



## Sustainable farms critical to bananas

ABOVE: Compost being spread in a nurse suckered block between bananas, which have been cut down to even out the production following Cyclone Yasi.

ABOVE, LEFT: The MacKay family, who grow about 10 percent of Australia's bananas through sustainable means.

**G**ROWING commercially viable bananas is hard enough, let alone with the pressures of doing it beside World Heritage listed rainforest and in a Great Barrier Reef catchment area.

Members of the MacKay family take it all in their stride though, operating Mackay Estates in North Queensland's Tully Valley.

In fact, use of natural growing systems and biology has led to the farms saving money and also being environmentally sustainable.

Mackay Estates grows on average, 10 percent of all Cavendish bananas in Australia across 1000 hectares.

The company has grown to include a fourth generation family member in the business, having produced bananas for the past 50 years.

The third generation members manage five growing properties and marketing in Brisbane.

The company is dependent upon producing high volumes of quality bananas. The production system has been tailored to achieve this without impacting on the surrounding rainforest or the Great Barrier Reef catchment.

North Queensland-based Total Grower Services (TGS) has been working with Mackay Estates since 2003 providing nutrient, pest, disease and irrigation monitoring "with exceptional results".

From improved diseases resistance to longer shelf-life, the cornerstone of the system is nutrient balance. The principal of nutritional disease control developed from TGS combining disease and nutrient monitoring.

Disease monitoring records over a 10-year period showed strong trends relating to soil test calcium and boron readings. The Petrik system used by TGS highlights this relationship.

Subsequent manipulation of critical nutrients resulted in improved cell wall integrity and an 80pc reduction in conventional disease control measures.

This has also resulted in a more nutritionally complete banana, providing a better consumer product.

The cell wall integrity enhancement gives the products a longer shelf life after purchase.

Fertiliser programs are tailored for the time of year, crop stage, plus soil and tissue test results. Each farm is soil and tissue tested monthly and nutrient programs are adjusted accordingly, providing maximum results from minimum fertiliser usage.

Nitrogen and phosphorus, two key elements for productivity, are also of most concern in terms of impact on the Great Barrier Reef.

Minimisation of the use of these elements has been achieved by application of the Petrik soil biology products BXD and Digestor.

These products maximise the plant-soil biology relationship, which enables the release of these elements to become plant driven.

Petrik biology contains species of microbes which enhance natural phosphorus release, nitrogen cycling and create the all important humus.

Mackay Estates uses these products in conjunction with recycled sugarcane mill waste and compost made on chicken manure, in a system termed in-ground composting.

The humus created by this process improves nutrient holding capacity, water holding capacity and soil structure but more importantly provides a better environment for the indigenous soil biology.

The use of this system has reduced synthetic nitrogen use by a third and has eliminated phosphorus applications over many properties.

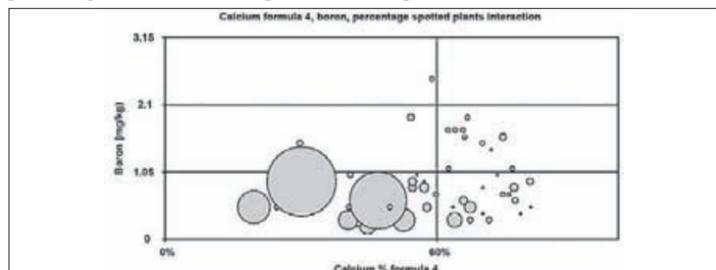
Soil moisture is monitored using EnviroScan Plus systems to ensure irrigation penetrates only to optimum depth to minimise fertiliser leaching.

Richard Piper of Scientific Advisory Services is based at Mackay Estates and provides in-house IPM monitoring and advice.

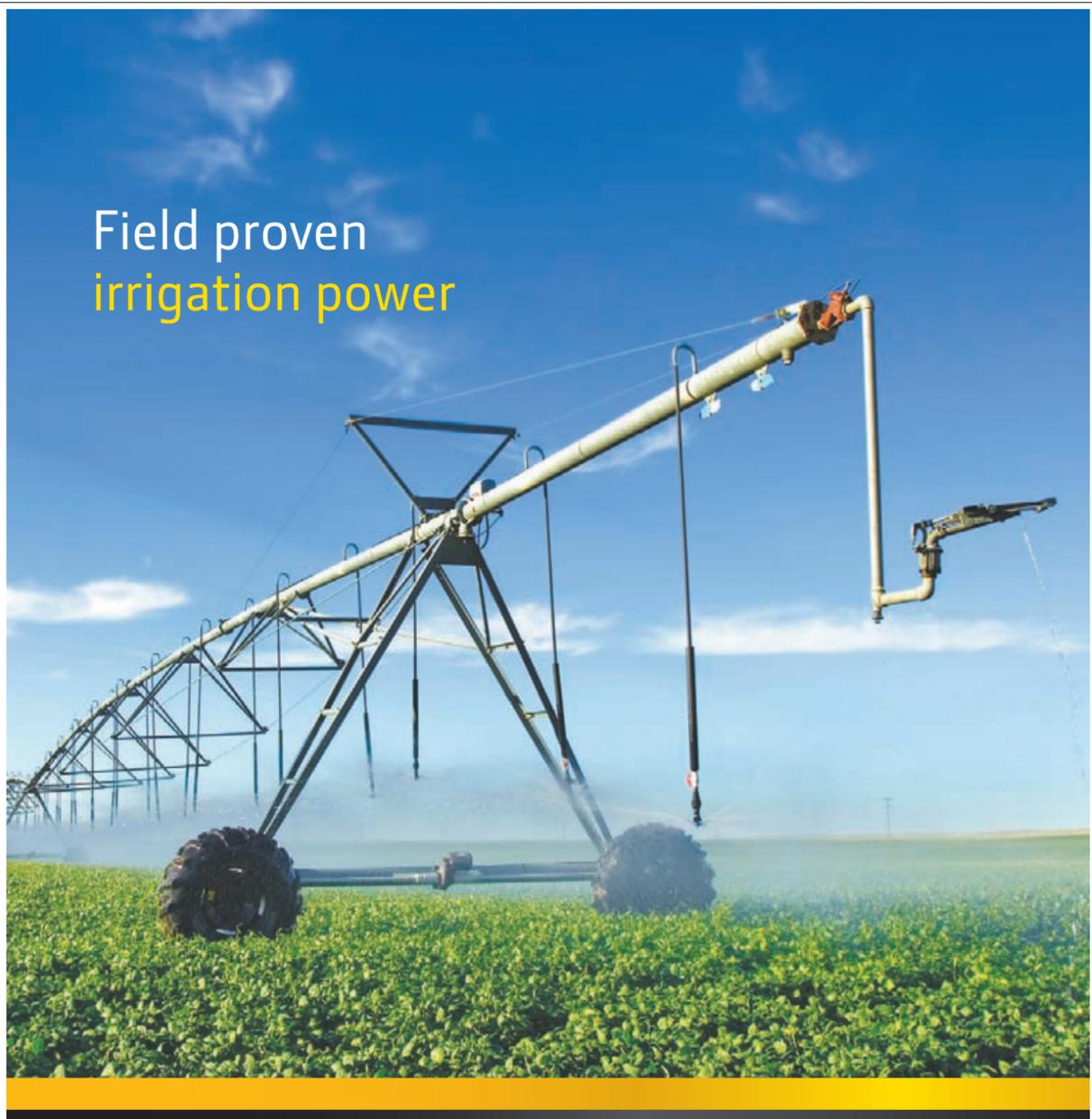
He was also heavily involved in the successful implementation of the ISO14001 environmental code of practice across the farms.

This holistic approach by Mackay Estates has resulted in increased yields of high quality fruit while consistently reducing environmental impact.

Manipulation of critical nutrients ... improved cell wall integrity.



Calcium percentage formula 4, boron and PS interactions; PS is represented by the width of bubbles; hollow bubbles represent zero PS values.



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