

Bundaberg District Grain in Cane

- Location:** Bundaberg, Queensland
- Region:** Burnett Mary
- Industry:** Sugar
- Group:** Bundaberg CANEGROWERS
- Issue:** Soil health, break-cropping and controlled-traffic farming of sugar cane.
- Key Outcomes**
- 129 families in the Bundaberg and Isis regions were involved growing soybeans in 1300 ha of cane, yielding almost 20% of Queensland's soybean production
 - Improved sugar productivity, rainfall capture and harvester efficiency; reduced chemical fertiliser application and land preparation costs
 - Presentations of information and research via conferences, field days and articles

Background

CANEGROWERS is the peak representative body for Queensland's sugarcane growers, which has been advancing and protecting the interests of cane farming families in Queensland since 1925. CANEGROWERS Grain in Cane is a group of growers with a common interest of finding additional income streams through the incorporation of recent sugar industry research findings into practical, robust, sugar cane farming systems.

Research conducted by the Sugar Yield Decline Joint Venture initiative has demonstrated that "break cropping" (breaking the cane monoculture with a grain legume crop) may increase subsequent cane productivity substantially. This increased productivity is a result of improved soil health.

The Sugar Yield Decline Joint Venture findings also demonstrated that the current sugarcane farming system contributes to soil structural degradation through compaction. This is because the current row spacing (1.5m) results in traffic on 90% of the paddock during harvest. The resultant compaction reduces productivity as well as greatly reducing the soil's ability to capture rainfall through infiltration.

The Project

The aim of the CANEGROWERS Grain in Cane project is to promote the adoption of research outputs such as legume break cropping, reduced nitrogen fertiliser inputs and matching cane rows to harvest machinery to reduce the soil structural degradation of compaction. Changing row centres to 1.8m provides the basis for the development of Controlled Traffic Farming Systems and reduces the portion of the paddock trafficked during harvest of the sugarcane crop from 90% to 60%.

Outcomes

Prior to the planting season, farmers were provided with important background information on growing soybeans under local conditions. This was achieved through meetings and distribution of a printed guide. Support was provided to farmers throughout the project, through workshops, fact sheets and provision of specific on-ground advice as needed. The outcome from this was that 47 growers in Bundaberg and 37 growers in Isis grew over 1,300 ha of soybeans the first year of operation, an increase of more than 400% over the previous year. The grain harvested equated to about 19% of Queensland's and over 5% of Australia's production.

As well as to this additional production, the increased adoption of soybeans as a fallow crop resulted in a reduction of over 30% in the amount of nitrogen fertiliser used over the whole farm. This reduction in applied chemical nitrogen fertiliser reduces the potential risk of nitrate being washed or leached from the soil, reducing off-site pollution.

The growing of a soybean crop during the wet season has further desirable natural resource management (NRM) outcomes by reducing weed problems and reducing sediment and chemical loss from the farm. Weed problems are reduced through the use of different (grass selective) herbicides to those used in sugarcane, and from crop competition provided by the soybeans as they provide a dense canopy that reduces the amount of light reaching the soil surface, which reduces the vigour of the weeds, decreasing the number that survive and reproduce. The increased soil cover reduces the amount of erosion from rainfall and surface water movement, reducing the potential of nutrients and chemicals to leave the paddock and enter waterways in sediment.

The adoption of 1.8 m controlled traffic rows reduced the area of compacted soil in the paddock and increased rainfall infiltration, further decreasing nutrient and



Zero-till soybeans (Photo: Matthew Leighton)



sediment runoff. The 1.8m row width was selected as it is the width of the cane harvester and the equipment used to haul cane from the paddock. The adoption of minimum-till farming practices reduced the frequency of soil cultivation and thus erosion. The reduction in cultivation increases the amount of stubble and trash on the soil surface decreasing raindrop impact on the soil and the amount of erosion. Growing soybeans improved soil structure, leading to increased rainfall infiltration and irrigation and reduced erosion. The benefit from adopting these practices is that they are complementary and the adoption of one makes it easier to adopt another.

Another major benefit from the growing of a legume break crop (soybeans) is the breaking of the cane monoculture and the reduction in pests and diseases that affect cane, improving cane yield and reducing the reliance on chemical control methods.

The Future

The adoption of the soybeans as a break crop in the sugarcane farming system has created a more sustainable farming system that is having a social, economic and environmental benefit to cane growers.

**Minimum-till planting into soy stubble
(Photo: Matthew Leighton)**



**Gathering around the beat sheet (Photo:
Matthew Leighton)**