CONTROLLING ECONTROLLING In the South African Sugar Industry





SOUTH AFRICAN SUGARCANE RESEARCH INSTITUTE

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Controlling Eldana

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Published by

South African Sugarcane Research Institute 170 Flanders Drive, Mount Edgecombe, 4300 Private Bag X02, Mount Edgecombe, 4300 Tel: (031) 508 7400 Fax: (031) 508 7597 Website: www.sasri.org.za

July 2023

ISBN: 1-874903-31-X

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eldana

he eldana borer is the larval stage of Eldana saccharina Walker (Lepidoptera: Pyralidae), a small brown moth that is indigenous to Africa.

Eldana occurs commonly in several indigenous grasses and sedges throughout the sugarcane growing areas of South Africa and Swaziland. Of the sedges, *Cyperus papyrus* and *Cyperus dives* are favoured hosts, frequently found in wetland areas and along the banks of rivers and streams. In these natural habitats, eldana is not a pest and is controlled by natural parasitoids and predators. However, extensive monoculture and destruction of the natural habitat has resulted in its adaptation to sugarcane.

The first outbreaks of eldana occurred in the late 1930s in the Umfolozi River Flats, and it was considered to be a pest in the early 1940s. It is now the most serious insect pest in the South African sugar industry.

Eldana will attack sugarcane of all ages, although frequently, the most serious damage occurs in sugarcane of 13-months or more. The borer feeds voraciously on the soft tissue inside the sugarcane stalk causing serious loss in yields and sugarcane quality. Up to 14 borers per internode have been recorded, and the stem can become completely hollowed out. It has been estimated that, for every 1 eldana/100 stalks average throughout the season, 0.5 ton cane/hectare is lost. Another estimate indicates that for every 1% stalk length red, 1 to 1.5% of your RV% cane is lost. In a severe infestation the entire crop can be destroyed. Under drought conditions eldana damage may become increasingly severe, as stressed sugarcane is particularly susceptible.

In addition to the extensive loss of soft tissue inside the stalks, a fungus, *Fusarium verticillioides*, often infests the borings and causes further loss in sugarcane quality. This fungus is beneficial to eldana.

Another borer, *Sesamia calamistis*, is also active in sugarcane, but is far less serious than eldana. You can tell the difference between the two by looking at and touching the larvae. Eldana larvae are a darker brown colour than sesamia, with eldana looking tough and leathery compared with the softer-bodied sesamia. The pattern of hooks on the pro-legs of eldana form a complete circle, whereas on sesamia they form a semicircle only. Eldana wriggles back wards vigorously when touched, and may attempt escape by descending from the stalk on a silken thread, which it spins readily. Sesamia larvae tend to be less active.



The eldana life cycle

The female moth, which lives for about one week, flies in the sugarcane canopy looking for a mate, and within three days of mating she lays most of her eggs. Batches of eggs can be found in concealed positions in dry leaf material, on the leaf sheath, and sometimes hidden between the sugarcane stem and the soil.

The time periods between the life stages will differ between areas because of differences in temperature. The hotter the weather, the shorter the life cycle will be, but generally the life cycle lasts for 1.5-2.5 months. Breeding is continuous, and eldana infestations can increase alarmingly in a short time. After about a week the eggs hatch, tiny larvae emerge and begin scavenging on the outside of the stalk.

When a larva is mature, it will spin a cocoon, either in the hollow stalk, or outside the stalk, frequently behind a leaf sheath. Inside the cocoon, the larva becomes a pupa. About 10 days later, an adult will emerge from the cocoon and fly off to look for a mate.



20 - 40 days



>- 10 days

As soon as the larvae are strong enough, they bore into the sugarcane stalks. There they feed on the soft tissue inside the stalk.

Eldana **Control measures**

Manage the natural habitat of eldana

Eldana prefers wetland sedges (*Cyperus dives* and *Cyperus papyrus*) to sugarcane. Plant these natural hosts in clumps in wet areas. Combine in a 'push-pull' system with the repellent grass Melinis.

Choose appropriate varieties

Choose the best and most suitable varieties for your conditions. Planting resistant varieties in areas where eldana is prevalent is an important and effective control measure against this pest. This becomes even more important when drought occurs and eldana numbers increase in stressed sugarcane.

Use only clean, healthy seedcane

Ensuring that seedcane is of high quality is probably the simplest and least expensive step that can be taken towards improving sugarcane productivity and maintaining high yields.

If there is eldana in seedcane, then it stands to reason that your young sugarcane will have eldana, and this in turn will lead to disastrous yields and continuing eldana problems in future ratoons.

Manage nitrogen applications

Excessive applications of nitrogen encourage eldana. Limit the nutrient available to the pest by following FAS recommendations regarding a realistic yield target. Adjust your yield target downwards if a dry summer is predicted. Consider splitting nitrogen applications so that adjustments can be made if an unexpected dry summer materialises, or if conditions improve.

In many cases plant cane will not require as much nitrogen as subsequent ratoons.

Reduce plant stress by managing soil physical and biological health

A stressed crop is more susceptible to eldana damage. Identify soils that are prone to stress, and that will need priority in treatment for eldana.

Practices such as strip cropping, conservation structures, mulching at harvest and proper weed control all help conserve moisture.

Apply effective irrigation management through irrigation scheduling. Avoid over-irrigation and waterlogged conditions. Take measures to prevent or alleviate salinity and sodicity.

Practices such as green manuring, controlled traffic, ripping, nematode control and liming to reduce soil acidity all help improve root health.

A healthy well-aerated and deep root system ensures optimal nutrient and silicon uptake and stress tolerance.

Defoliating carry-over fields

Detaching dead leaves from standing sugarcane that will be carried over reduces eldana damage to the standing crop. The optimum time is before or at the moth peak occurring during the period September to November.

Select carry-over fields carefully

Borer populations increase as the crop matures. When selecting fields for carry-over, take the following into account: the resistance category of the variety, the potential for the crop to experience stress, and the historic and current eldana levels. Always abide by your LPD & VCC threshold levels.

Stick to a harvest cycle suitable to your area. Do not age cane excessively.

In the irrigated north and Umfolozi, ratoon cane should not be carried over or aged beyond 13-14 months. Plant cane should not be aged beyond 14-15 months.

Where carry-over cane becomes unavoidable, careful planning is required.

Use of insecticides

Insecticides containing alpha-cypermethrin (pyrethroid), lamda-cyhalothrin (pyrethroid), chlorantaniliprole (diamide), cyantraniliprole (diamide) and indoxacarb (oxadiazine) have been registered for use against eldana in standing cane where eldana is present. Emamectin benzoate (avermectin) is registered for use on stubble for the control of below-ground stool infestations.

Using a registered insecticide during moth peaks will allow the crop to mature while minimising damage.

Conduct regular surveys

Conducting your own regular surveys will give an idea of the level of infestation and help decide harvest priorities. By doing so, infestations will be noticed before it is too late to take action. Remember that frequent small surveys are more useful than infrequent detailed surveys.

Practise stringent field hygiene

Sugarane should be cut as low as possible leaving no stubble. All whole stalks and pieces of stalk must be removed from the field. Loading zones should also be cleared of all stalk material left behind.

Burning heavily infested fields before harvest is an accepted control measure against eldana as it reduces the chances of ratoon crop infestation.

Abide by Local Pest, Disease and Variety Control Committee regulations and guidelines

The LPD&VCCs are legally constituted bodies whose existence is crucial to the industry's well-being. Their regulations and guidelines are designed to protect your interests by minimising the threat posed by pests and diseases.

Chemical cane quality management

As a rule, stressed or eldana infested sugarcane should not be sprayed with chemical ripeners, especially Ethephon[®].

Manage the natural habitat of **eldana**

Eldana moths prefer wetland sedges (Cyperus dives and Cyperus papyrus) to sugarcane for egg-laying. Eldana is controlled in sedges by its natural enemies.

Field trials and growers' experiences have shown that sugarcane adjacent to sedges growing in wetlands has lower infestations of

eldana than sugarcane that is not adjacent to sedges.

For sugarcane, a 'Push-Pull' system has been designed that makes use of melinis (molasses grass) as a repellent 'push' plant and combines it with natural hosts of eldana as 'pull' plants.



Melinis grass is highly repellent to eldana moths



<u>Choose</u> appropriate varieties

Whether you have an eldana problem or not, a key factor for successful farming is the appropriate choice and placement of varieties. Planting eldana resistant varieties in areas where the pest is prevalent is an important and effective control measure against this pest. This becomes even more important when droughts occur and eldana numbers increase in stressed sugarcane. It is important to understand that when a variety is described as 'resistant', it does not mean that the variety is completely immune to the pest. Under adverse conditions, even resistant varieties may suffer eldana damage.

Changing your variety spectrum will require an initial cost outlay, but as a long-term strategy it makes sound financial sense. The table gives the eldana risk category of the currently available varieties.

| Highly susceptible | Susceptible | Intermediate- susceptible | Intermediate | Intermediate- resistant | Resistant |
|-----------------------|-------------|------------------------------|--------------|----------------------------|-----------|
| N26 | NCo376 | CP66/1043 | N12 | N17 | N21 |
| N30 | N14 | N19 | N23 | N25 | N33 |
| | N16 | N22 | N24 | N28 | N39 |
| | N27 | N36 | N31 | N41 | N42 |
| | N35 | N43 | N37 | N47 | N53 |
| | N71 | N45 | N40 | N52 | N58 |
| | N73 | N49 | N46 | N55 | N59 |
| | | N60 | N48 | N56 | N62 |
| | | | N50 | N57 | N63 |
| | | | N51 | N61 | N66 |
| | | | N54 | N64 | N70 |
| | | | N67 | N68 | N74 |
| | | | | N69 | N75 |
| | | | | N72 | N77 |
| | | | | N76 | N78 |



Use only clean, healthy Seedcane

nsuring that seedcane is of high quality is probably the simplest and least expensive step that can be taken towards improving and maintaining high sugarcane productivity.

Healthy seedcane is sugarcane that:

- is free of diseases and pests,
- is varietally pure,
- · has good germination capacity,
- has been hot water treated, and
- has been purchased from a registered producer.

The source of ALL seedcane should be Seedcane Schemes run by LPD&VC Committees. Any other source could have negative effects not just on your farm, but on the whole district, by spreading pests and diseases.

Seedcane orders should be submitted before May/June every year. This allows the seedcane co-operators to plan their nurseries and how much seed of which variety to supply in the following year. This seedcane, which will have been certified by the Seedcane Scheme, should be planted into fallowed farm nurseries (not directly into commercial fields) for bulking up by the grower. Thus, a grower needs to plan his seedcane requirements in year one, collect his seedcane for bulking up in year two, and plant out in commercial fields in year three.

Ideally, seedcane should have no eldana. If there is no choice, abide by the eldana levels allowable for seedcane as stipulated by your local P&D Committee. Treat seedcane with eldana in a hot water tank at 50°C for 30 minutes and use a registered fungicide treatment to ensure good germination. For planting, select stalks that show no sign of borer attack. Bored stalks should be milled or burnt.

If there is eldana in seedcane, then it stands to reason that your young sugarcane will have eldana, and this in turn will lead to disastrous yields and continuing eldana problems in future ratoons. Remember: It's the quality of what you put into the ground that will determine the amount you get off the land.



Reduce

plant stress

stressed crop is more susceptible to eldana damage. Use your soil survey information to identify soils that are prone to moisture stress, compaction, poor drainage or salinity/sodicity.

This will be of value in helping to predict which areas are likely to need priority in treatment for eldana. Cut selectively on the good and poor soils of the farm, and try not to carry-over sugarcane growing on poor soils.

If sugarcane is to be cut annually under coastal rainfed conditions, a 12-month cycle starting from July to October should be programmed.

A properly implemented Land Use Plan will assist with moisture conservation by ensuring that all appropriate conservation structures are in place.

You can further contribute to moisture conservation by maintaining an efficient weed control programme, which will prevent competition for soil moisture from weeds.

In sandy soils, the use of a nematicide is often beneficial in ensuring a healthy root system so reducing stress.

Crop residue conservation is a very effective means of reducing soil and water loss from sugarcane fields, particularly on slopes and highly erodible soils. Mulching increases rainfed yields, reduces erosion, reduces the need for chemical weed control and obviates air pollution. As an eldana control measure, burning is recommended only when a field is heavily infested at the time of harvest.

Compaction is a long-standing problem in the South African sugar industry. It restricts water intake, water holding capacity and rooting depth, thereby increasing the risk of eldana damage. The tendency to become compacted is greatest when soil water content is near field capacity. Take steps to avoid soil compaction such as controlled traffic and improvement in the level of organic matter in the soil by green manuring, adding organic matter at planting and mulching.

Addressing subsoil acidity and aluminium toxicity, or salinity and sodicity, improves root growth and access to soil moisture during periods of water limitation. This should be done before planting.

Under irrigated conditions, avoid under- and over-irrigation by accurate scheduling. Avoid waterlogged conditions. Over-irrigation can lead to salt accumulation at the surface as the result of a rising water table.

Consider ripping as a practice that increases root aeration and improves rooting depth. Ripping of ratoon fields should be restricted to two weeks or less following harvest; ripping later than this may damage new roots.

Soil re-acidification occurs with nitrogen fertilisation of each ratoon and is one of the causes of ratoon yield decline (along with compaction and stool damage caused by infield traffic, and disease build-up). To limit rapid re-acidification, surface liming after every harvest is effective. Use one of the less acidifying N carriers, such as LAN, in split applications. This will help to slow re-acidification.



Ensure adequate Silicon uptake

rial results show that, where silicon uptake is not compromised, damage caused by eldana is reduced.

Uptake of adequate silicon requires a well aerated, extensive and finely branched

root system. It is therefore essential to limit compaction by practising controlled traffic and by ripping, and to control nematodes when necessary. In addition, soil acidity, in particular the presence of soluble aluminium, limits the availability of silicon.



Manage nitrogen applications

igh eldana infestations are linked with excessive nitrogen levels. The FAS nitrogen recommendation is tailored to the soil nitrogen mineralisation potential of your soil type, and to the yield estimates that you provide.

It is therefore critically important that a realistic yield estimate be provided, considering historical yields and the medium term rainfall forecast.



This would especially apply to situations where:

- eldana is known to be a serious problem,
- soils are shallow,
- nematodes are a problem when a nematicide is not used,
- rainfall is low, or irrigation is restricted,
- salinity/sodicity or acidity problems exist, and/or
- there is soil compaction or stool damage problems caused by uncontrolled infield haulage especially under wet conditions.

Nitrogen applications should be split when losses are likely, particularly on eldana prone sandy soils or soils prone to waterlogging. For example, heavy spring/early summer rains leach nitrogen beyond the root zone leading to accelerated soil re-acidification and a need to reapply N. Split N reduces the resultant acidification and the amount of N that would need to be reapplied.

Splitting N application also affords an opportunity to reassess the yield target of a field based on short to medium term rainfall forecasts. In the case of the second half of summer being predicted to be drier than expected, less N could be added in the second application in line with a decreased yield target. This would reduce eldana risk.

Similarly, if drought is predicted, split N can accommodate the possibility that the drought does not in fact materialise. An increased amount can be added in the second application. Again, eldana risk is reduced.

Increased nitrogen mineralisation in some soils due to tillage means that nitrogen fertiliser requirement for plant sugarcane may be reduced compared to subsequent ratoons.

Do not apply nitrogen within 6 months of harvest.

Select Carry-over fields carefully

Lana populations, and therefore sugarcane damage, can escalate rapidly once the sugarcane age exceeds 12 months. Cut the percentage of your farm prescribed by the Local Pest, Disease and Variety Control Committee (LPD&VCC). In coastal rainfed areas south of Umfolozi where high percentages of farms are harvested, consider late summer and autumn planting, using chemical minimum tillage to ensure millable sugarcane at the start of the next season.

In the irrigated north including Umfolozi, plant sugarcane age should not exceed 11 months by the end of December (14-15 months at harvest) regardless of variety. Ratoon sugarcane should not be carried over or aged beyond 13-14 months.

In much of the coastal rainfed area south of Umfolozi, growers need some carry-over sugarcane to start the season. In endemic areas, careful decisions must be made before sugarcane is carried over. Adhere to the threshold level determined by your LPD&VCC. Where threshold levels are exceeded, prompt action to apply insecticide or to harvest is necessary.

In coastal areas, the decision on whether to carry over a particular field must take the following factors into account:

- Check the resistance category of the variety. This will give you a guide to the likely risk of eldana damage.
- Eldana infestations are known to increase enormously when the sugarcane is stressed. Low rainfall in conjunction with shallow soils, high levels of available N and susceptible varieties, will result in runaway infestations in carry-over sugarcane.

 The current and historical levels of eldana in the field are the most important factors to consider. You must know your levels from LPD&VCC surveys, as well as from your own surveys.

Studies have shown that damage in April can be between two and four times that of the damage assessed in the previous October in carry-over sugarcane. There is an estimated 1.0 to 1.5% loss in RV for every 1% stalk length red. For example, a field with 4% stalk length red in October, equating to a 6% loss in RV, could increase to 24% RV lost if the field is carried over to April.

When flowering occurs, do not carry over, especially if more than 20% of the field has flowered. Where possible, it is advisable to harvest all flowered sugarcane by late September/early-October. Delaying harvesting beyond this time can lead to severe losses if there are no sideshoots. In some varieties, in drought conditions, and where eldana is present in flowered stalks, no sideshoots will form and deterioration will be rapid.



Defoliate carry-over fields

will be carried over, you reduce the area where moths can effectively lay their eggs. The optimum time is before or at the first moth peak, which occurs during the period September to November. A team of about 25 labourers per hectare is sufficient.

y detaching dead leaves in fields that Defoliating can be done using a wooden stick. Some growers have devised special implements. It is not necessary to do a thorough cleaning of the stalk, a light cleaning will suffice. The dead leaves should be moved away from the base of the stool.



<u>regular surveys</u>

Conduct your own field surveys to supplement P&D team surveys. By conducting surveys regularly, a pattern of eldana distribution and intensity can be established. Such information is useful for decisions on insecticide treatment, harvesting priorities, plough-out, and replant variety selection.

Survey method

- Take 100 stalk samples from a field that has an area of 5 ha or less. Where fields exceed 5 ha, 100 stalk samples must be taken for each 5 ha (or part thereof).
- 2. Aim to sample stalks so that the whole sample area is represented in the sample, i.e. sample points should be distributed evenly over the entire sample area.
- 3. Choose stalks of average height.

- 4. Remove the tops at the natural breaking point. Whilst doing this, examine the leaf material and sugarcane tops for eldana pupae that may be present. Make a note of findings.
- 5. Measure a stalk of average length in the bundle. Multiply this by the total number of stalks in your sample to get an estimated total stalk length.
- 6. Check each stalk for borer damage. Make a note of the number of stalks that have any sign of borer damage.
- 7. Cut each stalk longitudinally into halves. If borings are seen, cut the stalk into quarters to examine the stalk further.
- 8. Count and record the total number of eldana of any life stage present.
- 9. Measure the total length of red discolouration in all stalks.



Survey Measurements

% stalks bored

This measurement will indicate how many stalks in the sample are bored, regardless of the extent of the damage or eldana numbers. For example, 10% stalks bored means that 10% of the total number of stalks in the field have borer damage, be it high or low.

To calculate % stalks bored, count the number of stalks with any borer damage, multiply by 100, and divide by the total number of stalks sampled.

number of stalks with any borer damage x 100

total number of stalks

% stalk length red (SLR)

Stalk length red (%SLR) refers to the measured length of all the stalks sampled that have borings that turn the sugarcane stalks red in colour, and is expressed as a percentage of the total length of stalks. It also tells us the % length of the stalk that has no sugar in it, i.e. 5% stalk red means that 5% of the length of all the stalks in the field have no sugar.

total length of discolouration in all stalks x 100

estimated total length of all stalks

e/100 stalks

Eldana/100 stalks (E/100) indicates the number of eldana (including pupae) in 100 stalks, and is a measure of the eldana population in the field at the time of the survey. E/100 is used by LPD&VC Committees to assess the eldana hazard in a region. It is also used to set maximum permissible eldana levels in fields to be harvested, as well as fields to be carried over.

Divide the total number of eldana of any life stage recovered by the number of stalks in the sample. This gives the average number of larvae per stalk. Multiply this by 100 to calculate the number of eldana larvae per 100 stalks.

total number of eldana of any life stage x 100

total number of stalks in sample

Additional information for survey

The following information is also valuable when combined with your survey results, and will help you make an objective assessment of the potential hazard in carrying over a particular field:

- Susceptibility of the variety
- Age of crop

- Soil type and depth
- Aspect north, south, etc.
- Quantity of nitrogen applied

• Previous eldana history

• Degree of crop stress

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Use of insecticides

Applying registered insecticides reduces the build-up of eldana. There are eight available formulations to assist in controlling eldana. The table below summarises the application requirements and length of control when using these formulations.

| Insecticide (active ingredient) | Number of consecutive applications | Weeks of control |
|--|------------------------------------|------------------|
| Coragen® (chlorantraniliprole) | 1 | 8 |
| Benevia® (cyantraniliprole) | 1 | 8 |
| Steward®, DoxStar-Flo®, Addition® (indoxacarb) | 2 with a one month interval | 8 |
| Ampligo® (lamda-cyhalothrin + chlorantraniliprole) | 2 with a one month interval | 8 |
| Fastac [®] (alpha-cypermethrin) | 8 (two-week intervals) | 16 |
| Emma® (emamectin benzoate) 1 (infested stubble) | 1 (infested stubble) | |

When applying insecticides, keep the following in mind:

- Insecticide programmes can begin at early stalk elongation.
- In older cane scout for eldana larvae prior to the two main moth peaks.
- Target the two main moth peaks with insecticide programmes usually beginning towards the ends of August and February (See graph below).
- Be aware that in warm dry winters an additional moth peak can occur in July. Scouting for this peak should be done in June.
- Follow the insecticide manufacturers' label instructions.
- Rotate modes of insecticide action when necessary.

- Operators must wear full protective clothing.
- There is a requirement for a 120-day withholding period (the time between the last spray application and harvesting the crop) if the sugarcane is cut green. If the sugarcane is burnt, the withholding period is only one day.

Not every field will need to be treated. For example, no benefit will be derived from treating a resistant variety growing on 'good' soil where stress is unlikely. It is in situations where there is a greater likelihood of severe eldana infestations that insecticides will help.

Although the northern irrigated areas should not carry-over, if this is unavoidable then sugarcane should be treated with insecticides regardless of variety.

SASRI is continuing research into improving and refining recommendations for using insecticides for eldana control.



Targeting the spring and autumn moth peaks with a registered insecticidal programme prevents the buildup of damage. Seek the advice of SASRI Extension and Specialists .

<u>Chem</u>ical cane quality management

s a rule, stressed or eldana infested sugarcane should not be sprayed with chemical ripeners.

Ethephon[®] (and other trade names), by itself or in the combined "piggy back" method, is not suitable for ripening of carry-over crops (unless testing indicates juice purity less than 75% at spraying, and stress is absent) or for late-season quality maintenance when the sugarcane will be very mature at spraying. Refer to SASRI Information Sheet 4.8 for detailed recommendations for the use of this chemical. The spray-to-harvest interval for Ethephon[®] is between 8 and 12 weeks and must not be exceeded. During this time, eldana populations can increase significantly.

To illustrate this point, during the first week of February all suitable fields (juice purity below 75% at spraying, and stress is absent) that are scheduled for harvesting during April could be sprayed with this chemical. The autumn moth peak usually begins in February and, under conditions favourable to eldana, a further two generations of larvae could cause severe damage before harvest.

Practise stringent field hygiene

ut sugarcane at ground level, remove all whole stalks and pieces of stalk from the field and leave no stubble. Loading zones should also be cleared of all stalk material left behind. Leaving eldanainfested stalks in the field provides an eldana population that will infest ratooning sugarcane and will result in increased eldana levels in young sugarcane. Burn sugarcane which, at the time of harvest, is heavily infested with eldana or is drought stressed, or both. Avoid indiscriminate burning as mulching can be beneficial. Follow your local Code of Burning Practice.

Do not burn tops. Eldana does not lay eggs on green leaves and larvae do not feed on tops. Always leave tops scattered to conserve soil moisture.



Abide by local pest, disease and variety **Control committee** regulations and guidelines

ests and diseases have the potential to cause enormous losses in sugarcane productivity. Eldana is one of the most significant threats to the South African sugar industry, being found in every area of the industry and resulting in considerable loss in revenue to growers each year. LPD&VCCs are therefore crucial to the industry's wellbeing, being responsible for the monitoring and control of pests, diseases and varieties in their respective control areas. In the case of eldana, each LPD&VCC has established local hazard levels for the pest and where these are exceeded, remedial action in the form of pre-emptive harvesting or the application of insecticide is required by growers. There are also hazard levels for seedcane to prevent the spread of eldana through infested seedcane. The susceptibility of different varieties to eldana also influences the decision as to which varieties are approved for planting in each LPD&VC area.

The legalities of the LPD&VCCs are set out in the Sugar Act of 1978, and Sugar Industry Agreement 2000.

This legislation grants LPD&VCCs the right to:

- Enter a grower's lands to perform their function, or those of SASA.
- Issue orders for remedial operations in infested/diseased sugarcane.
- Issue orders for the harvesting or destruction of infested/diseased sugarcane.
- Out of season, require growers to destroy or apply insecticide to the crop where eldana levels are excessive.
- Issue orders for destruction of infested/ diseased sugarcane where the risk can affect adjacent growers' production.

- Ensure that only varieties approved by SASA for planting in the relevant control areas are grown.
- Approve all grower seedcane nurseries.
- Approve the sale or disposal of all seedcane.



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