ELDANA, A RISING THREAT IN OUR INDUSTRY

Introduction

The industry has seen a rise in the eldana infestation levels in recent years. Between April and August 2023, the maximum internode damage recorded was 47,1% with the highest population of 6 eldana per 100 recorded. Studies in South Africa have estimated that for every 1 eldana/100 recorded, a 0,5 ton cane per hectare is lost and for every 1% internode damage, about 1 to 1,5% sucrose yield is lost. There are several factors which favour eldana populations. These include but not limited to climate, nutrition, planting infested seedcane, and poor field hygiene.

Poor field hygiene

A general observation lately is the poor field hygiene across the industry due to failure to cut at the stalk base during harvesting, and lots of stubble are left in the fields (**Figure 4**). The stumps and stubbles provide perfect habitat for eldana. Therefore, the aim of this article is to remind growers to work towards improving field hygiene as that has proven to be one of the effective control measures in integrated pest management.

Figure 4: Poor field hygiene. On the left, a cane stubble left at cutting is shown. On the right, is cane left infield after harvesting

Control measures

Growers are urged to focus on field hygiene and observe fallow period in case of new field establishment. Where high levels have been recorded, an eldana spray programme must be followed.

Work done by SASRI has shown that insecticide application in young cane is much more effective than to wait to apply insecticides in older cane. There are a number of chemistries or products that are available for eldana control. There is also a newly registered product that is available to growers. However, it is critical that growers do eldana scouting in all fields due for harvest, and the results will inform of the necessary intervention. In cases of infestation, harvest date adjustment is the first step. Eldana surveys must also be done during cutting especially in fields that were not surveyed prior to cutting. This allows for appropriate control measures to be done.

A general spray programme in fields which are heavily infested with eldana is summarized as follows.

In highly infested fields

Apply Emma (Emamectin benzoate) within three days after cutting while the stubbles are not yet dried. The application must be directed to the row and trash must be removed to ensure that the product comes into contact with the stumps/stubbles. It is crucial to ensure that wetting is achieved. So mixing the product with the wetter shown on the label is critical. Apply only once per season.

In early harvest fields with young actively growing cane, apply Steward (Indoxacarb) starting in August before the moth peak period, September to November, for best control of the moth and young larvae before they bore into the cane stalk. The product is not effective once larvae is inside the cane stalk. For late cut fields with high eldana levels, target to apply Steward at four months of cane age around February before the other moth peak period of March to May.

Growers are also advised to ensure that their cane crop is well fertilized and nitrogen (N) fertilizers are applied in right quantities and at the right time. Over application of N-fertilizers is known worsen eldana infestations.

Mphumelelo Ndlovu
(Crop Protection & Extension Officer)

ESWATINI SUGAR ASSOCIATION TECHNICAL SERVICES

EXTENSION NEWSLETTER

Number 92 2nd Quarter 2023/2024

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IS THERE A PLACE FOR CONSERVATION AGRICULTURE IN CANE PRODUCTION?

Introduction

The European Conservation Agriculture Federation (ECAF) defines conservation agriculture (CA) as "a sustainable agriculture production system comprising a set of farming practices adapted to the requirements of crops and local conditions of each region, whose farming and soil management techniques protect the soil from erosion and degradation, improve its quality and biodiversity, and contribute to the preservation of the natural resources, water and air, while optimizing yields". According to the Food and Agriculture Organization (FAO), CA achieves these by implementing the three principles: (i) promoting minimum soil disturbance (i.e., no tillage), (ii) maintaining a permanent soil cover, and (iii) diversifying plant species. The critical question is, can these principles of CA be adopted in sugarcane production to address some of the challenges associated with monocropping such as declining soil health, build-up of soil pathogens and high use of agrochemicals.

Minimum mechanical soil disturbance (i.e., no or zero tillage)

This is largely achieved through direct seed and/or fertilizer placement. The purpose being to reduce soil erosion and preserve soil organic matter. Continuous soil tilling is known to accelerate the decomposition of soil organic matter. While direct seeding has not been extensively explored in sugarcane farming, the ratooning of the crop over several years before replanting minimizes soil disturbance. Zero till is difficult to achieve for now because of the need to rejuvenate the soil after a cropping cycle due to compaction resulting from infield traffic. Unlike annual crops, the sugarcane crop is deep rooted. The need to loosen the soil before planting is necessary. Moreover, soils with subsoil acidity problems also need liming material to be ploughed-in due to immobility.

Permanent soil organic cover

This can be realized by leaving crop residues after harvesting and/or planting cover crops in between cropping cycles. Maintaining a protective layer of vegetation on the soil surface suppresses weeds, protects the soil from the impact of extreme weather patterns, helps to preserve soil moisture, and avoids compaction of the soil. Growers are strongly encouraged

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P O Box 367 Simunye, Eswatini. Tel/Fax (+268) 23838998/ 23838470/ 23838731 Website: http://www.esa.co.sz

IS THERE A PLACE FOR CONSERVATION AGRICULTURE IN CANE PRODUCTION? *CONT…*

to incorporate these in their farming practices, the benefits outweigh the costs. Green cane harvesting and cane burning when it is moist (i.e., wet burning) increase the amount of crop residues retained in the field. Under such circumstances, growers should monitor the presence of pests of economic importance which hide under the trash blanket.

Diversifying plant species

CA promotes the diversification of plant species through varied crop sequences and associations. A well-designed crop rotation promotes good soil structure, fosters a diverse range of soil flora and fauna that contributes to nutrient cycling and improved plant nutrition, and helps to prevent pests and diseases. The need to plant break crops after each ratoon cropping cycle is important in sugar-cane production to cut the monoculture. The benefits in the long-term are far reaching. Break crops can include, among others, crops such as legumes which are not related to sugarcane.

Conclusion

While CA cannot be adopted in its entirety in sugarcane production, but the three principles can be embraced to a larger extent by cane growers. With the threats of climate change, CA has been identified as one agricultural system that will bolster grower resilience and sustainability.

Njabulo Dlamini
(Research Agronomist)

RISING DRAINAGE PROBLEMS IN THE SUGAR INDUSTRY

Introduction

It appears that the number of growers in the Eswatini sugarcane industry who are facing drainage problems is on the rise particularly small-scale growers. This is inferred from the number of cases reported to the Technical Services department of ESA (**Figure 1**). It is assumed that there are more growers who have not yet reported or requested assistance from ESA even though they are facing these problems. This article aims to create grower awareness on the rising drainage problems so that efforts to reduce them are made timely.

Possible causes of drainage problems in the sugar industry

The following things were found to be the main cause drainage problems in the visited Eswatini sugarcane farms:

Poor irrigation scheduling practices

Most of the drainage problems on the visited farms were caused by prolonged waterlogged conditions due to over irrigation (**Figure 2**). The over irrigations indicated lack of proper irrigation scheduling.

Non-uniform irrigation

In some cases, growers use different stand times within a cycle, different sprinkler nozzle and drip emitter sizes in the same field. These lead to different amounts of water being applied in the same field. As a result, some parts of the field receive more water than others leading to waterlogged areas in the field.

Poor maintenance of irrigation systems

Poorly maintained irrigation systems result in water leakages which can lead to drainage problems if left unattended for a long time (**Figure 3**).

Poor maintenance of existing drainage systems

Uncleaned surface and subsurface drainage systems leads to blockages. Blocked drainage systems collect and deposit water within the field thus causing waterlogged conditions.

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RISING DRAINAGE PROBLEMS IN THE SUGAR INDUSTRY *CONT…*

Water seepages

Seepage from conveyance canals and balancing dams were also found to be causes of drainage problems in some farms. Conveyance canals and balancing dams should be properly lined to minimize drainage problems. Also, the lined canals and balancing dams should be regularly maintained to prevent water seepage and drainage problems.

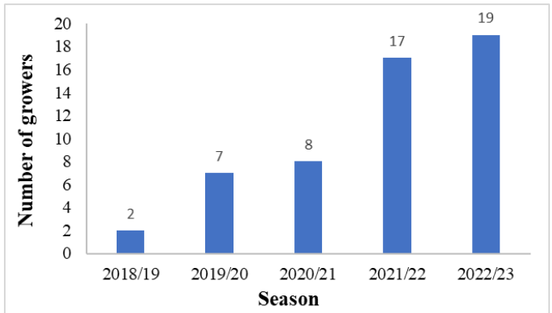

Figure 1: Reported drainage cases over the last five seasons

Figure 2: Waterlogging in a field after an irrigation event

Figure 3: Leakage leading to drainage problem

Poor irrigation designs

Poor irrigation design is another cause of drainage problem. This is especially true where the soil characteristics were not taken into account

Effects of drainage problems

Arable land is replaced by wet areas and water loving plant species like bulrush (*libhuma*) thus productive land is lost resulting in reduced production. Fixing drainage problems increase production costs. Currently, it costs about E50 000 per hectare to install a subsurface drainage system. Secondly, installed drainage systems need to be cleaned and maintained regularly at a cost. Hence, by preventing development of drainage problems such costs can be avoided.

How to deal with drainage problems

Prevention is key in dealing with drainage problems because correcting is very expensive. Therefore, growers are advised to:

1) strictly adhere to proper irrigation scheduling to avoid over irrigation;
2) adhere to best farming and water management practices to minimize interference with natural drainage waterways;
3) timely fix leaks in irrigation systems to avoid localized waterlogged areas in fields;
4) line conveyance canals and balancing dams to prevent seepage; and,
5) regularly clean and maintain installed drainage systems to prevent blockages.

Conclusion

With the increasing impact of climate change where high intensity and continuous rainfall is experienced at times, growers are encouraged to make means to prevent drainage problems. For further details and assistance on drainage issues and proper irrigation scheduling, growers may contact ESA.

Ephraem Dlamini & Zwelakhe Mtsetfwa (Irrigation Graduate Trainees) and Patrick Mkhaliphi (Irrigation Officer)

P O Box 367 Simunye, Eswatini. Tel/Fax (+268) 23838998/ 23838470/ 23838731 Website: http://www.esa.co.sz