TO HARVEST OR NOT TO HARVEST

Introduction

With the harvesting season already at hand, as a consequence of the drought scourge, many growers are at crossroads as whether to harvest or not harvest their early cut fields. The uncertainty is created by the slow crop growth experienced in most parts of the country this season. On the other hand, millers are also debating whether to resume the crushing season on normal dates or delay by a week or two. This is a result of the expected decline in cane to be crushed this year hence a shorter than normal milling season is expected.

Millable cane

The decision of whether to cut or not to cut hinges on three interactive factors: status of cane stalks, water availability and climatic conditions. If the crop has millable stalks, water is scarce and climatic conditions are not likely to favour any further substantial cane growth, it is advantageous to harvest the crop for milling. Water required at this stage will be for filling the soil profile and then follow the irrigation strategy recommended by SSATS. However, if water is available and climatic conditions are likely to favour considerable crop growth of millable stalks, then delaying harvesting or the start of the crushing season may be of some benefit. Where the cane is millable but any one of these other factors (water and climatic) is limiting, keeping the crop standing may not be beneficial.

Non-millable cane

In cases where the cane is not millable but stressed, it is recommended that whether water availability and climatic factors are restrictive or not, the crop be not cut back. If possible, the grower is advised to implement the "*prevention of cane stool die back due to drought guidelines*" outlined in this Newsletter. Cutting back will stimulate the crop to break dormancy and re-grow, and, if soil water is not sufficient, stool mortality will occur. However, where eldana infestation is so severe such that keeping the crop will not be economical, cutting back is highly recommended. Once sufficient rains are received or water becomes available, stressed cane with three green leaves or less, which is too short to mill, should be slashed back to rejuvenate new growth.

By Njabulo Dlamini (Crops Agronomist)

AWARENESS ON MITES INJURIES ON SUGARCANE

Background

Symptoms resembling those caused by the feeding of mites were observed in late December in the North and in January in the South on two farms/estates, respectively.

Symptoms

These symptoms are fine red freckling which are usually towards the leaf tips and can temporarily give affected fields a general red-brown colour (Figures 1a and 1b). They are similar to those of rust. Literature says mite injury is most likely to occur in periods of dry weather.

Figure 1(a): Symptoms of mites damage on cane

Figure 1(b): Symptoms of mites damage on cane

Control

Presently mite injury is not considered to be economically important. Growers are encouraged to be on the lookout for such damages and report suspected mite incidents to Extension Officers and/or SSATS for monitoring purposes as pests are known to become problematic under favourable conditions.

By Mphumelelo Ndlovu (Crop Protection & Extension Officer - SSATS) & Machawe Dlamini (Extension Officer - KDDP)

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SWAZILAND SUGAR ASSOCIATION TECHNICAL SERVICES

EXTENSION NEWSLETTER

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Read on the awareness on mites damage on sugarcane

Prevention of stool die back

"During the drought period, growers are advised to extend the dry-off period to 3 x TAW. This will save and spread the available water on the farm for continued irrigation."

Experience with chicken litter in low pH soils

"There is another practice embraced by some growers in the area that appears to help increase soil pH, that is the application of chicken litter."

PREVENTION OF CANE STOOL DIE BACK DUE TO DROUGHT

Introduction

Some studies indicate that die back of the sugarcane stool may begin when soil water falls below 22% of crop water requirement for a longer period. Under severe stress, the photosynthetic apparatus of the sugarcane plant shuts down and the plant starts to wilt. Other studies indicate that the effects of drought interact with other factors in the plant, soil and atmosphere continuum to cause the death of sugarcane plants.

Strategies

Previously, growers had been advised to irrigate according to the strategy shown in Table 1. However, with the urge to save water the strategy was revised to that shown in Table 2. Furthermore, the current drought has necessitated an even more stringent water saving strategy to spread the available water and minimize death of the cane. This strategy is shown in Table 3.

Table 3 is based on the proposition that a 25% crop water requirement is applied to prevent die back of cane stools.

Soils in the sugar industry vary from sandy to heavy clays, necessitating more frequent irrigations on the sandy soils compared to the heavy soils. Growers need to carry out field soil inspections and canopy views to check the extent of the damage due to the reduced irrigation water applied. Cane must have at least three green leaves to ensure that the stool is kept alive and viable for the next crop.

Table 1: Normal winter irrigation strategy

Harvest month	Month of year & number of irrigation cycles									Total
	April	May	June	July	Aug	Sep	Oct	Nov	Dec	
April	2	1	1	1	2	2	2	2	2	**15**
May	-	2	1	1	1	2	2	2	2	**13**
June	-	-	2	1	1	1	2	2	2	**11**
July	-	-	-	2	1	1	2	2	2	**10**
August	-	-	-	-	2	1	2	2	2	**9**
September	-	-	-	-	-	2	1	2	2	**7**
October	-	-	-	-	-	-	2	1	2	**5**

Table 2: Water-saving winter strategy

Harvest month	Month of year Month of year & number of irrigation cycles									Total
	April	May	June	July	Aug	Sep	Oct	Nov	Dec	
April	1	1	-	-	1	1	1	2	2	**9**
May	-	1	1	-	-	1	1	2	2	**8**
June	-	-	1	1	-	-	1	2	2	**7**
July	-	-	-	1	1	-	1	2	2	**7**
August	-	-	-	-	1	1	1	2	2	**7**
September	-	-	-	-	-	1	1	1	2	**5**
October	-	-	-	-	-	-	1	1	1	**3**

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PREVENTION OF CANE STOOL DIE BACK DUE TO DROUGHT ...CONT

Table 3: Cane survival strategy (25% of crop water Requirement)

Harvest month	Month of year & number of irrigation cycles									Total
	April	May	June	July	Aug	Sep	Oct	Nov	Dec	
April	1		1		1		1			**4**
May		1		1		1		1		**4**
June			1			1		1		**3**
July				1		1		1		**3**
August					1	1		1		**3**
September						1		1		**2**
October							1	1		**2**

Pre and post-harvest irrigation

1. Drying-Off

The time between the last irrigation event and the next harvesting operation is called the dry-off period. It is highly dependent on the soil type and it's Total Available Water (TAW). Under normal conditions, the recommended dry-off period is 2 x TAW. During the drought period, growers are advised to extend the dry-off period to 3 x TAW. This will save and spread the available water on the farm for continued irrigation.

Table 4 shows the dry off in weeks from May to December for the different TAW and soil sets in the sugar industry. It assumes that the field capacity was achieved at the final irrigation before harvest. As an example, a field with 100mm TAW to be harvested on 31 July would be dried off for 11 weeks. (Dry- off would begin on 19 May and harvested on 31 July = 11 weeks).

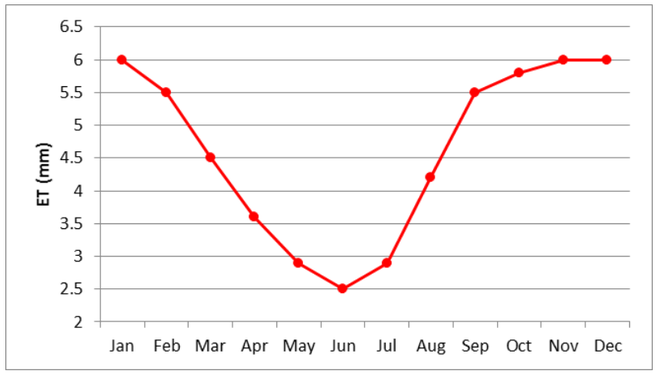

Figure 1: Crop water demand for the Lowveld

Table 4: Dry off in weeks, working back from the harvest date [3 x TAW]

Month of Harvest	Total Available Water (TAW)				
	50 mm	75 mm	100 mm	125 mm	150 mm
Soil Sets	S, De (Z,H,F)	T, K V, C	Dt, Ro	Rk, B W	Rt, L
May +	5	7	8	11	12
Jun	6	8	10	12	14
July	6	9	11	13	15
August	5	8	11	14	16
September	4	6	9	12	15
October	4	5	7	9	12
November	3	5	6	8	10
December	3	4	6	8	9

2. Management of the first irrigation after harvesting

The harvesting season normally begins in April each year. This will be a difficult year under the prevailing drought conditions. Growers need to be aware that it coincides with the period when the evapotranspiration (ET) is on the decline as shown by Figure 1. Therefore, the crop will survive even with minimum irrigation.

First Irrigation

Since the soil is likely to be very dry after harvesting due to the long dry-off period, hence growers must quickly apply the first irrigation, within a week after harvesting. Lengthy delays will affect ratooning and hence reduce plant population because any regrowth under very dry conditions results in die back which in turn will have adverse effects on yields. The first irrigation must bring the soil moisture to field capacity or up to the full TAW of the soil. This is because the young ratooning crop needs moisture to develop a tangible roots system.

Second and Subsequent Irrigations

As the drought is ongoing, the second irrigation should be delayed until the 5th leaf (stem elongation) stage or for a month or two as shown in Table 3. This will just keep the cane alive. Subsequent irrigations should be applied in two month intervals.

It is possible that there will be some rainfall events occurring, thus growers are

PREVENTION OF CANE STOOL DIE BACK DUE TO DROUGHT...CONT

-advised to schedule their irrigation accordingly. The decision to irrigate or not to irrigate after such rainfall events will depend on the amount of rainfall received and the resultant soil water content.

4. Summer and Normal rainfall Guidelines

Even when the drought is over, growers must continue to be vigilant in using water. Irrigation scheduling should continue. The crop water demand varies according to season of harvest and the growth stage of the crop. Sugarcane has different canopy factors (CF) for each growth stage and this should be considered when scheduling. The appropriate water demand of the crop at a given growth stage is calculated by multiplying the ET figure with the CF before subtracting it from the previous soil moisture value. Table 5 shows canopy factors by harvest month for the Lowveld. The irrigation scheduling must take into account constraints of the irrigation system design in order to provide an optimum soil moisture for an optimal yield. Moisture stress can be avoided by maintaining the soil moisture content between field capacity and half of the soil TAW. With the prevailing weather resulting in diminishing water resources, growers are advised to use water sparingly. Strict irrigation scheduling should be followed and where possible spreading the available water over a longer period is strongly recommended. Growers are advised to use scheduling tools such as auger, profile pit, probes, pin peg board, Profit and Loss book, and irrigation software (CaneSched).

Table 5: Canopy factors by harvest month for the Lowveld

Harvest month	Current month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Apr	1	1	1	0.4	0.4	0.6	0.78	0.93	1	1	1	1
May	1	1	1	1	0.4	0.4	0.4	0.49	0.76	0.96	1	1
Jun	1	1	1	1	1	0.4	0.4	0.4	0.46	0.8	1	1
Jul	1	1	1	1	1	1	0.4	0.4	0.4	0.73	1	1
Aug	1	1	1	1	1	1	1	0.4	0.4	0.58	0.9	1
Sep	1	1	1	1	1	1	1	1	0.4	0.4	0.7	0.95
Oct	1	1	1	1	1	1	1	1	1	0.4	0.4	0.78
Nov	0.81	1	1	1	1	1	1	1	1	1	0.4	0.46
Dec	0.45	0.83	1	1	1	1	1	1	1	1	1	0.4

By Noah Dlamini (Irrigation Engineer)

EXPERIENCE WITH CHICKEN LITTER IN LOW pH SOILS

Introduction

Soils in the Malkerns area are generally low in pH. In some farms in the area, soil test results indicate pH values as low as 4. The problems associated with low pH (acid) soils were highlighted in Newsletter No. 53 and growers were encouraged to take the necessary steps towards addressing these problems. The emphasis was mainly on lime application.

Observations

There is another practice embraced by some growers in the area that appears to help increase soil pH, that is the application of chicken litter (CL). There are some growers who apply CL in their sugar cane fields and the following observations have been made:

- The soils where CL has been applied do not have problems of low pH. The pH values in these soils are above 5.5, yet in other farms where CL is not applied, most of the soils are in the low pH regime. This means that the application of CL has some ameliorating effect.
- Also the levels of phosphorus are relatively high where CL is applied and as such fertilizer recommendations for subsequent crops for these growers do not include P, only N and K are applied. Hence, CL application provides an opportunity to save on P costs.

Other benefits of CL applications

- Addition of organic matter in the soil
- Improvements of soil physical properties (good water infiltration and retention).
- Promotes soil structure
- Promotes soil micro and macro organism activity.
- Addition of primary nutrients like N, P and K, and some micro elements such as Cu and Zn.

However, excessive application of CL may result in surface and subsurface water pollution. Hence, growers are advised to test CL to ascertain nutrient composition so that applications are aimed at meeting crop nutrient requirements, particularly P. Any shortfall, may then be met by applying inorganic fertilisers. To check crop nutrient status, leaf analyses should be done as recommended. For more information on CL applications, growers are advised to contact their Extension Officers.

By Justice Mabuza (Extension Officer -Malkerns)

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