

Donovale Farm

Picture Perfect

ABOVE : Drip irrigated cane on the banks of the uMsunduze river where irrigation better management practices have reduced overall water use.

Passion for the environment has contributed to the sugarcane farm Donovanale being a picture perfect example of the outstanding results of Best Management Practices. It takes time to achieve these results, and all too often growers may feel the exercise is daunting. However, a visit to Donovanale farm is encouraging because the results are exceptional despite the time it has taken.

Donovale is 10km north east of Pietermaritzburg and is managed by the Edmonds brothers, Ant and Chris. The sugarcane is managed by Ant and the citrus and avocado operations are handled by Chris. The brothers and this farm have been covered in a previous edition of the Journal on the successful land reform of their family farm that they not only embraced but were most proactive about. The result is a successful partnership with the new land owners.



ABOVE : Ant Edmonds explains the benefits of riparian zone rehabilitation and how it results in an improvement in water quality and quantity downstream.

ABOVE : Indigenous *Cyperus papyrus* used as a “pull plant” as part of an Eldana habitat management programme.

The Sugar Journal visited the farm as part of a media tour to demonstrate the many SASRI recommended Best Management Practices such as strip planting/harvesting, green manuring; irrigation scheduling, minimum tillage on steeper slopes and an Integrated Pest Management system that are implemented on the farm.

The sugarcane yields on Donovale are consistently above average yields for the area and being some 50km from the Noodsberg Sugar Mill, it is most important to optimise yields and quality of cane.

- **How long have you been farming?** 34 years
- **What are your beliefs as a grower about farming and the future of farming in South Africa?**

Farming is a space to occupy given the finite nature of the resources you utilise and the challenges of sustaining a world population of 9 billion, it has a bright future.

Farming in South Africa with its multi-faceted risk profile is that much more challenging. The land issue can be resolved with some cool heads and creative thinking.

- **Water is a scarce resource. What are your thoughts on the best way growers can contribute to the management of its use?**

Having a good knowledge of soils, climate, crop demand, weather forecasting systems and reticulation losses certainly helps with optimising water use.

- **Is the entire farm you are involved with under irrigation?**

No, only 122ha cane and 57ha avocado/citrus is under irrigation.

- **What can a grower do to improve water use and reduce cost when irrigating?**

Using a site matched irrigation system, accurate scheduling of irrigation to avoid over or under application and also by using off peak tariff structures.

- **What irrigation system is used on the farm and what do you believe are the pros and cons of this system?**

A surface drip irrigation system is used which is highly efficient as it places the water on the rooting zone of the crop, minimising wastage. It is also a low pressure system and has a comparatively low energy demand.

On the downside, due to the small apertures in the dripper lines, water quality and filtration of irrigation water are important to ensure the system operates efficiently. Another con is the extra labour required for removing the dripper lines at time of burning/harvest and then replacing them afterwards. Rodent damage to dripper lines can also be a problem.

- **You have spoken about the probe, how has this helped you to be effective in water use and management?**

The use of the probes has allowed more accurate scheduling of applications of water as it takes the guesswork out of deciding when and how much water to apply. Information gathered from the probe informs of soil moisture content and where it is in relation to Field Capacity and Permanent Wilting Point. Avoiding conditions that will result in moisture stress (either too little or too much) contributes to achieving optimum yields.

This has also had the benefit of reduced water and energy consumption compared to when scheduling was done less scientifically.

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ABOVE : Soil moisture data are collected from an infield probe.

• **You have successfully implemented some bio control measures - tell us more about this, what have been the challenges and benefits?**

As part of an Integrated Pest Management strategy, an eldana habitat management programme was introduced during the past four years as the region has traditionally been an eldana hotspot.

Eldana habitat management involves the rehabilitation of riparian zones so that they are able to support populations of the natural predators of the eldana borer. Sugarcane alone is not sufficient to support these populations, requiring an improvement of the biodiversity of the farm. Practically, this involves the planting of sedges such as *Cyperus dives* and *Cyperus papyrus* in the riparian zones and controlling alien invasive species.

Other push plants such as melinis grass (*Melinis minutiflora*) are used within the sugarcane panels to discourage female eldana moths from laying eggs in the cane.

The challenges associated with bio-control include the establishment of these plants, as the melinis grass is susceptible to damage from fire and chemicals. The employees also have to be educated as to the role that the grass is playing to avoid it being inadvertently hoed out or sprayed.

The benefits of biocontrol measures are functional, healthy wetlands, and reduced eldana numbers in cane fields. Reliance on insecticides can also be reduced.

• **What advice would you give to growers who want to improve their water use efficiencies?**

Through careful Land Use Planning with correct field layouts, a reduction in sedimentation of streams and optimal use of rainfall will help with cutting down irrigation applications/amount of water used.

Choose an irrigation system that allows flexibility regarding changes in cycles brought about by changes in weather conditions/forecasts. The system should also allow quick cycle times to allow full coverage during peak growth periods. Monitoring soil moisture is important as measurement allows for effective management.

From a social, environmental and economic perspective, Donovale certainly is a very good example of sustainable sugarcane farming in South Africa.



David Wilkinson
Midlands North Extension Specialist
South African Sugarcane
Research Institute
South African Sugar Association

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Mpumalanga
Laevel Trekkers Rocky Drift
Chris Labuschagne / Tiaan Marx
Tel: 013 758 1233
E-Mail: chris@lvt.co.za
E-Mail: tiaan@lvt.co.za