



Burdekin cane farms

WATER QUALITY AND IRRIGATION CHALLENGES

The Lower Burdekin is Australia's most productive sugarcane region, with over 75,000 hectares of irrigated farmland producing around 7.5 million tonnes of sugarcane annually. This thriving industry sustains livelihoods and forms the heart of the local community.

The Burdekin Dam, the largest of any reservoir in Queensland, allows for extensive agriculture through furrow irrigation. It's the only region offering this unique advantage at this scale in sugarcane cultivation, providing an abundant, consistent, and reliable water supply.

Yet, despite its advantages, this reliance on irrigation sets a unique challenge in managing water quality.

Challenges with irrigation, pesticides and nutrients

While growers rely on irrigation, fertilisers and pesticides for productive crops, chemicals can be lost to waterways through paddock runoff and deep drainage if irrigation is not carefully managed.

Typically, about 20% of applied furrow irrigation water runs off the paddock. On top of this, water also seeps down and is lost as deep drainage, causing rising groundwater levels. Monitoring results show that improved irrigation practices can halve water loss. With less water running off the paddock, these practices greatly reduce nutrient and pesticide runoff.

Through the Burdekin Water Quality Program, growers are enhancing practices to reduce excess water use and mitigate nutrient and pesticide loss, resulting in benefits for the farm and the environment.

Growers are **tackling irrigation challenges** to reduce water loss.



Water quality in the Burdekin

Nutrients and pesticides in waterways

Water quality monitoring reveals elevated levels of nutrients and pesticides in freshwater and estuarine creeks, particularly in the Haughton River and Barratta Creek system.

This can lead to problems like excessive algae and weed growth in waterways, and low levels of dissolved oxygen in the water. Excess water across the Burdekin system has changed water quality and hydrology, impacting biodiversity, including macroinvertebrate and fish species.

Groundwater tables

Intensive irrigation has caused increased deep drainage, leading to a substantial rise in groundwater tables in certain districts. The elevated groundwater tables have altered the hydrology of some local streams as well as affecting sugarcane productivity in specific areas.



Embracing practices for **co-benefits**

Making good land management decisions benefit both the farm and the environment.

Benefits for the farm

- By reducing water usage, growers save on water and electricity costs.
- By accounting for organic nutrients added to the paddock, such as from fallow crops and mill mud, synthetic fertiliser application rates are lowered. This strategy optimises fertiliser rates, which can increase crop yields and reduce input costs.
- Managing rising groundwater tables ensures viable farming. Reducing excessive irrigation stops waterlogging, aiding cane growth and maintaining soil health.

Benefits to the environment

- Good water quality enhances resilience, allowing freshwater and marine ecosystems to thrive and recover.
- Halting the rise of groundwater tables reduces runoff seeping into streams and lowers the risk of salinity in some areas.
- Reducing irrigation runoff and deep drainage improves the quality of the water in streams, wetlands and Bowling Green Bay which are the lifeblood for wildlife.

Water quality programs **boost confidence**

The Burdekin Water Quality Program is tackling irrigation challenges and improving pesticide and fertiliser management. Data from this program brings hard facts to growers, boosting their confidence in smart farming techniques and offer access to better tools, technologies, and support.



Understanding irrigation and product loss

Extension providers establish water quality monitoring programs to help growers understand how much irrigation, along with pesticides and fertilisers, is being lost off their farms.



Recommend intervention strategies

The team evaluates data to recommend irrigation interventions tailored to each farm's unique conditions, considering soil type, block layout, water inflow rates, and soil moisture levels.



Fine-tune irrigation practices

Growers fine-tune irrigation methods to reduce losses by increasing water flow and using mid-stream shutoffs. They also use modern technologies like automated pumps, valves, sensors, and advanced scheduling programs.



Pesticide and fertiliser management

Growers carefully manage application methods and product choices. For fertilisers, this includes timing, rates, placement, and product selection. For pesticides, it involves timing, product choice, and strategic application. Machinery can allow for precise application and record keeping.

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