FAIRTRADE IMPACT ON MAVALELA FARM

Introduction

Mavalela farm is one of the farmer associations in the south (Big Bend mill group area), and it has about 133 ha of sugar cane production area with 37 members. The farm was established in 1998 by a group of community members who made some financial contributions towards its establishment. For a long time, sugarcane was the only source of income of the community. At times, dividends were not available due to unrealized profits. However, the business landscape changed when they adopted Fairtrade.

Figure 3: Garden for high value crops

Impact

Fairtrade was adopted in 2013 and an audit was done to ensure that they qualify for membership with Fairtrade. Advantages of being a Fairtrade member include the provision of premium which is received annually as a contribution towards improving the livelihood of the members and the community around the project. This premium is received yearly, subject to markets.

There were certain production activities which were supported by the premium. These activities were basically aimed at enhancing the sugar cane production, and they have had great impact on the business.

Direct positive impact to business

The investments that have come as a result of the received premium are:

1. New irrigation pump since the old pump was small and could not meet maximum demand during the hot months. This change has improved water application efficiency as well as sugarcane yields.
2. Installation of an electric wire to keep hippos away from the cane fields.
3. Desktop computer and a printer.

Figure 4: Mavalela truck

Diversification

In addition to the above, the grower was able to:

1. Purchase 37 tanks with a capacity of 500litres each for water storage for the members.
2. Diversify to high value crops (**Figure 3**) which are sold to the local community and the National Marketing Board. The proceeds from these crops have improved the dividends given to members, and have spurred other businesses.
3. Set up a piggery which also increased the revenue stream for the business.
4. Purchase a 10 cubic truck which is rented or leased out to the community (**Figure 4**).

Social responsibilities

The Fairtrade premium has not only helped the business but it has also had a positive impact to the community. These include:

1. Donating 300 chairs to the neighboring primary school.
2. Purchasing Christmas food hampers and blankets for their 22 employees.
3. Providing clean water to the community by purchasing a communal 10 000 litre tank which is replenished once a week. This water is treated making it suitable for human consumption.

Conclusion

Fairtrade has had a tremendous impact to the grower, members, employees and the community at large.

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ESWATINI SUGAR ASSOCIATION TECHNICAL SERVICES

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Fairtrade impact

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MANAGING PUMPING COSTS

Introduction

In Eswatini, irrigation accounts for a larger portion of the energy used in the sugarcane industry. As the cost of electricity increases, the cost of pumping irrigation water will become one of the most important factors to be considered in the coming seasons.

Irrigation pumping costs currently account for about 27% of production costs, and, with the continued increase of electricity tariffs, this proportion is expected to increase as well in coming seasons. For example, between 2014 and 2021, irrigation pumping costs increased from E4 163 to E9 769 per ha **(Figure 1)**, largely due to increase in electricity tariffs**.**

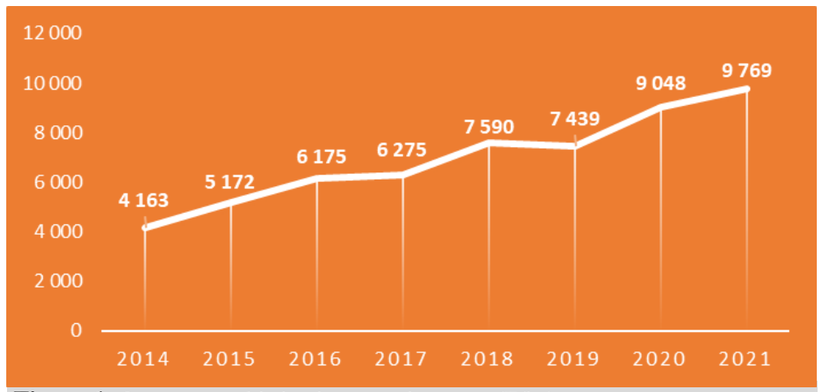

Figure 1: 8-year annual irrigation pumping costs (E/ha)

This article presents strategies growers can adopt to counter these cost increases.

Strategies for minimizing irrigation pumping costs

The cost of irrigating a sugarcane farm is determined by factors that growers can influence (including irrigation scheduling, application efficiency, efficiency of pumping plant, and the pumping pressure required for the system **)**. Growers can minimize pumping costs by concentrating on these factors.

Practice strict irrigation scheduling

Irrigation scheduling can optimize the total volume of water applied to the field by direct monitoring of soil water content or by estimating the soil water content through water budgeting. The idea is to maximize use of stored soil water and rainfall to minimize the need for pumping. Irrigation scheduling is not widely practised by sugarcane growers despite the many scheduling tools available. Some of the more commonly used irrigation scheduling tools in the sugar industry include Water Budgeting, Neutron Probe, Canesched/ Canepro. Proper scheduling can save irrigation water by up to 25% thus reducing the amount of water to be pumped into the farm.

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MANAGING PUMPING COSTS *CONT…*

Maximize efficiency of water application

Water application efficiency is a measure of how effective the irrigation system is in storing applied water in the root zone and make it available to the crop. Irrigation systems can lose water through many avenues including leaks in pipe connections and draghoses, evaporation or runoff on soil surface, deep percolation through the crop root zone, and wind drift due to excessive pressure on sprinklers. Growers must exercise caution to avoid these factors as they affect the application efficiency of the irrigation system.

Adopt energy saving technologies

Energy use can also be reduced by lowering the operating pressure of the irrigation system using Variable Speed Drives (VSDs). VSDs can reduce energy consumption at the pumping plant by regulating the electric motor speeds to match the energy demand with the system load. Standard pumps and motors always run at full speed, and therefore consuming more electricity than required to do the job. A VSD, therefore, slows down the pump when the actual load decreases and in doing so, it reduces the energy consumption and contribute to lowering the farm's pumping costs by up to 18%.

Avoid irrigating during peak periods where practicable

Growers should avoid running their pumps during the 3 hours of morning peak periods (0600 – 0900) and the 2 hours of evening peak periods (1700 – 1900) during weekdays as the peak rates are 3 times higher than the standard rates. Avoiding these time zones can reduce annual pumping costs by 18%. Growers should consider a pumping combination that incorporates Sundays as the whole day is considered off-peak period by the energy supplier.

Adopt renewable (solar) energy

Solar irrigation pumping system is an attractive complementary energy source installed alongside grid energy. Significant energy savings up to 37% can be achieved with this solution. Before installing a solar pumping, growers must consider the following:

- Checking existing irrigation system's energy and water efficiency
- Understanding usage of water, energy and costs
- Possibility of shifting to daytime irrigation
- Contacting power utility about intentions to instal solar
- Finding out about license issues

Understanding operational and maintenance, warranties and quality assurance.

Nkululeko Dlamini (Irrigation Engineer)

A PRACTICAL GUIDE FOR THE EFFECTIVE CONTROL OF YSA

Introduction

Since the Yellow Sugarcane Aphid (YSA) was first recorded in the local industry in 2013, insecticide application to control the pest increased drastically in terms of type and volume applied. It could be attributed to the short life cycle of the pest as well as the high reproductive rates leading to high populations over a short period of time and the fact that YSA affects a wide range of hosts including grasses.

Many reports have been received from growers who suspect that the current recommended available insecticides for YSA control are no longer giving the desired result, meaning it has now developed resista-nce to the insecticides. Resistance to insecticides is defined as a "heritable change in the sensitivity of the pest population against a certain insecticide mode of action" that leads to control failure of a product when used according to label recommendations for that pest species and where problems of product storage, application, and unusual climate or environmental conditions can be eliminated (IRAC, FAO).

Figure 2 shows how pests develop resistance from use of insecticides. Pest management practices which have been shown to speed up the loss of susceptible pest populations and the development of resistance include:

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A PRACTICAL GUIDE TO THE EFFECTIVE CONTROL OF YSA *CONT…*

- Continued and frequent use of a single pesticide or closely related pesticides on a pest population. The fact that the registered insecticides to control YSA are mainly the neonicotinoids is not good for the local industry.
- Using application rates that are below or above the recommended rates on the label.
- Poor coverage of the area being treated. The YSA is generally found on the underside of the leaves, so it is important to intentionally aim to reach out for them with the spray.
- Frequent treatment of organisms with large populations and short generation times
- Failure to incorporate non-chemical control practices when possible
- Simultaneous treatment of larval and adult stages with a single or related compounds

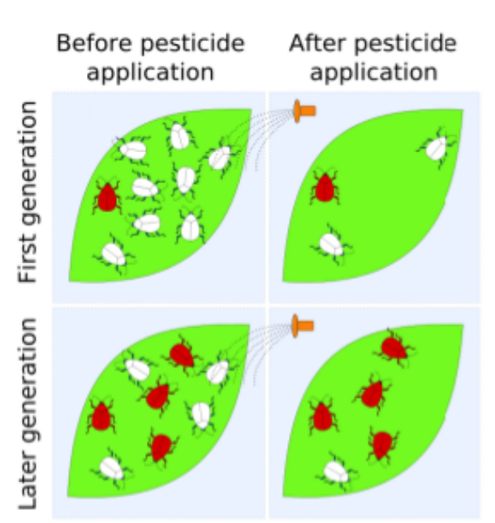

Figure 2: Pesticide application can artificially select for resistant pests. In this diagram, the first generation happens to have an insect with a heightened resistance to a pesticide (red). After pesticide application, its descendants represent a larger proportion of the population, because sensitive pests (white) have been selectively killed. After repeated applications, resistant pests may comprise the majority of the population.

Management tactics to reduce the risk of development of resistance

- Use Integrated Pest Management (IPM) approach: this includes monitoring and adhering to recommended pest and/or damage thresholds, which promotes natural enemies populations, keep field verges clean (free from tall grass), base cutting and removal of all cane stubbles in the fields.
- Protect beneficial organisms: these help because they feed on the target pest irrespective of the degree of resistance. This protection can be achieved by using selective insecticides and avoiding broad-spectrum insecticides
- Use recommended application rates: follow the recommended rates and treatment intervals as indicated on the label. Overapplication can lead to resistance and unwanted effect on non-target organisms and the environment. Make sure that the spray equipment is in good condition with no blockages and leakages.
- Rotate unrelated compounds: use a variety of registered insecticides for the target pest/s from unrelated chemical classes, that is, with different mode of action.
- Use mixtures with caution: mixtures are recommended in very limited situations since incorrect use of mixtures can accelerate resistance development. Don't include a product in a mixture if the target pest is already resistant or suspected to be.
- Apply insecticides with care: apply the insecticides when control opportunity is optimum. Follow threshold guidelines and ensure that good coverage is achieved. The current guide is that chemical control should be considered when the percentage leaves damage by YSA has reached 15% and is increasing.

Training

ESATS P&D team has already started on the annual training of growers for pest and disease identification. This training is aimed at equipping growers with the knowledge so they can be able to conduct their own scouting in their farms for early detection and identification of the pest. It is pertinent for growers to note following:

- Early detection is critical for timely control measures
- It is important to pay attention to the natural enemies that are available.
- Identification is equally important so that you know exactly the species or biotype that you are dealing with.
- Take note of the conditions that favor the presence of the pest and follow threshold guidelines where available.

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