazardous) which is toxic to fish, and contaminated water flowing into rivers and dams must be prevented.

This chemical has proven to be very effective for improving cane quality (chemical ripening) in South Africa and Swaziland when it is applied to immature – relatively mature, vigorously growing sugarcane.

When cane quality is at a peak following prolonged slow growth during winter, this chemical can also be used for late-season quality maintenance (typically crops harvested in November – December under South African conditions).

At registered application rates, this chemical arrests elongation of sugarcane stalks by disrupting membrane formation in the apical meristem (see Figure 1 on page 4). The new leaves in the spindle will desiccate following application (see Figure 2 on page 4). Necrotic rings also often develop on one or more of the elongating internodes (see Figure 3 on page 4). Buds below the stalk apex will eventually form side shoots (see Figure 4 on page 4).

Because the severity of these symptoms progresses with time, the carry-over to the following milling season of crops treated with this chemical for purposes of late-season quality maintenance, should be avoided at all cost.

Recommendations

Refer to Information Sheet 4.6 for detailed guidelines for selecting cane suitable for chemical ripening or late-season quality maintenance with this chemical.

Used for chemical ripening:

This chemical is effective for chemical ripening of immature to 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. The use of this chemical could be considered if refractometer measurements reveal sufficient immaturity in the top third of stalks despite estimated whole-stalk juice purities being above 85% (caused by very high maturity in lower parts of stalk). The **PurEst**[®] application automatically informs users of these potential chemical ripening opportunities. Refer to SASRI Information Sheet 4.7 that explains how to estimate whole-stalk juice purity on the farm with **PurEst**[®].

This chemical can be applied in summer, autumn and winter provided there is vigorous growth. Cane to be harvested in August and September is highly likely to have ripened naturally due to lack of moisture and low temperatures. However, **PurEst**[®] testing can be conducted to confirm the maturity status of these crops, particularly when unusually mild and wet winters are experienced.



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

Used for late-season quality maintenance:

When cane quality is at a peak following prolonged slow growth during winter, this chemical can be used for purposes of late-season cane quality maintenance (typically crops harvested in November – December under South African conditions). The **PurEst**[®] application automatically informs users of potential late-season quality maintenance opportunities in fields that are tested during August - October. These crops will mostly be slow-growing and at peak maturity when spraying needs to take place. Decisions to spray these crops should be made on merit and a field-by-field basis. At spraying, the leaf canopy must be in good vegetative state (seven or more open and healthy green leaves) and soil moisture reserves (and supply of irrigation water) must be adequate to prevent drought stress for the duration of the treatment period.

Extreme Caution: Because of profuse side-shoot development due to growth point kill, the associated inability of the stalk to produce new leaves required for sucrose production, as well as the added risk of eldana infestation (due to increased stress levels), the carry-over of crops treated with this chemical should be avoided at all cost.

Soil moisture requirements

The supply of moisture to the crop must be sufficient at spraying (crop not suffering from drought stress) and to maintain growth for at least five weeks after spraying. Available evidence indicates that stressed cane produces fewer esterase enzymes, which inhibits conversion of fluazifop-p-butyl to its more active acid form, thus lowering the efficacy of this chemical. To achieve maximum chemical efficacy, it is recommended that the treated crop be irrigated for as long as possible after application yet allowing enough time without irrigation to avoid complications (stool damage and poor burning efficiency) during harvesting. For rainfed crops, the same conditions stipulated above apply. Crops ripened with this chemical on good soils, holding abundant soil moisture, will achieve much better results than crops grown under marginal conditions.

Will all varieties respond to this chemical?

Yes, all released varieties have been shown to respond. However, a higher rate is required for variety N14 (see application rates table).

Application rates

This chemical must be sprayed at the rates indicated in the table below:

Application rates for this chemical for purposes of chemical ripening and late season cane quality maintenance (rates for variety N14 in brackets).

Application method	Registered rate (150 g/l formulation)	Registered rate (125 g/l formulation)	Water volume
Ground application	200 to 250 mL/ha (330 mL/ha for variety N14)	300 mL/ha (400 mL/ha for variety N14)	Apply in 50 to 200 L water/ha
Aerial application	225 to 275 mL/ha (367 mL/ha for variety N14)	330 mL/ha (440 mL/ha for variety N14)	Apply in 30 to 35L water/ha

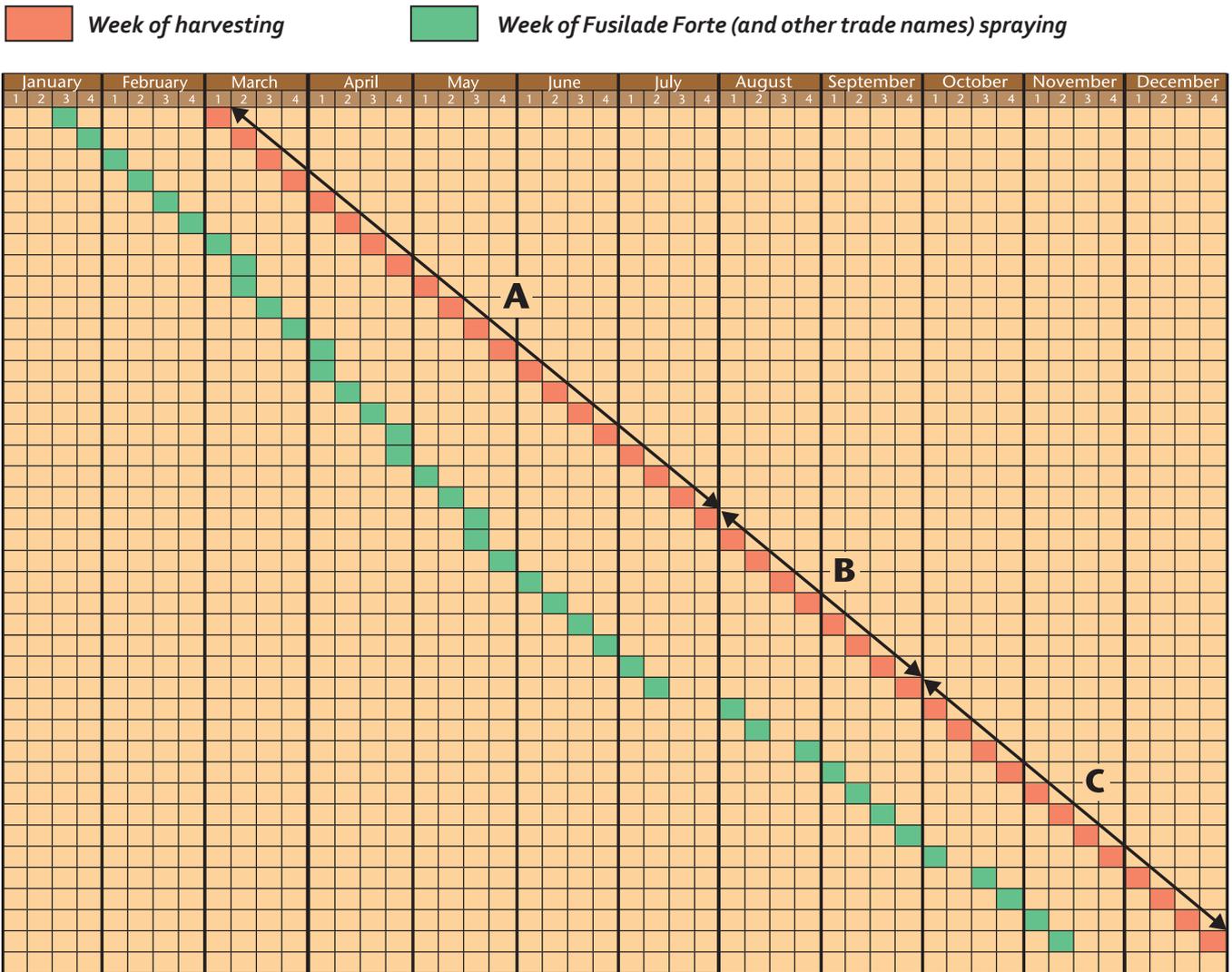
Timing of application

A guide to help growers determine the suitable time of applying this chemical for the different harvest months for purposes of chemical ripening or late-season cane quality maintenance is provided in the schedule on the next page. A convenient spray date guide calculator has also been incorporated within the **PurEst**[®] application. Spray-to-harvest intervals in the schedule and calculator 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. This schedule and calculator is a guideline and the exact timing of application to achieve best results may be influenced by climate and variety. Hand-held refractometers may 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 4.7 that explains how to fine-tune spray-to-harvest intervals from Brix% readings taken with hand-held refractometers.

Examples: For a crop harvested during the first week of April, this chemical should be applied during the third week of February, i.e. six weeks before harvest. However, for a crop harvested during the last week of July, application should occur during the third week of May, i.e. nine weeks before harvest.

Timing schedule for FUSILADE FORTE application



Harvest weeks falling during time-period indicated by arrows:
A = Chemical ripening period (to improve quality)
B = Only apply chemical on merit (following maturity assessment)
C = Late-season quality maintenance period (to maintain high quality)

Does this chemical affect the growth of the following crop (residual effects)?

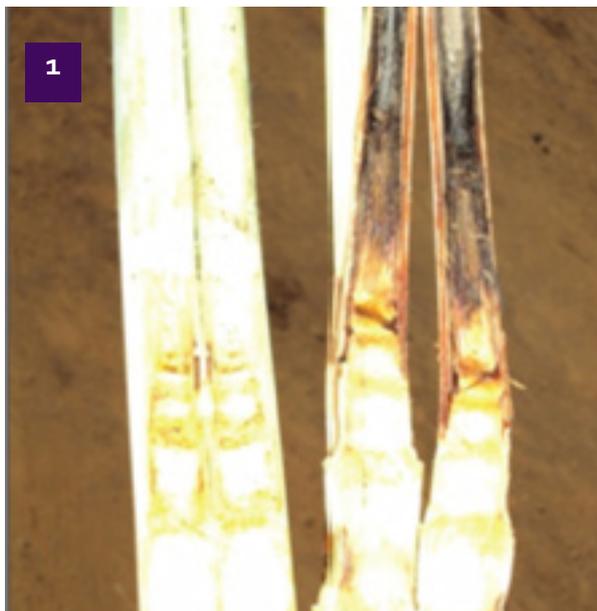
Published evidence and trial research does not support the presence of negative effects on ratoon re-growth in crops where application occurred under conditions that are regarded as favourable for the use of this chemical (i.e. conditions conducive to good crop growth). There is some evidence of increased tillering in the following ratoon crop, but this does not translate into higher yields. From limited cases where this chemical 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 this chemical

is applied at higher than recommended rates under cold and cloudy conditions in soils saturated with water. When applied correctly, 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 this chemical be used for seedcane?

No. Because this chemical is translocated through the stalk, it may retard the growth of any buds which break.

Typical symptoms that develop in sugarcane following application



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.



3
▲ Black necrotic ring(s) on elongating internodes.



4
▲ Side-shoot development due to loss of apical dominance.

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