

PRECAUTIONS AT CANE BURNING

Introduction

The sugar industry has most of its cane burnt at harvesting; there are a few exceptions for some growers who harvest green cane. This therefore makes cane burning a very critical operation in cane harvesting. The main reason for burning is removing excessive trash thus improving handling at harvesting and improving milling efficiency. The improved handling at harvesting refers to improved cutter efficiency and increased payloads. Burned cane will generally have a better payload compared to cane with a lot of trash.

Precautions

Before burning, precautions should be taken to ensure that irrigation pipes are not burned in the fields, hence they should be removed. Cane around electric poles should be cut, and Eswatini Electricity Company (EEC) should be notified of intention to burn so that they switch off power lines. It is recommended that burning should be done in the afternoon when it is

dry and cool, not unless the weather conditions are not favourable, i.e. chances of rainfall. Disabled person are discouraged to be part of the burning team. This include persons that are blind, deaf, dumb or with disabled limbs or epileptic. They may not be quick enough to spot danger or escape in case of emergency. People under the influence of alcohol should never be part of the burning team.

Growers should be aware that if they enter a field that is burning and they are caught in the fire, they have little chances of survival, hence they should be extra careful. When fighting a runaway fire one should stand on an already burnt field or clear path, at no particular point should anyone stand on an area being burnt or to be burnt.

Safety aspects to be considered

- Before burning commences, there should be a discussion on planning the operation led by a team leader. The burning team should at least be an eight member team that consists of the team leader. The team leader should explain to the team what is to be done and he should be the only one giving instructions.
- Discussions should include checking wind direc-

tion and speed. Always start burning at the corner of the field against the direction of the wind (*back burning*). Let the fire progress for about 20 metres before burning from the other end of the field so that the flames move towards each other within the intended field. This helps reduce possible fire jumps.

- It is also important to know the daily rateable (the harvesting group portion of cane to be crushed by the mill on daily basis) and the grower must burn cane that is enough to meet their daily rateable plus 10% buffering stocks.
- Growers are advised to make open fire breaks that are sufficiently wide enough, at least 2 meters and must be clean.
- Provide water tanks or the pump must be ready to be started in case of a fire outbreak, when burning centre pivot fields; the centre pivot operator should be present so that the centre pivot can be moved if a need arises.



FIGURE 3: Figure 1: Sugarcane burning before cutting

- The team should never leave a burning field. They must leave only after it has finished burning and the fire is completely put out.
- After burning, the Team leader should check if all member of the team are available.
- The burning team should wear bright coloured clothes for visibility. The protective equipment should include, respirators, overalls, hard hat, gum boots and reflector vests.
- When burning close to public roads, it is best practice to put signs to warn motorists of reduced visibility due to burning.
- In the event a fire jump occurs, a quick decision should be made whether the whole field or part of it is to be burned. Try as much as possible to protect adjacent fields or bushes. The grower should quickly assess if there will be need for reinforcement. The National fire end emergency department can be contacted on 933 if the situation is beyond the growers' capacity to manage it.
- After burning, the grower should do an inspection to ensure that there are no live sparks left behind.
- The fire and emergency department can be contacted to train burning teams.



Mfanzile Mabila
(Extension Officer -South)



SWAZILAND SUGAR ASSOCIATION TECHNICAL SERVICES

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GROWER CONCERNS ON N36

Background

Early in the year, some Growers raised a concern that variety N36 is germinating very poorly in their farms. This concern came mainly from those growers who had delayed spring replanting in the past season. Some of the replanting happened as late as December.

While it is understandable that some of the issues that ultimately lead to such delayed replanting are beyond the growers' control, growers are advised that planting during the rainy months is not encouraged. Ideally, for spring replants – planting should be finished latest by October in the Lowveld and September in the Highveld.

Ratooning ability

Working on wet soil leads to soil compaction, poor seedcane covering and reduced productivity (both machinery and labour). This then results in poor crop emergence and reduced ratoon longevity. Furthermore, delayed replanting in spring implies that the plant crop will be harvested during the rainy months as well. Harvesting plant and young ratoon crops when soil is wet compromises the ratooning ability of the cane. This arise primarily from soil compaction and stool damage since the soil is relatively loose at the time following ploughing operations.

Variety N36

Variety N36 is an early maturing/ high

sucrose variety recommended for early to mid-season planting across wide soil ranges. It has stalk population that is below average, but the stalk height is above average. Due to its morphological structure (including large stalk diameter), this variety lodges easily at high cane tonnage. The flowering propensity of N36 is moderate. The industry variety disposition of 2018/19 indicates that variety N36 occupies approximately 10% of the area under cane.



Current variety orders are indicating that the rate of adoption of N36 will increase at an increasing rate moving forward. This variety was first grown for commercial purposes in the industry

in 2008/09, and its adoption rate is averaged at 0,86% per year over the past ten years.

Matching with season

Growers are advised to restrict the planting of variety N36 within the early to mid-season period (refer to industry variety recommendations). Growing a variety outside its recommended season compromises its genetic potential. (Readers are encouraged to read the article ‘Seasons Effects on Cane Performance’ in Technical Services Newsletters No. 64, available in the organization's website <http://www.esa.co.sz/extension-newsletter/> Second Quarter 2016/17). During variety seminars, growers are urged to always prepare-

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GROWER CONCERNS ON N36... CONT.

-medium to long-term replant programmes. That assists them to order the right varieties from their sources well in advance. That will further eliminate the pressure of buying any available seedcane which may not be recommended for planting at the time. A number of growers acknowledge that due to unavailability of the recommended seed, they end up taking whatsoever is available from their sources.

Lodging and age

Since N36 matures early, growers are advised to plant only fresh seedcane that is not older than 12 months in age. The older the seedcane the less likely it is to germinate. Once seedcane is cut, it should be planted and irrigated within the shortest period

possible. Variety N36 has shown to deteriorate faster after cutting especially under hot and dry conditions. Lodged seedcane was also observed to lose its germination vigour more rapidly compared to un-lodged cane. As indicated above that N36 is susceptible to lodging, growers are advised against using lodged N36 as seedcane especially when old.

Growers are further reminded that seed material should be free from pests and diseases, certified by ESA and not dry. For more information, growers can contact their respective Extension Officers.



Njabulo Dlamini
(Agronomist)

MANAGING IRRIGATION IN WINTER

Introduction

The winter season (May to July) is the time when crop water demand is at the lowest as shown by the evapotranspiration (ET) long term mean (LTM) values in **Figure 1**. There is a tendency among growers to continue applying water at the same frequency as in summer yet sugarcane water requirement in winter is at the lowest. As the sugarcane water requirement drops in winter, the irrigation frequency is also expected to be decreased. This can only be real-

Despite the presence of windy days and absence of rainfall during the winter season, it is very important to apply the required irrigation water because excess water is a problem to the crop, soil and the running costs of the farm. Over-irrigation wastes water and electricity, yet electricity is more expensive in winter from June to August. According to the Eswatini Electricity Company (EEC), this period falls under the high electricity demand season when electricity tariffs are significantly high.

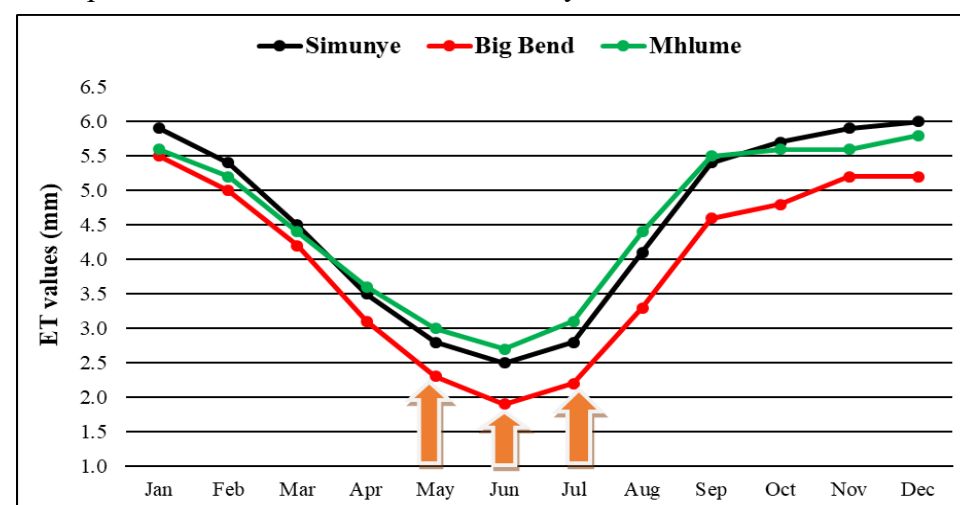


FIGURE 1: Average LTM of crop water demand for the Lowveld

ised by properly scheduling irrigation events.

Problems of over-irrigation in winter

Due to low water demand in winter, lack of proper irrigation scheduling can lead to over-irrigation.

Excessive water in the soil in winter can also increase chances of frost formation if temperatures drop significantly as it occurs sometimes in winter. Over-irrigation increases irrigation labour costs as well. However, the first irrigation after harvesting is critical and should not be delayed.

Importance of first irrigation after harvesting in winter

Since the soil is completely dry after harvesting due to the drying-off process, unless there has been rainfall before harvesting;

growers should not delay the first irrigation after harvesting. This is because in winter rainfall is significantly low.

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MANAGING IRRIGATION IN WINTER... CONT.

According to the Eswatini Meteorological Service, rainfall in the May-June-July 2019 period is forecasted to be normal to below-normal; meaning there are no lengthy periods of substantial rainfalls expected this winter, thus it may be the normal dry winter season. It is therefore important to apply the first irrigation within a week after harvesting.

Lengthy delays affect ratooning thus plant population is reduced because any regrowth under very dry conditions results in stool die back which in turn have adverse effects on yields. For that reason, back to back irrigation events are recommended to bring the soil moisture to field capacity or up to the total available water (TAW, formerly known as TAM) of the soil. This is because the young ratooning crop needs moisture to develop good roots system. To ensure that the first irrigation is applied on time, it is important that once a field is on dry off, maintenance of the irrigation system and equipment is done immediately. In the case of irrigation equipment that cannot be removed from the field, maintenance should commence immediately after harvesting. Once the soil is at field capacity, water-saving winter strategy should be followed.

Water-saving winter strategy

Although there have been good improvements in water levels in dams and rivers in the 2018/19 season which resulted to the good water levels at the start of 2019/20 season, substantial rainfall for the next rain season cannot be guaranteed. Therefore, growers should continue to follow the water-saving winter strategy in order to have sufficient irrigation water until the start of the next rain season. The water-saving winter strategy is to irrigate the field to the soil's TAW after harvesting, then delay subsequent irrigations according to **Table 1**. The water-saving winter strategy also helps reduce electricity usage.

TABLE 1: Water-saving winter strategy

Harvest month	Month of the year and irrigation events									Total irrig. events	Savings (%)
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Apr	1	1	-	-	1	1	1	2	2	9	39
May	-	1	1	-	-	1	1	2	2	8	41
Jun	-	-	1	1	-	-	1	2	2	7	35
Jul	-	-	-	1	1	-	1	2	2	7	29
Aug	-	-	-	-	1	1	1	2	2	7	16
Sep	-	-	-	-	-	1	1	1	2	5	27
Oct	-	-	-	-	-	-	1	1	1	3	39

Benefits of using the time of use tariff structure in winter

There is high demand of electricity in winter hence electricity is more expensive as from June to August; and less expensive during the low demand season (September to May). Growers are advised to use electricity carefully at this time to avoid unnecessary high pumping costs. During the winter period growers who are under the time of use (TOU) tariff structure should as much as practically possible irrigate following the TOU chart given in **Figure 2**, so that they benefit from the periods when the charges are low.

Peak times (06h00 to 22h00 Mondays to Fridays, 07h00 to 12h00 and 18h00 to 20h00 on Saturdays) during the June to August period should be avoided or irrigation events reduced because electricity cost is more expensive at this time. Alternatively, growers should irrigate their fields during the off-peak time where possible. Off-peak time is when the electricity charges are relatively low.

Electricity charges are lower from 22h00 to 06h00

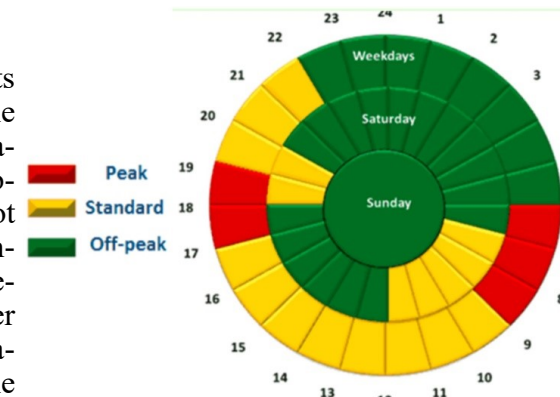


FIGURE 2: Time of use (TOU) periods for the energy supplier (sourced from EEC)

Mondays to Fridays, 12h00 to 18h00 and 20h00 to 07h00 on Saturdays, and all day on Sundays. If correctly used, these tariffs offer significant opportunities for growers to save on their electricity bills by moving load from expensive times to cheaper times of the day.



Patrick Mkhaliphi
(Irrigation Officer)