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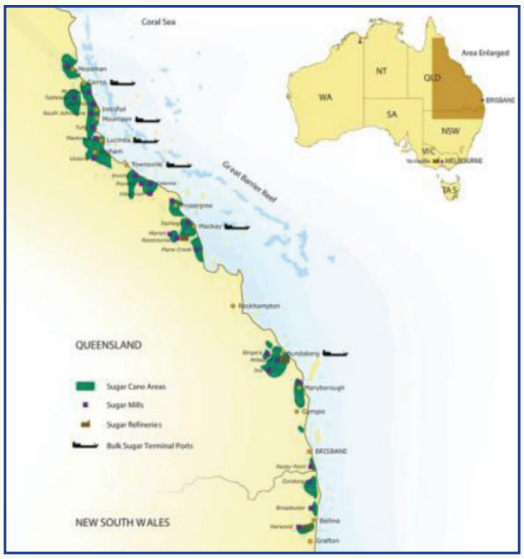
Case Study 9.1-1 Nutrient management plans for sugarcane in Australia's wet tropics.

The Australian sugar industry produces around 5 million (M) t of raw sugar from 35 M t of cane and 4,000 farms. Sugarcane is grown in high-rainfall and irrigated districts along coastal plains and rivers on Australia's north-eastern coast from Queensland to New South Wales (see map). Cane growing and sugar production underpins the economy of many coastal communities and is second only to the tourism industry in its regional economic impact.

The northern cane regions are in the wet tropics with 2,000 to 4,000 mm annual rainfall and are adjacent to sections of the Great Barrier Reef World Heritage Area.

The Great Barrier Reef is a unique and treasured ecosystem. The Great Barrier Reef is already under stress from fishing, urban growth in its catchments, sewage and mining, as well as climate change impacts such as ocean acidification and warming. Corals and other reef organisms that make up the Great Barrier Reef are affected by water quality variables such as temperature, some pesticides, salinity, nutrients and suspended sediments.



Government and Industry Partner to Develop the "Six Easy Steps" Program for protecting the Great Barrier Reef

Sugarcane production in Australia is a highly specialized industry that has responded to changing economic and social issues with new and improved agronomic techniques. All cane is mechanically planted and harvested; most is grown under a green trash blanket in lieu of burning the trash before harvest. Minimum tillage is widely practiced and many growers have adopted site specific nutrient management within their fields. Farmers are also developing riparian zones within their farms as nutrient and sediment traps.

Targets have been set to protect the water quality of the reef area by reducing inputs of nutrients and pesticides from nearby sugarcane production areas. Any person who grows sugarcane commercially on more than 70 ha in the wet tropics catchment is required to prepare an Environmental Risk Management Plan (ERMP), whose requirements include:

- Identification of any hazards on the farm that may cause the release of contaminants into water entering the reef.
- Measurable targets and performance indicators for improving the quality of water being discharged from the farm.
- Include a management plan that provides for the management of nutrients applied to the soil, agricultural chemicals, and sediment loss from the farm.
- Application of no more than the optimum amount of fertilizer N and P to the soil, based on soil properties, other sources (e.g. mill byproducts) and sugar cane yield potential.
- Records of soil test results and the application of fertilizers. In some regions, soil tests must be taken before any nutrients are applied to the crop. Soil testing must include a measure of mineralizable N and plant-available P.
- Variances from these recommendations may be done only with the consent of an accredited adviser.

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The ERMP for each farm is then assessed by the Queensland Department of Environment and Resource Management (DERM). Once assessed and agreed to, the plan will have an accreditation term of one to five years. Plans would include maps of the farm, nutrient management plans and Integrated pest and weed management plans.

These plans are registered and audited by DERM, so that a nutrient management plan – usually formed around the *SIX EASY STEPS* approach of BSES Limited (a sugarcane producer organization) becomes a legal statement of the way a cane grower will use fertilizers on their farms.

The *SIX EASY STEPS* program is an integrated nutrient management tool that enables adoption of nutrient best management practices for cane growers, and these tools can be used to develop nutrient management plans required in the ERMP. The six steps are:

- Knowing and understanding your soils
- Understanding and managing nutrient processes and losses
- Regular soil testing
- Adopting soil-specific nutrient management guidelines
- Checking on the adequacy of nutrient inputs (e.g., using leaf analyses)
- Keeping good records to modify nutrient inputs when and where necessary

The program is delivered through a short course developed with growers. The objective is to provide a guide to implementing balanced nutrition on-farm, optimizing productivity and profitability, without causing adverse off-farm effects.

For more information:
The *SIX EASY STEPS* approach. [On-line].
ReefWise Farming. Qld. Government, Australia. [On-line].

Submitted by R. Norton, IPNI, Australia, December 2011.