

## **Controlled traffic farming and precision horticulture in vegetables: Adoption and outcomes in Bowen, Queensland**

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### **Background**

The benefits of controlled traffic farming (CTF) have been proven in Australian grain and fibre cropping for many years, while in the horticultural vegetable industry, it is a relatively new practice. In a survey of local Bowen growers, we found that the ability to convert a multiple wheel-track system to CTF is hindered by:

1. The initial start-up cost for equipment, modifications and training,
2. The value of CTF is often unclear in vegetable production,
3. The availability of information and service providers to help make decisions, support change and integrate the tools to work together and,
4. The unknown risks or new challenges caused by implementing CTF.

We are seeking answers to these questions in a project funded by the Australian Government's 'Caring for Our Country' Initiative in the Queensland vegetable growing centres of Bowen, Bundaberg and the Lockyer Valley.

In Bowen, a demonstration site at a local vegetable growing property is quantifying the economic and agronomic differences between conventional and CTF minimised tillage systems. By partnering with growers, we aim to:

1. Quantify the economic differences between their CTF system compared to the previous conventional system,
2. Quantify differences in yield, and soil structural and chemical properties and,
3. Identify challenges that arise as a result of implementing CTF and gaps in research.

### **What we've found so far**

In 2012, we surveyed growers in the Bowen Dry Tropics region, benchmarking the level of adoption and CTF practices. We found 85% of growers surveyed said it was a system they aspire to, while 70% have machinery equipped with guidance and auto-steer technology. Interestingly, 40% of growers were unsure how to use technology to improve farm practices and planning, other than driving in straight lines.

In CTF beds, green bean and sweet corn beds were free of shallow compaction zones, with these confined to wheel tracks. Comparatively, compaction in the conventional system occurred within the bed at depths as shallow as 0.1 m, with compaction exceeding 0.8 MPa at a depth of 0.2 m, twice that of the CTF beds at the same depth.

The soil of the CTF beds showed superior structure and resistance to erosion; allowing the infiltration of a 103 mm/hr simulated rainstorm, with no runoff after 60 minutes. Under the same testing, the conventional system produced runoff and sediment transport within 15 minutes, with significant surface ponding and crusting.

### **What's next?**

An economic analysis will be prepared, comparing the CTF and conventional systems of this vegetable farm, along with yield and soil carbon measurements in an effort to quantify the benefits of CTF in Queensland vegetables.

