SWAZILAND SUGAR ASSOCIATION TECHNICAL SERVICES

EXTENSION NEWSLETTER

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SMALL SCALE GROWERS COMPETITION

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"successful farmers have been following the advice available to small scale growers"

Prize giving for the 2001-2002 Small Scale Sugarcane Growers (SSG) Competition was held at Nyakatfo Sugarcane Pilot Project on 20th March.

Emadvodza Farmers Association won first prize for their average sucrose production of 1.552 tons sucrose/ha/month during the 2001-2002 season. They were closely followed by Hlomane Farmers Association (1.548 ts/ha/month) and Bambanani Farmers Association (1.504 ts/ha/month).

The Winners

Emadvodza Farmers Association farm 76ha of well drained alluvial soils under drag line sprinkler irrigation in the Mhlume mill group area. Their irrigation system uses a pump station shared with Hlomane and Bambanani Farmers Associations under the umbrella of the Nyakatfo Pilot Project.

The Prizes

The winners were awarded a floating trophy, a full set of tractor tyres and tubes and 5 litres of Gesapax. Second prize was a three tine ridger and a Humber bicycle, and third prize was a seven tine cultivator. The generosity of prize donors was much appreciated.

How they won

The Farmers Associations at Nyakatfo have been diligent in seeking and following the advice that is available to small scale growers. John Reilly of Mhlume (now seconded to SKPE) has played a large part in delivering solutions to their problems by consultation. The successful farmers have attended all SSA training courses, using their own transport to get there, and are quick to spot in-field problems and to seek advice if they cannot be rectified independently. They are attentive to their machinery, pumps, record keeping and in-field operations and their fields are visibly well kept at all times. It is therefore no surprise that the three Nyakatfo Farmers Associations finished first, second and third in the competition.

Guest Speakers

The prize giving ceremony was well attended by farmers and by prominent industry figures who were invited to speak about the issues affecting Swaziland sugar farmers. Mike Matsebula, CEO of SSA, warned growers to control production costs in the face of falling sugar prices. Ian Moore of Mhlume Sugar Company and Zaks Nkosi of Swaziland Cane Growers Association both highlighted the technical assistance available to small scale growers through cane supply managers from the sugar mills and extension officers from SSA and government. Use of this assistance reaps considerable rewards, as demonstrated by this year's winners. The Managing Director of Swazi Bank, Stanley Matsebula, spoke about Swazi Bank's involvement in small scale sugarcane grower development since 1992, when it was the first bank to fund projects of this kind. Swazi Bank has provided E60 million finance for small scale sugar projects since 1992 and are considering investing a further E40 million.

Emadvodza Farmers Association are to be congratulated for their achievement. Judging by the high spirits of farmers at the prize giving there is likely to be tough competition for next year's trophy.

LUSIP GOES AHEAD

A E411 million loan has been approved by the African Development Bank for the Lower Usuthu Smallholder Irrigation Project (LUSIP).

The project will involve the construction of three new dams to develop the water resources of the Lower Usuthu and provide irrigation infrastructure to the area. Small holder farmers will be encouraged to diversify and intensify production, and many are expected to grow sugarcane.

IRRIGATION ALERT

The prolonged dry spell during March has put extra demand on irrigation water resources as we head into winter.

Growers should check that they are scheduling irrigation correctly to avoid over-application during winter, when river flows and dam levels are likely to be lower than usual. If in doubt, contact SSATS for advice (Tel 383 8998).

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UPDATE ON VARIETIES FOR 2002

Sugarcane varieties grown in Swaziland are imported from the South African Sugar Association Experiment Station (SASEX), where a programme to introduce, test and produce new varieties has been underway since the 1930's.

Variety Testing

Conditions under which varieties are selected in South Africa do not always match those in Swaziland, and a secondary testing programme is conducted by SSA Technical Services to establish the suitability of new South African releases to the Swaziland industry. New varieties are assessed on the following characteristics:

- Sucrose yield must compare favourably with that of ripened NCo376
- Yield performance must be sustainable for at least five ratoons
- The variety must be tolerant to sugarcane smut and other major pests and diseases
- The variety must have acceptable general agronomic qualities

Varieties are not made available for commercial production until they have been fully tested by SSA Technical Services.

Approved Varieties

There are currently five sugarcane varieties approved for commercial production in Swaziland: NCo376, N14, N19, N23 and N25. All five originated from SASEX and therefore carry the prefix "N". Their characteristics, benefits and limitations are summarized below:

NCo376 was released by SASEX in 1955 and has been the mainstay of the Swaziland industry since the late 1970's. NCo376 yields well under most growing conditions, ratoons well and responds exceptionally strongly to chemical ripening. However, it is highly susceptible to smut and can only continue to be grown under strict pest and disease regulations. For this reason, it cannot be grown in Malkerns, its use in small grower developments is discouraged, and the industry is gradually reducing the total area planted to this variety (from over 80% in 1984 to 58% in 2002).

N14 was planted widely in Swaziland after its release in 1980, mainly because it was heralded as a smut-tolerant alternative to NCo376. However, its yield performance does not compare well with that of NCo376 under most conditions other than in a mid to late season cycle on deep, well drained soils.

N19 was released in 1986 and has been adopted as a variety for poor soil conditions in Swaziland, where its yield performance is more reliable than that of most other varieties available to the industry, especially when harvested early to mid season. It is not as well adapted to better soil conditions, where it often lodges heavily. N19 is susceptible to Mosaic disease, and therefore cannot be grown in Malkerns.

N23's yield performance, response to chemical ripeners, ratooning ability and stalk population are similar to NCo376. It has the added advantage of being tolerant to smut. Disadvantages include profuse flowering and poor germination under wet, cold soil conditions. The profuse flowering restricts harvest to no later than mid-October. Poor germination restricts planting to well-prepared seedbeds in warm weather conditions (avoid planting in winter and over-irrigating after planting).

N25 produces variable but extremely heavy yields of low sucrose content cane. It is especially useful as a relatively smut-tolerant variety for harvest towards the end of the season. It performs well on all soil types, although lodging may be a problem on the more productive soils. The combination of heavy cane yield and low sucrose content makes it unsuitable for cultivation at long distances from the mill because of transport costs, although sucrose content can be improved with chemical ripeners. N25 has more brittle stalks than other varieties, sometimes causing severe lodging and making it unsuitable for harvesting systems based on bundled cane. It may also be more sensitive to herbicides than other varieties.

Choice of Variety

General recommendations for choice of variety are given in **Figure 1**. They are based on the yield benefits and agronomic disadvantages of each variety when grown on good, moderate or poor soil and harvested early, mid or late season. It is important to note the following when referring to these recommendations:

- Varieties NCo376 and N19 may not be grown in Malkerns.
- Recommendations are updated regularly as commercial experience and results of field trials dictate. Refer to SSA Technical Services for the latest recommendations if in doubt.
- These recommendations should be considered in conjunction with chemical ripener recommendations, especially when choosing varieties for early season harvest on well and moderately drained soils (see December 2001 Newsletter).

Figure 1: Variety recommendations by soil type and harvest season.

Soil category	Soil set	Season + Variety[1]		
		Early April - July	Mid Aug - Sept	Late Oct - Nov
Good/Moderate (well drained)	R, N, L, W, S	N23[4] NCo376[2] N25[5]	N23[4] NCo376[2] N25[5] N14	N25[5] NCo376[3] N14 N23[6]
Moderate (moderate to poorly drained)	T, D, K, C, V	N19 N25[5] NCo376 N23[4]	NCo376[2] N25[5] N23[4] N14	N25[5] NCo376 N19 N14
Poor (poorly drained or duplex)	H, Z, E	N19 N25[5] NCo376	N25[5] NCo376 N19	N25[5] NCo376 N19

Notes:

1 Varieties are ranked in order of preference

2 NCo376 is ranked above N25 due to more consistent yields

3 NCo376 is ranked above N23 due to lower risk of flowering

4 Germination in N23 may be poor if planted in cold, wet conditions

5 Beware of lodging and difficulties in forming bundles with N25

6 Harvest N23 earlier than mid-October

2002 SEASON OUTLOOK

Just as the 2002 cutting season gets underway, it is perhaps timely to consider yield estimates for the coming crop.

The Good News

Our crop has completed its crucial summer growing period and the potential yield platform for the coming season has been set. Poor growing conditions during Spring and early Summer were replaced by average growing conditions between December 2001 and February 2002 and bumper conditions during March 2002. Potential yields forecast for the 2002 season are the highest in six years, which is good news for our industry.

The CANEGRO simulations for all three Mill Groups are presented below. Actual weather data between April 2001 and March 2002 were combined with generated data sets matching the mid-to-long-term climate forecast to represent the remainder of the 2002 cutting season. Results are presented as cumulative probability functions (**Figure 2**) and as season comparisons (**Figure 3**). The probability functions give the reader an estimate of the range in potential cane yield depending on the scenario used.

Potential cane yields at Mhlume are estimated to be between 138 (y = 0) and 144 (y = 1) t/ha/year. Potential yields at Simunye are forecasted to range between 134 and 142 t/ha/year and at Ubombo, between 135 and 145 t/ha/year.

For comparative purposes potential cane yields for the past 20 seasons (Long Term Mean, LTM) were simulated using historical weather data for each of the three sites (**Figure 3**). Theses graphs allow the reader to judge the relative potential of the coming season. At Mhlume forecast yields at the 50% probability level are higher than the LTM for the first time in six years (141 vs LTM of 138 t/ha/year). At Simunye yields are expected to be slightly below the LTM (139 vs LTM of 141 t/ha/year) whereas at Ubombo yields are forecast to be similar to LTM yields (142 t/ha/year).

The Bad News

However, a word of caution. The good growing conditions experienced during the past three months naturally coincided with hot, dry conditions that will have severely tested irrigation water supply systems. Yields will have been affected on fields where irrigation was not adequate during this time. Bear this in mind when adjusting your estimates.

Provisos and assumptions

- These estimates have tried to take into account what we know about past and future weather conditions, but our confidence is low for crops harvested mid to late season.
- Potential yield estimates have been based on the 50% probability level but yields could be lower or higher.
- Commercial yields are usually 20-30% below potential yields.
- Cane yield calculations do not take into account cane sucrose content, which may not follow the same seasonal trend.
- This exercise takes no account of crop age; all yields are expressed on an annual basis (t/ha/year).

Figure 2: Cumulative probability functions

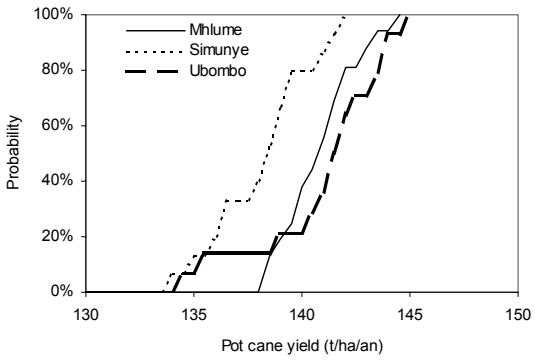
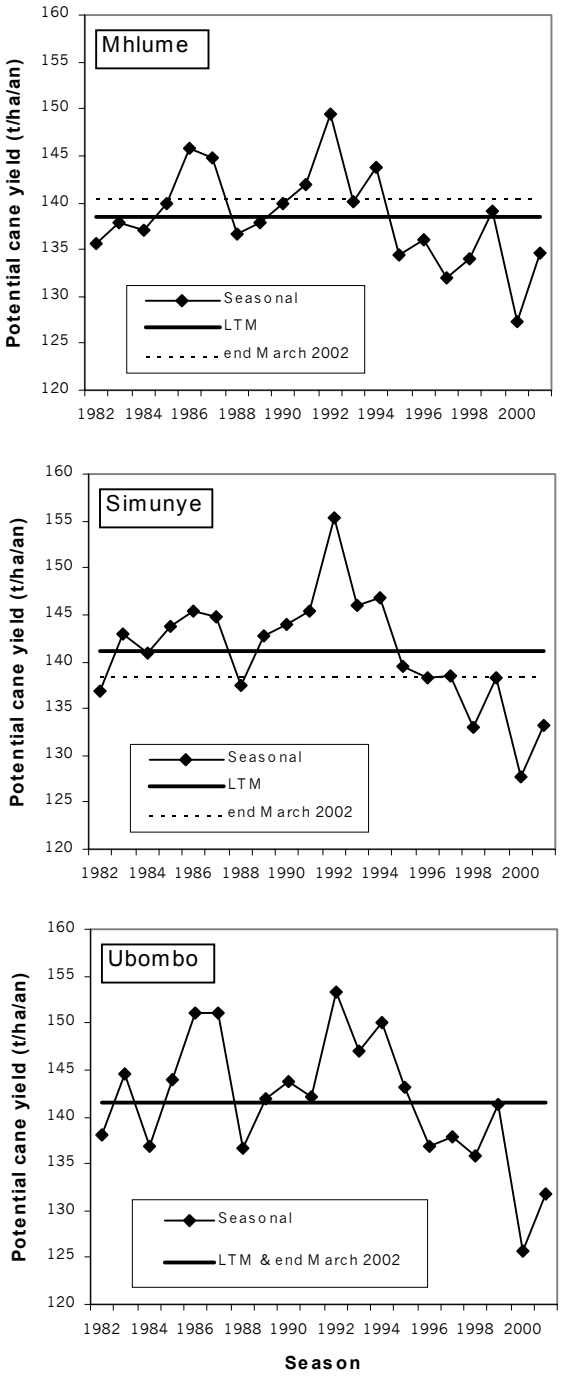


Figure 3: Season comparisons for each mill area



WEED CONTROL IN DRIP - IRRIGATED CANE

Some growers have experienced poor performance of pre/early-post emergence herbicides in drip-irrigated cane because of dry soil conditions in the inter-rows, particularly during periods of low rainfall.

Noel Leibbrandt, former herbicide specialist at SASEX, was asked to comment on possible solutions to this problem. The techniques that he has come across in Southern Africa are summarized below:

- A dragline system is maintained to pre-irrigate the soil before applying herbicides. This is followed up by a second light irrigation to wash the herbicides into the upper soil profile. This system has been used successfully with products such as Metribuzin + Diuron that are totally dependent on moisture. Although impractical on large areas, the excellent weed control achieved could justify this approach on smaller sections and eliminate the expense of a second follow-up treatment.
- Acetochlor + atrazine are applied to the wetted row and followed up with a hormone based treatment on the dry inter-row. The combination of herbicides used on the row can be adjusted depending on the expected weed spectrum.
- New products such as Merlin, that do not require moisture at the time of spraying, could be applied in the dry inter-row at the same time as applying standard herbicides to the wetted row, eliminating the need for the follow-up hormone spray described above. This system has not yet been tested and the cost may be prohibitive.
- Surface drip tape is moved from row to inter-row to wet the entire soil surface before and after herbicide application. This may not be practical unless spraying is carried out by hand or aircraft (tractors would disturb the herbicide layer on a wet soil surface).

Cane roots can be a problem in buried drippers. Netafim recommend that Treflan (trifluralin) should be applied at 0.125g product/emitter through the system twice during the growing season — once during the fast growing period of the crop and again during dry off. Trifluralin can be very damaging to the crop at high rates and care should be taken to avoid over-application.

More information on herbicides is given in the new Swaziland Sugarcane Production Manual, available from SSA offices at Mbabane, Big Bend and Simunye or from Swaziland Cane Growers Association offices in Mbabane. Telephone 383 8998 (SSA Simunye) or 40 43561 (Cane Growers).

NITROGEN FERTILISER RECOMMENDATIONS

Nitrogen fertiliser recommendations for sugarcane in Swaziland have been derived from experimental data collected since 1984. Over-application of fertiliser can lead to reduced cane quality, lodging, pest and disease problems, poor economic returns and soil acidification. Under-application leads to poor growth and sub-optimal yields. It is therefore important to follow recommendations as closely as possible.

Rates of application

Soils are classified into three groups according to their potential to mineralize N from organic matter present in the soil. A soil with high organic matter content will mineralize more N and will therefore need a smaller application of N fertiliser than a soil with low organic matter content. Nitrogen recommendations for plant crops are usually less than for ratoon crops because plant crops are preceded by a fallow period that enhances the soil's ability to release nitrogen from organic matter. Recommended nitrogen rates are shown in **Figure 4**. Exceptions to these recommendations occur as follows:

- Rates of nitrogen can be **reduced** by 20kg N/ha if irrigation water is restricted, soil is saline/sodic, Milo has been applied or where cane was preceded by a green manure crop.
- Rates of nitrogen can be **reduced** by 20% if fertigating through drip irrigation.
- Rates of nitrogen can be **increased** by 20kg N/ha for variety N14.

Timing of application

Plant cane should receive a third to half of the recommended rate in the furrow and the remainder should be top-dressed at the stage of rapid stalk elongation (i.e. in August for Autumn plantings and approximately 6 weeks after planting in Spring). Ratoon cane should generally receive all its nitrogen as soon after harvesting as possible, but split application can be considered in the following situations:

- Winter (May and June) harvested cane. The initial application should be applied after harvest and the balance top-dressed in August.
- Cane on deep sandy soils that are prone to leaching.
- Cane on poorly drained soils where denitrification could take place.
- Cane harvested in summer (November to December) when heavy rainfall can be expected.

Fertigation

Recent results from experiments with sub surface drip irrigation have shown that fertigation with nitrogen should not continue for more than five months after planting or harvesting. Nitrogen application can be split evenly on a monthly basis during this period. Application for longer periods does not improve sucrose yield and can reduce cane quality.

Figure 4: Nitrogen recommendations by soil type

Soil/crop criteria	Nitrogen mineralisation category				
	Low		Moderate	High	
Soil colour	Grey with mottling		Dark grey, brown/ black	Red or brown	
Soil sets	B,E,H,Z,D		C,K,S,T,V	L,N,R,W	
Plant cane	140		120	120	
Ratoon cane	Rooting depth		160#*	1–4 R	>4 R
	<400 mm	>400 mm		140	160
	160	180			

All T sets except Thorburn = 180 kg N/ha
* S sets <4 Ratoon = 140 kg N/ha