

# SUCCESSFUL chemical ripening in Mpumalanga

*The large economic benefit that chemical ripening can have on well-managed irrigated sugarcane crops was clearly demonstrated in a recent strip trial conducted in collaboration with TSB on Piet Smith's farm, Noordgrens, near Komatipoort under commercial (on-farm) conditions.*

**C**ONSIDERING THE LOW COST OF APPLICATION, AND THE RAPID RETURN ON INVESTMENT, CHEMICAL RIPENING IS A LOW-RISK AND PROFITABLE BEST MANAGEMENT PRACTICE THAT GROWERS CAN IMPLEMENT IN HIGH-YIELDING SUGARCANE CROPS.

Strips measuring 1.6 ha each, within three fields under sub-surface drip irrigation were selected for the trial (5<sup>th</sup> ratoon of N25, plant crop and 3<sup>rd</sup> ratoon of N23). At the time of ripener spraying, the sugarcane in these fields had 8 or more green leaves and long upper internodes, reliable indicators of vigorous crop growth essential for achieving good ripener responses. The strips were sprayed with chemical ripeners or left unsprayed (control) and inspected prior to harvest for the development of visual ripener symptoms.

In this trial, harvest was delayed due to wet conditions, which resulted in spray-to-harvest intervals of 14 weeks for Ethephon and 9 weeks for Fusilade Forte. Ethephon and Fusilade Forte was applied by fixed-wing aircraft at application rates of 1.5 L/ha and 275 ml/ha respectively in a volume of 30 L of water/ha as specified on the product labels. Ethephon and Fusilade Forte were applied on the 23<sup>rd</sup> of February 2010 and 29<sup>th</sup> of March 2010 respectively. All three crops were harvested during the last week of May/first week of June 2010 at crop ages of 12 -13 months. At harvest, cane consignments (3 - 5) from each strip were analysed for cane quality (%RV) by the cane testing service at the Komatipoort mill. Since all the cane consignments (8 - 9 per strip) were also weighed at the mill, it was possible to calculate both the cane and RV yields (t/ha) in each strip.

From top to bottom:

*Black necrotic ring formation and side-shoot development on upper internodes in response to Fusilade Forte observed nine weeks after application.*

*Fusilade Forte application resulted in the death of spindle leaves but without damaging the mature green leaves required for sucrose production and storage.*

Variety	Treatment	RV (%)	Cane yield (t/ha)	RV yield (t/ha)	Improvement (t/ha) in RV yield relative to control	Profit (R/ha)
N25	Control	10.02	139.2	13.95	-	-
(5 <sup>th</sup> ratoon)	Ripened	10.82	143.2	15.50	1.55	3 697
N23	Control	10.02	132.5	13.27	-	-
(3 <sup>rd</sup> ratoon)	Ripened	11.5	133.7	15.38	2.11	5 077
N23	Control	10.57	130.3	13.77	-	-
(plant crop)	Ripened	12.55	119.1	14.95	1.18	2 785

The chemical ripener responses achieved within the three fields are displayed in the table above.

*The profit achieved by Piet Smith from using chemical ripeners in these three fields was between R2785 – R5077/ha.*

RV yields showed improvement due to the combination ripener treatment which varied between 1.18 – 2.11 t/ha. The total cost (chemicals + aerial application) of the combination treatment during 2010 at Komatipoort was approximately R494/ha. However, with a subsidy of 75% from TSB, the actual cost to growers was as low as R123.50/ha. The profit (R/ha) achieved was calculated using the end May/early June 2010 RV price of R2465. The profit achieved by Piet Smith from using chemical ripeners in these three fields was between R2785 – R5077/ha. Only in one case (N23 plant crop) did the combination treatment reduce cane yields slightly by ±11 t/ha, but the very large improvement in cane quality

(%RV) more than compensated for this loss, still allowing a substantial profit of R2785/ha in addition to some savings in transport costs.

At the start of the trial, Piet was of the opinion that even a small percentage increase in RV would be economically beneficial since he was already achieving high yields, however, with the gains that were made, Piet is extremely happy with the results. Looking forward into this season, Piet will be applying combination (or piggy-back) treatments to every section of his farm that would benefit from ripening.

Please contact your Extension Specialist if you are interested in following a similar approach to assess ripener responses on your farms. 🍀

Riekert van Heerden  
Senior Scientist – Sugarcane Physiologist  
South African Sugarcane Research Institute  
South African Sugar Association



## SASRI Recommendations

SASRI recommendations for chemical ripening can be found in the following Information Sheets, obtainable from the SASRI library (Email: [library@sugarcane.org.za](mailto:library@sugarcane.org.za))

- 12.1 Principles underlying chemical ripening (January 2010).
- 12.2 Registered chemicals for ripening sugarcane: Ethephon (August 2005).
- 12.3 Registered chemicals for ripening sugarcane: Fusilade Forte (October 2010).

**Additional articles on the subject include:**

- Chemical Ripeners: How do they work? – The Link, February 2009.
- Chemical Ripener Evaluation Programme – The Link, September 2009.
- Chemical Ripening: Recommendations for use of Fusilade® Forte - The Link, January 2011.