

Demonstrating Sustainable Farming Systems

Minimum Tillage

PARTNERSHIPS IN INNOVATION

The National Action Plan for Salinity and Water Quality funded the Department of Agriculture and Food to demonstrate to growers existing best management practices that contribute to improved tail-water quality and water use efficiency.

Ord Land and Water provided assistance in the initial phase of the project by contacting growers to be a part of a steering committee. They also assisted with the running of field days.

MINIMUM TILLAGE

Minimum tillage is considered to be best management practice. The aim of this demonstration was to disturb the soil as little as possible. There are several advantages of minimising tillage. These include:

- better soil structure
- reduced soil loss
- reduced fuel costs

This strategy is achieved by creating permanent beds. A wet season cover crop was grown to protect the beds from slumping. More information is available on wet season management in a fact sheet with the same title.

The dry season crop was then planted into wet season crop residue. The preferable method of planting into residue is with a disc planter (Fig 2). The disc cuts through the residue and plants the seed with minimal soil disturbance.

The residue remaining on the surface after planting helped suppress weeds and improved organic matter in the soil.



Fig 1: Planting maize with a disc planter into lab-lab residue (2007).

CROP ROTATION

Another best management practice that was implemented at the same time was crop rotation. That is, the wet season cover crop chosen was dependant on what crop was going to be grown the following dry season. The cover crops grown for this demonstration were selected on the following criteria:

1. Weed control. If the dry season crop was going to be a broad-leaf, then a grass was grown over the wet season. Selective herbicides can be used.
2. Nitrogen sensitivity. Grass crops are hungry for nitrogen. Whereas, other crops such as cucurbits are nitrogen sensitive.

DEMONSTRATION SITE

The main demonstration site has not been cultivated since the end of 2005. Prior to the sorghum cover crop being planted in November 2005 the field was go-devilled and bed shaped. Since then the only soil disturbance has been planting. Even planting only caused minor disturbance (Fig 1).

The crop rotation, as shown in Fig 2 to Fig 6, was:

- forage sorghum, wet season 2005-06
- Jarrahdale pumpkin, 2006
- lab-lab, wet season 2006-07
- maize, 2007
- maize stubble, wet season 2007-08

The plan for 2008 is to plant chickpeas into the maize stubble, which will be mulched first.

The pumpkin crop in 2006 yielded 16.6t/ha, which according to growers was slightly below average. The maize crop in 2007 was a new variety (31G66) yielded well at 10.5t/ha.

In terms of management weed control was an issue. The wet season sorghum crop from 2005-06 was still re-shooting in the

following wet season crop. If the soil had been worked-up the sorghum's root structure would have been destroyed.

Another issue during the first wet season was mulching the cover crop. To keep the height of the cut even across the field the wheels of the contract mulcher were run along the top of the bed. This caused an indentation, which would not have been a problem if the beds had been worked-up before planting. However, the indentation in the centre of 2 out of 3 beds meant uneven planting depths of pumpkin seeds with the disc planter. Planting depth was more uniform using a boot planter, but the soil disturbance was greater. A 5.4m mulcher was purchased. This was used on the lab-lab cover crop making it much easier to plant the maize crop with a disc planter as the trash was cut into smaller pieces.

RELATED FACT SHEETS

Other fact sheets available in the "Demonstrating Sustainable Farming Systems" series are:

- Wet Season Management
- Advanced Fertigation
- Use of Flocculants



Fig 2: Sorghum. 2005-06 wet season cover crop.

Fig 3: Pumpkin seedling germinating through sorghum trash in 2006.

Fig 4: Lab-lab. 2006-07 wet season cover crop.

Fig 5: Maize in 2007.

Fig 6: Maize stubble. 2007-08 wet season.

FURTHER INFORMATION

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