

Murdeduke – Raised beds and CTF

Bruce Willson, Winchelsea, Vic

INTRODUCTION

Bruce's father bought the original farm block in the 1960's, which was then later split in the mid 1970's. With attention to detail and an open mind to new ideas Bruce has led a successful farming operation for a number of years.

Bruce and Judy Wilson own the 3000 hectare property "Murdeduke" and manage a further 1500 hectares in the high rainfall zone of south-west Victoria, near Winchelsea. In partnership with their son Lachie they manage a mix of enterprises (60% cropping and 40% livestock) including:

- 2600 hectare cropping system with a typical rotation of canola, wheat, barley, and on the odd occasion field peas on well drained soils.
- 200 stud Angus cows and 450 commercial Angus cows, with an extensive Embryo Transfer operation
- 3000 first cross ewes prime lambs
- 2000 wethers, with numbers reducing to increase prime lamb production
- 170 hectares of lucerne – providing excellent gross margins from prime lambs and great for drying the subsoil profile
- 1500 sows run on three 40ha units in the crop rotation, run as a separate business 'Pastoral Pork'

The country ranges from well drained rolling lunette's to flat swampy country. Lunettes represent the deposition sites of wind blown sands and clays from swamps and lakes. The soils on the lunette's are dominantly highly fertile deep black self-mulching sandy clays over a deep cracking clay. The majority of the lower lying soils are gradational self-mulching black clays (Vertosols), which are often sodic at depth.

The introduction of raised bed farming has revolutionised their lives and has allowed them to expand their cropping system to paddocks, which would otherwise lay waterlogged in any average season. Success has been experienced with the beds allowing the Wilson's to expand their farming operation through leasing and purchasing new land.

Raised bed farming and potentially controlled traffic farming on the already well-drained paddocks are two positive leaps towards a sustainable, profitable farming system. However Bruce and Lachie are keen to take management to the next level, this is where precision agriculture can play a role. The understanding of within paddock variability, in combination with current best management practices, should offer the ability of achieving maximum potential gross margins/hectare and simultaneously minimise environmental impacts.

RAISED BEDS

- Always considered the lunette paddocks to be like 'one big raised bed'
- 1200ha 2m wide raised beds
- Knife points and press wheels for depth control improve plant distribution and crop establishment.
- Interested in determining ideal press wheel pressures. How should it vary with soil moisture?
- Beds lead to rapid soil improvements in just one year. Heavy sodic clays converted to friable healthy workable soil in year 1, and this happens every time! The soil structure improves due to

the removal of waterlogging and wheeled compaction and thus the soil health improves through more organic matter and more frequent wetting and drying cycles.

- Gradually reinstalling beds with the autosteer to eliminate the problem of uneven bed widths, which cause trouble particularly at sowing.
- Beds improve water infiltration rates and crops achieve higher water use efficiencies. These factors limit the amount of run-off from raised beds.
- The next step is to improve the design of main collector drains which run perpendicular to the furrows

CTF

- 1400ha CTF (2005 is the first season)
- 24m tram tracks for spraying and spreading
- Two 8m Gyrat planters both designed to sow beds and flat
- CAT header on 4m wheel centres to fit raised beds. Where to next?
- Working up and down the slope where possible, otherwise work east west to minimise wind damage to canola windrows.
- Early stages and will evolve over time.
- Where do livestock fit? A proportion of the country is rocky basalt unable to be cleared. A National Landcare Program funded project 'Grain and Graze' has five integrated projects to help mixed grazing and cropping farmers increase profits and enhance the environment – stubble management, lucerne on beds, integrated pest management, native grasslands and pastures on beds.

PADDOCK LAYOUT

- Rocks are a big issue. Have cleared many rocks at great expense, but the return on investment says it is worthwhile. Have crushed some rock piles and will use for internal roads.
- Need to determine CTF design to maximise harvest efficiencies
- Undulating paddocks are difficult to install effective raised beds. May need to laser level.
- Contour maps are critical for determining paddock design for raised beds.

PRECISION AGRICULTURE

- Guidance (2cm RTK GPS-Ag autosteer) has proved it's worth – a fantastic initial investment. Less fatigue, less inputs, and no delays from fog and dust. You know exactly where you are – allows site specific management
- The collaboration of CTF, autosteer and yield monitoring allows for accurate strip trials
- Spatial info includes 5-6yrs yield data, EM surveys, contour maps, aerial photos and satellite imagery.
- Managing spatial data requires technical support. Computer systems include PAM, AgriMaster (financial) and Farm Works.
- Will begin this year to test consistent trends in paddock variability to determine potential for variable rate (VRT). Pig paddocks introduce significant variability, which may be worth managing?
- Yield data is good for identifying large scale differences such as large scale trials such as lime and manure (pig paddock) responses.
- Satellite imagery provides a more intense picture of responses and should be useful for understanding and then managing spatial variability.

SATELLITE IMAGERY

- Purchased IKONOS imagery last year and found it to be valuable. Planning on going again this year.
- Able to gain more benefit from this imagery than from yield maps.
- Reduced the working width of the spreader from 36m to 24m to improve accuracy (avoid visible striping) and to match the CTF system.
- Satellite imagery provides a more intense picture of crop responses and should be useful for understanding and then managing spatial variability.

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