

“Controlled Traffic Farming at Brookstead”

Engelbert Krامل, ‘Garryhunden Farming’, Brookstead, Qld.

Introduction:

Having visited Australia in 1984, ’85 and ’86, the decision was made to purchase two properties, ‘Garryhunden’ and ‘Mussenhof’ in 1987. These adjoining farms, with a total area of 2700 acres, are located in the Brookstead area of Queensland on the floodplain of the Condamine River. The entire property produces irrigated crops using a 2000 Megalitre ring tank supplemented by a 1100 Megalitre underground water allocation. Initially, these properties were farmed using conventional methods, with high horsepower tractors and wide equipment.

Before coming to Australia, I farmed in Austria. Although the average farm size was only 40 to 50 acres, by leasing additional smaller farms, I produced corn, wheat and barley on 200 acres. These crops were used as feed to fatten pigs in our 1000 head piggery. During the early 1970’s, the traditional European farming method used the mouldboard plough, where the measure of a good farmer was the total absence of any crop residue on the soil surface and a smooth even field finish. Later, the practice moved away from total soil inversion, in an effort to eliminate layers and speed stubble decomposition.

At this time, planting and spraying operations were performed using a system of controlled traffic or tramlining. In Austria, we used 4WD tractors with linkage mounted, 3 metre planters, and a 15 metre boomspray. A mechanical device on the planter, would shut off the seed to particular rows on every fifth pass to mark the spray tracks.

Since the early days of my farming in Australia with a 400 HP tractor and a New Holland Trashfarmer, I have been investigating ways of improving my farming operation. The obvious change was to move towards a system of controlled traffic, which had proven successful in Austria. It was encouraging that a neighbour, John Woods, was also farming using 3 metre beds at ‘Dunbar’. The decision was made to use a controlled traffic system, and produce all crops on 30 inch rows, with the wheels spaced at 120 inches.

1989 was the year that I would identify as the ‘turning point’ in our farming system at ‘Garryhunden’. That year it was necessary to use a contractor to assist with planting 1000 acres of soybeans. The crop was planted using our Becker planter, based on 30 inch rows, and in 40 inch rows by the contractor. Yield tests revealed that the crop planted under the controlled traffic system produced 3.5 ton per hectare while that planted on 40 inch rows yielded 2.5 ton per hectare. The main reasons for this variation were:

- the plants in the wheel tracks were stunted and approximately half the height of the others resulting in reduced yields
- losses at harvest due to unevenness of the crop and different stages of ripening

Now, under the system of permanent wheel tracks our soybeans can be harvested using a contractor with a MacDon draper front. This harvesting contractor, from Pittsworth, has the facility to change the harvesters’ wheel spacing to suit our requirements.

Cropping Program:

The cropping rotation at Garryhunden Farming is quite flexible and is determined by:-

- Water availability

- Crop prices
- Weed problems
- Chemical residuals
- Soil fertility
- Seasonal conditions

After a cautious venture into cotton from the traditional summer crops of sorghum and corn, we now plant 1000 to 1500 acres of cotton each year, plus around 500 acres of corn. Soybeans are also grown for seed production. During winter our cropping options include oats, canary or wheat which is usually double cropped into cotton stubble.

Currently, we base the rotation around a cotton crop, doubled into cereal after pulling, raking and applying urea with a spreader. Additional nitrogen and phosphorus is applied and incorporated prior to planting. This is usually followed by corn or sorghum and then back into cotton. In some seasons, high levels of corn crop residue can be difficult to work with. One option is to leave the trash for as long as possible and if necessary rake and burn, prior to planting.

For the current season, we have planted 400 acres of canary. This will be complimented with 1200 acres of cotton, 400 acres of corn and 300 acres of corn.

Machinery:

All my machinery is designed or modified to suit 120 inch beds, with widths in multiples of the bed size.

Tractors:

Fiat 180-90 with spacers added to the front axle to achieve 120 inch wheel spacing.

Fiat 1880 with extended front axle

G210 Fiatagri with the same front axle modification.

Planters:

Monosem linkage planter is used to plant corn and cotton. This machine is set up to plant 12 - 30 inch rows.

Cereal crops are planted with a Simplicity Airseeder mounted to the hitch of a 30 foot AFM Scarichisel. The 36 planting tynes, fitted with narrow sowing points, are spaced at approximately 9 inches. To reduce problems with lodging, the tynes adjacent to the wheel tracks are positioned so that the seed is actually placed in the edge of the wheel depression. A Janke vertically adjustable tyne is used in these locations to provide improved seed placement.

Fertilizer Spreader:

Our fertilizer spreader can be adjusted to spread over an area of 18 or 24 metres.

Boomspray:

A 24 metre tractor mounted boomspray is used.

Harvester:

To harvest all cereal crops and corn, we use a Claas 106 header. This machine has been simply modified by repositioning the wheel centres within the front rims to achieve the desired wheel

spacing. The adjustment, provided by the manufacturer, enabled the rear wheels to be shifted into alignment.

Using spacers available from John Deere, the front wheels of our cotton pickers were moved out to match the rest of our equipment, and a local engineering works extended the rear axle. Another minor modification was the addition of deflectors to prevent crop being run over by the wheels.

Additional Machinery:

Other equipment used, particularly for the production of cotton, includes:-

- 4 row stalk puller
- 12 row interrow cultivator
- 12 row shielded sprayer
- and a 12 row spot sprayer

Difficulties:

- Crop lodging in wheel tracks. This was addressed by planting as close as possible to the wheel track and if necessary at harvest, using crop lifters in those rows.
- The control of weeds in the wheel tracks did present a problem. With the use of improved spray technology this has been controlled. To supplement chemical weed control, we also use an Alabama sweep which also helps maintain the track evenness.
- Manufacturers will not warrant the extended front axle on our tractors. Some early breakages have been overcome by increasing maintenance and attention to specific areas. As an example, the ball joints on the front axles are regularly checked and adjusted to specification.
- It was necessary to strengthen hubs and housings on the front final drives of the older tractors.

Changes resulting from Controlled Traffic:

- The number of permanent staff reduced from 4 to 3.
- Fuel bill decreased by 1/3.
- Allowed a wider range of cropping opportunities.
- After a couple of years it became obvious that the soil structure improved.
- With this improved soil structure, yields increased by 10 - 15%
- Only under extreme circumstances is it necessary to use aerial spraying.

The Future:

In the future, I would like to see progress in standardisation of row spacing and wheel track spacing, improvements in guidance systems to assist in precision farming, improved flexibility from equipment manufacturers, and advances in band spraying technology.