# Off season planting: A grower's nightmare

**Introduction**

There has been a growing trend within the sugar industry of growers planting their cane crop outside recommended times. This has been attributed to many factors including unfavorable weather (i.e., rainfall), inadequate land preparation equipment (or service providers), delayed release of finance from financiers and unavailability of seedcane. No matter how valid the reasons maybe, the penalty of planting sugarcane outside the recommended period is heavy for the grower.

**Suggested windows**

In the Eswatini industry, there are two suggested windows of planting sugarcane, autumn and spring. Autumn planting happens between March and April, while Spring planting happens between August and October. The autumn planting is shorter due to prevalence of rains and the start of lower temperatures after April, a condition that is not ideal for cane germination. Hence, fewer hectarage is planted during this period. Autumn planting presents advantages such as longer land fallowing thus increasing the chance of growing green manure or break crops to enhance soil health and pest & disease control. Sugarcane planted in autumn has higher cane yields since the period of stalk elongation coincides with the favorable growing conditions (i.e., more rains, high temperatures and radiation).

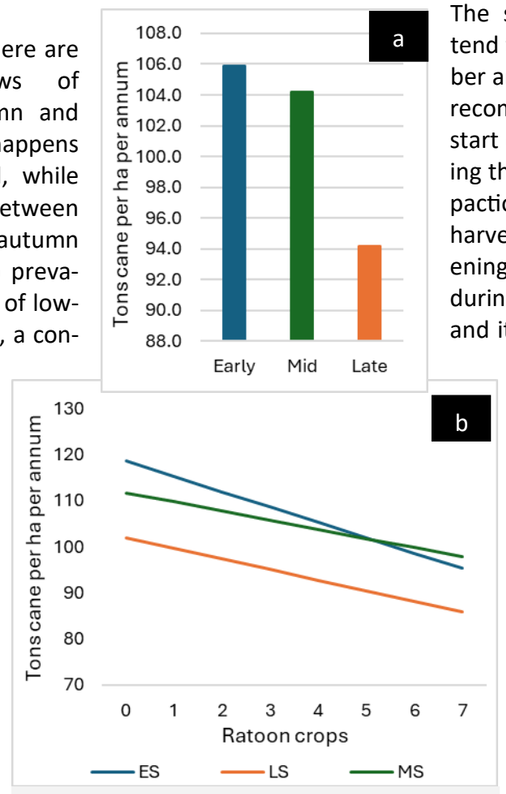


**Figure 4**: Comparison of (a) seasonal cane yields and (b) yields across ratoons of commercial data. ES: early season, LS: late season, MS: mid season

**Spring planting**

Spring planting is the longest of the two, hence more land is planted during this window. The downside of planting in spring, particularly the later part of it, is that the land is often not sufficiently rested and chances of planting green manure or break crops are slim. It is generally known in the industry that cane planted in spring (and harvested late season) has low yields than cane planted in Autumn (and harvested early season) (**Figure 4a**). This is so because the crop that is harvested late in the season does not fully benefit from the climatic conditions that favor vegetative growth.

**Off-season planting**

The sad reality is that most growers tend to plant their cane crop in November and December, a period outside the recommended times. This period is the start of heavy rains which makes working the soil difficult, leading to soil compaction. Furthermore, the plant crop is harvested during the rainy season worsening the situation. Cane harvested during this period has the lowest yield and it experiences a larger ratoon yield decline than cane harvested in the other times (**Figure 4b**). Additionally, cane harvested late in the season does not efficiently use rain water, temperature and solar radiation because it is young when these conditions are at maximum. Sadly, by the time the cane crop reaches the stage of rapid growth, these factors are at their lowest. It is well established that even when these conditions are restored to favorable levels later on in the season (from August onwards), the crop is unable to resume normal growth leading to low yields.

Hence, growers should endeavor to avoid replanting their cane during this period if their sugarcane businesses are to remain sustainable in the long-term.


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**African Armyworm**

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# AFRICAN ARMYWORM: A THREAT TO THE INDUSTRY

**Introduction**

The African Armyworm (Spodoptera *exempta*) is a migratory pest that is historically associated with grasses and cereal crops. However, recent reports within the country indicate its incursion into sugarcane fields. This development raises concerns about potential impact to sugarcane yields, necessitating immediate action to monitor and control the pest. This article provides an overview of the pest's identification, distribution, life cycle, impact on sugarcane, and effective management strategies.

**Identification**

African Armyworm larvae are known for their distinct appearance and feeding behavior. Young larvae are light green but darken as they mature, eventually becoming almost black with yellow lateral stripes (**Figure 1a**). A characteristic feature includes three dark bands across the neck and a pale stripe running along the back. The larvae move in large groups, rapidly consuming foliage, which can lead to severe defoliation. The adult moths are highly migratory and possess brown to black forewings with white hindwings (**Figure 1b**). They play a crucial role in the spread of infestations by traveling long distances in search of suitable breeding sites.

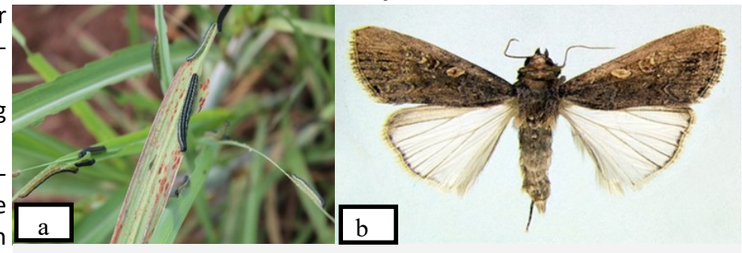


**Figure 1**: (a) African Armyworm Larvae on the left (*taken at Malkerns*). (b) Adult female moth on the right (*sourced from the internet*)

**Geographical Distribution**

The African Armyworm is endemic to Africa and has also been found in the Arabian Peninsula, parts of Asia, Australia, and Oceania. In Eswatini, recent infestations in sugarcane fields have been recorded in the Middleveld and Lowveld regions, highlighting a growing threat to the sugar industry.

**Life Cycle**

The African Armyworm undergoes four major developmental stages: egg, larva, pupa, and adult moth (**Figure 2**).

***Egg stage***: Female moths lay eggs in clusters on host plant leaves. These eggs hatch within a few days, depend-


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# African Armyworm... *continues*

-ing on environmental conditions.

***Larval stage***: This is the most destructive phase, lasting 2–3 weeks. Larvae feed voraciously on leaves, causing significant damage before they burrow into the soil to pupate.

**Pupal stage**: Pupation occurs underground, and the larvae remain in the soil for about 7–14 days before emerging as adult moths.

**Adult stage**: The moths are nocturnal, highly mobile, and disperse over long distances. They reproduce quickly, leading to multiple generations in a single season under favorable conditions.

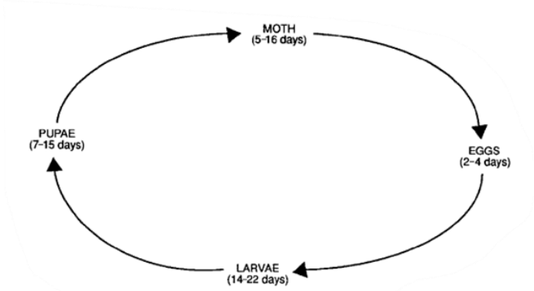


**Figure 2**: African Armyworm life cycle

**Damage on Sugarcane**

African Armyworm infestations primarily affect young sugarcane (0-5 months old), feeding on leaf blades and often leaving only the midrib intact. While the pest does not damage the growing point, severe defoliation can reduce the plant's ability to photosynthesize, ultimately impacting growth and yield.

**Causes of the Outbreak**

Outbreaks of African Armyworm are closely linked to climatic conditions. They often follow drought periods, which are succeeded by heavy rainfall. This pattern creates favorable conditions for moth breeding and larval development. The recent heavy rainfall (over 200mm) recorded in Big Bend and Malkerns may have significantly contributed to the current outbreak. The pest's migration is influenced by wind currents associated with the Intertropical Convergence Zone (ITCZ). Armyworm moths travel long distances until they either reach a suitable breeding site or encounter rainfall, which forces them to descend and initiate new infestations.

**Control Strategies**

Regular field monitoring at dawn and dusk is crucial for early detection, especially along field edges and grasslands. Good cultural practices, such as weed control and maintaining clean field margins, can help reduce breeding sites. Chemical control should only be used in severe infestations, with registered insecticides like cypermethrin applied cautiously to avoid harming beneficial organisms.

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# Fairtrade Irrigation Related Standards: Empowering Small-scale Growers

**Introduction**

Effective water management is essential as growers navigate the challenges of climate variability, erratic rainfall, and water scarcity. Fairtrade's irrigation compliance criteria are designed to assist small-scale growers in managing land and water resources sustainably, balancing the pursuit of improved livelihood with environmental responsibility. They specifically emphasis on two key practices namely water use efficiency and soil conservation, which are discussed in detail below.

**Water Use Efficiency (WUE)**

Water Use Efficiency (WUE) involves several practices aimed at optimizing water usage and minimizing waste. The standard seeks to promote training of growers to follow practices that improve water resources management which include the following key practices:

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# Fairtrade Irrigation Standards... *continues*

*Water management compliance*: Adhering to local water regulations and maintaining records of water usage including the installation of flow meters at every water abstraction point as stipulated in the National Water Act, 2003.

*Efficient irrigation*: Implementing efficient irrigation techniques such as drip irrigation and practicing real-time scheduling to reduce water wastage.

Leak detection and repair: Regularly inspecting and repairing leaks in irrigation systems and infrastructure.

*Water Audits*: Conducting regular audits to identify areas where water use can be reduced.

*Use of water-efficient fixtures*: Installing water-efficient fixtures like pressure regulating sprinklers and low-pressure systems.

*Alternative water sources*: Practising rainwater harvesting and utilizing recycled water for irrigation where possible.

These practices help in conserving water, reducing costs, and promoting sustainable agriculture.

**Figure 3**: Severe soil erosion due to lack of proper storm water drains (left) and a properly maintained stormwater drain (right).

Growers should consult ESATS to determine the most appropriate water management technology for their specific needs. Fairtrade standards mandate that growers should have access to training on sustainable irrigation techniques. This training empowers them to make informed decisions and implement innovative and sustainable practices in their farm operations. In accordance with these criteria, ESA continues to provide growers with training on various topics including those mentioned above. Growers are encouraged to attend all training sessions. They can also specify their needs to ESATS for tailored made training content.

**Soil Conservation**

Soil conservation is essential in the Fairtrade standards. Growers are encouraged to maintain sustainable production by protecting their soil from erosion, compaction, acidity and soil nutrient decline by implementing the following practices:

*Preventing soil erosion*: provide space for waterways and/or stormwater drains when establishing fields (**Figure 3**).

*Provide adequate drainage*: adequate drainage is crucial for maintaining soil structure and long-term sugarcane productivity.

*Minimise runoff from irrigation*: excess runoff may cause loss of soil nutrients, consequently reducing the soil fertility. Selecting the right irrigation method and application rates for the soil is critical.

*Tillage Practices*: avoid cultivating the soil when it is too wet or too dry

*Conduct soil tests*: soil test should be done before the establishment of each crop to ensure correct application of fertilisers to meet crop nutrient requirements and eliminate environmental pollution from over-fertilising.

Growers are encouraged to implement soil conservation measures early whenever erosion is detected. Early implementation of soil conservation measures is always cost-effective than addressing advanced and complex erosion at a later stage.

**Conclusion**

Adherence to these standards not only ensures compliance with Fairtrade principles but also cultivates a more sustainable and equitable agricultural system for future generations. It is through the collective efforts of growers with the support ESA that a future where both the growers and the environment can thrive is achieved.

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