

WEATHER OUTLOOK FOR THIS WINTER SEASON

Review of 2019/20 rainfall season

The 2019/20 season (covering April 2019 to March 2020) was characterized by low rainfall recorded across the industry meteorological stations (Figure 4)

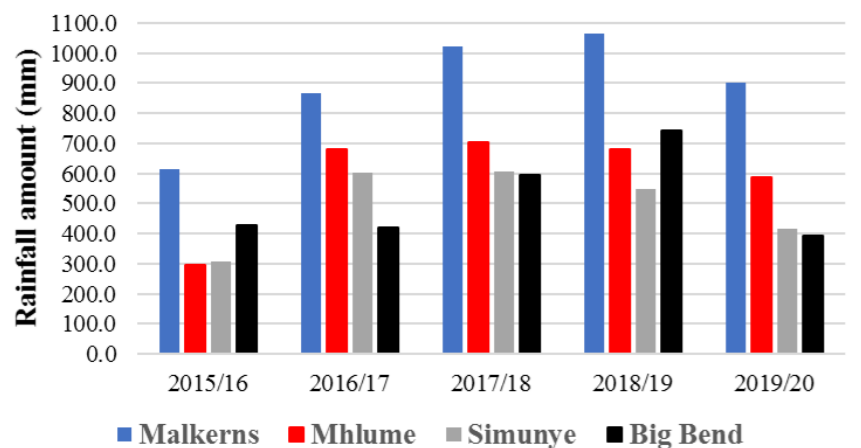


Figure 4: Five year rainfall for the sugarcane growing areas of the Eswatini industry

despite a favorable forecast that was released by the rainy season.

Eswatini Meteorological Service (EMS). All the sugarcane growing areas received lower rainfall compared to previous cropping season by 14% at Mhlume, 15% at Malkerns, 24% at Simunye, and 47% at Big Bend. The largest decrease was recorded in Big Bend which was nearly half of the previous season. In terms of the long-term mean (LTM), all met sites recorded rainfall below the LTM by 19% at Mhlume, 9% at Malkerns, and 37% at Simunye and Big Bend. Despite the low rainfall situation, irrigation water supplies to growers remained relatively stable with no water restrictions applied in all the sugarcane growing areas as at the end of March 2020.

As a result, the current season is starting with low river flows which may affect water storage levels. Growers abstracting surface water directly from rivers are cautioned that there is a possibility of a sharp decline in river flows during the winter months due to the decreased rainfall received in the 2019/20 season. For that reason, growers are advised to stick to proper

irrigation scheduling and to follow proper water saving practices.

Weather outlook for the 2020/21 winter season

The rainfall forecast released by the EMS for the May to July 2020 period shows a generally increased chance of normal-to-above-normal rainfall in most parts of the country except for the south where it will be normal-to-below-normal. Even if above normal rainfall were to be received during the forecasted period, historically, the winter season has low rainfall compared to the other seasons, and therefore no significant improvement in the river flows can be expected. The month of May for instance, has recorded less than 3mm of rainfall in total in all the industry major met stations. Growers are therefore advised to use water judiciously so that there is enough water for irrigation until the beginning of the next

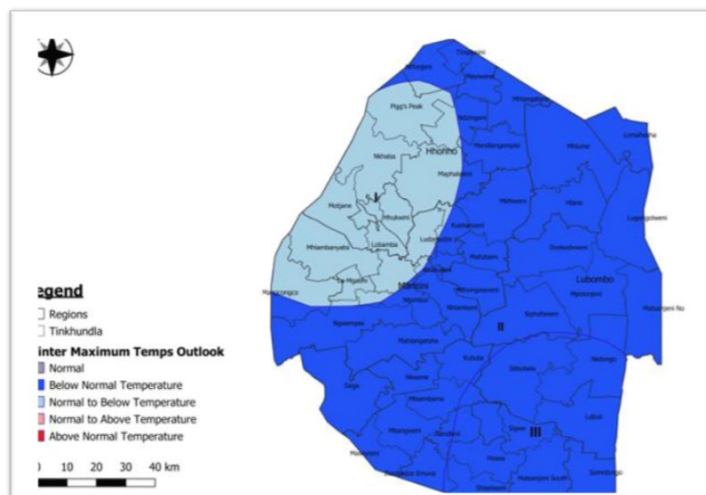


Figure 5: Forecasted maximum temperatures outlook for May to July 2020 (Source: Eswatini Meteorological Service)

Cool temperatures are not favorable for active growth of crops. Excessive irrigation must be avoided as it could worsen the slow growth rate of the sugarcane crop.

For further details about the weather forecast updates, growers can contact ESATS or EMS directly.



Patrick Mkhalihi (Irrigation Officer)

Projected maximum temperatures for the May to July 2020 period are below normal in most industry sugarcane growing areas (Figure 5). This means it will be cooler than expected during the day this winter, while night temperatures are projected to be normal-to-above-normal in most parts of the country.



EXTENSION NEWSLETTER

SAVE ELECTRICITY COSTS THIS WINTER

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Save electricity this winter

"...savings achieved through pump maintenance can have a noticeable impact in reducing overall energy costs"

Mpetseni growers...

"Growers were advised to re-schedule their harvesting programme to start in September when summer rains are expected to start"

Weather outlook for this winter season

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Introduction

Irrigation pumping cost is one of the major expenses incurred by sugarcane growers. This problem is aggravated by annual increases in the electricity tariffs from the energy supplier. Special rates alone offered by the energy supplier (such as S3 and T4 tariffs) for irrigation are not enough but must be coupled with other on-farm interventions to deal with the energy issues. Energy saving is not only important to ensure good income for growers but it is also for the survival of their farms and the sugar industry.

The period from June to August is the peak period for electricity usage, and

growers can employ in their irrigation management strategies to limit the cost of energy, include the following:

Proper irrigation scheduling: Efficient irrigation scheduling can significantly reduce the amount of irrigation water pumped, and through that, reduce energy use. Scheduling involves answering the two fundamental questions: *when to irrigate* and *how much to apply*. During May to July the sugarcane water requirement is at the lowest in the sugarcane growing region (Figure 1). At the same time, some fields have young cane (which has low water demand) owing to the ongoing harvesting season. This allows growers

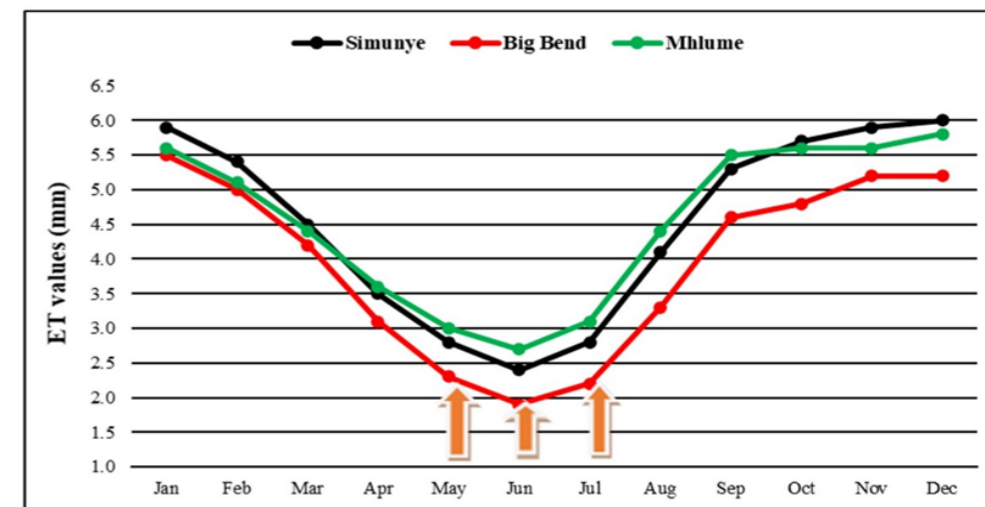


Figure 1: Long term mean evapotranspiration (ET) for Eswatini Lowveld Region

Unfortunately, it is the time when electricity tariffs are adjusted to higher rates, resulting in high pumping costs during these months. Growers are advised to use electricity vigilantly at this time to avoid unnecessary high payments for electricity. The most important energy-saving practices which

to reduce pumping hours which has an immediate effect on electricity usage. Therefore, growers are encouraged to save on electricity during this period as it is at peak.

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SAVE ELECTRICITY COSTS THIS WINTER

Water-saving winter strategy: Growers are reminded to stick to the water saving strategy for irrigation events. This strategy involves irrigating fields to Total Available Water (TAW) level, then delay subsequent irrigations according to **Table 1**. By so doing growers will be saving on water and, through that, on electricity costs during this peak period.

come less efficient in pumping the water. In the absence of regular maintenance, pump performance deteriorates steadily to a point where energy savings are compromised. It is essential to carry out pump performance tests as this will inform growers whether loss of performance is significant enough to warrant repairs.

Table 1: Water-saving winter strategy irrigation events

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

Electrical equipment operation and maintenance:

The following practices are critical in saving energy during irrigation season:

Functional pressure gauges, voltmeters and current meters at the pump station:

Growers should ensure that pressure gauges, voltmeters and current meters at

the pump station are functional and are always monitored because they are indicators of the rate of electricity usage. When these readings increase, the grower must know that excess electricity is being used to deliver water in the fields.

Installation of Power Factor Correction Device (PFCD): For growers without variable speed drives,

installing PFCD can help to minimize electricity power drawn by the motor of the pump and thereby electricity expenses are reduced too.

Follow recommended start-up procedures: During operation of pumps, irrigators should observe start-up procedures. Soft starting, and staggering pump start-up is recommended. This practice helps to avoid reaching the maximum demand. Reaching the maximum demand in winter is undesirable because of the high electricity tariff associated with this period. Once a high maximum demand is reached, it stays on the grower's bill for the next 12-month period. This should be avoided by all growers at all cost.

Follow the Energy Supplier Tariff Wheel: Given the high demand for the limited electricity resource, energy suppliers worldwide introduced the Time of Use (TOU) tariff structure. TOU charges high rate during peak consumption time periods within a day. TOU is broken into three time periods during specific time of the day namely: peak, standard and off-peak. Growers are therefore strongly advised to follow the Eswatini Electricity Company tariff wheel presented in **Figure 2**. Growers are encouraged, where possible, to make use of weekends and holidays to irrigate their cane crop as these days are predominately categorized by the energy supplier as off-peak and standard times. These times therefore offer significant opportunities for growers to save on electricity bills by moving load from expensive times to cheaper times of the day or week.

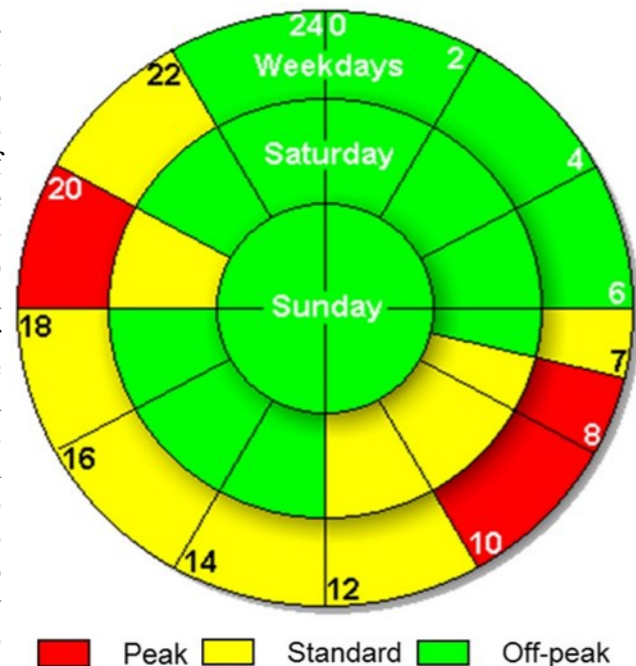


Figure 2: Time of use (TOU) periods for the energy supplier

Maintaining pumps: Where pressure is required, a pump becomes the heart of that irrigated farming system. Small savings achieved through pump maintenance can have a noticeable impact in reducing overall energy costs. As pumps wear, they be-

come less efficient in pumping the water. In the absence of regular maintenance, pump performance deteriorates steadily to a point where energy savings are compromised. It is essential to carry out pump performance tests as this will inform growers whether loss of performance is significant enough to warrant repairs.



Patrick Mkhalihi (Irrigation Officer) & Nkululeko Dlamini (Irrigation Engineer)

MBETSENI GROWERS ACHIEVE YIELDS ABOVE 76TCH UNDER RAINFED

Introduction

Mbetseni Farmers Cooperatives (MFC) is one of the cane growers in the Malkerns Area. The Cooperative is made of 11 members each managing his/her own field, but all share the same quota number. Field sizes range from 7 to 13 ha. The total area under cane is 90 ha. This system works very well as it promotes healthy competition and information sharing among the growers. The Cooperative has a unique characteristic in the whole sugar industry in that sugarcane is grown without irrigation since 2009 as it solely depends on rainfall for crop growth. The known practice in the Eswatini sugar industry is the irrigation of the cane crop to meet its crop water requirement for maximum yields.

Challenges & interventions

MFC encountered problems with their irrigation system in year 2009 which eventually forced the scheme to cease irrigating its crop.

To assist the growers revive the irrigation system, the Royal Eswatini Sugar Corporation (RES Corporation) secured a funding for the growers. The funding was used to improve the water conveyance to the scheme. Also new pumps were installed. What is pending is the rehabilitation of the irrigation infrastructure from the pump house to the fields. Discussions to secure finances to rehabilitate the irrigation are ongoing between the growers and the relevant stakeholders even though the process is too slow.

In the meantime, Extension advised the growers to close the Eswatini Electricity Company (EEC) account whose bill had reached E100, 000 as the growers were struggling to settle their bill due to financial constraints. The funding to pay for the bill before account closure came from RES Corporation through the Transport Subsidy Scheme. The subsidy scheme has been a pillar of strength for the Malkerns growers as it is known that they are too

far from the Simunye Mill. The growers are appreciative to RES Corporation for such a kind gesture. Secondly, the growers were advised to re-schedule their harvesting programme to start in September when the summer rains are expected to start. Before then, they were harvesting their cane in May and the cane would stay for about 5 months without water. Cane germination after cutting was greatly affected, resulting in low population. The change in the harvest schedule has kept MFC in the sugarcane growing business. The climatic conditions and their soils are also favourable.

Growers records

Two of the eleven growers, Elizabeth Maseko and Khanyisile Dlamini (Figure 3), have been recording cane yields (TCH) above 70 since 2017 and 2018 respectively. In 2019, Elizabeth achieved yield of 77.8 TCH while Khanyisile achieved 76.9 TCH with an average sucrose of 14.30%. Their field sizes are 7.0 and 8.0 ha respectively. This yield was achieved under rain fed conditions as earlier mentioned. What is worth noting is that Elizabeth has fully paid for a loan with her financier and Khanyisile is due to make her final instalment this coming season.



Figure 3: Mbetseni Farmers Cooperatives members, Khanyisile Dlamini & Elizabeth Maseko, standing next to their rainfed crop

Variety

The variety that has proved to stand the test of time under such conditions is N23. The fields where N25 was planted are encountering severe yield decline as this variety is very sensitive to water stress. When asked to comment, both women mentioned that they are able to support and sustain their families from their cane businesses and are very thankful for the advice they receive from Extension.



Justice Mabuza (Extension Officer - North)