



# Shelter belts for pivots with overhead sprinklers

“Port Mac Dairies”

## Background

Port Mac Dairies is a corporate dairy 10 km east of Port MacDonnell, South Australia. The farm is characterised by undulating hills and has little protection from the harsh environmental conditions. Jared Boshier the general manager was keen to participate in the shelter belts under pivot project to increase wind and sun protection for his cows and improve the aesthetics of their farm. Jared made the following comments:

*“This farm will benefit from wind protection provided by the shrubs under pivots”*

*“Other benefit is an increase in biodiversity”*

*“Yes I would put more trees under my pivots. I will be spreading them over all the pivots on the farm”*



Jared Boshier Manager of Port Mac Dairies with Swamp paperbark seedlings that are planted under his pivot.

## Farm statistics

Average cow numbers:	1250
Milk production:	10.5 million Litres
Hectares:	450
Distance of trees under pivot:	654m
Tree numbers under pivot:	564
Farm manager:	Jared Boshier

## Site selection

This project was implemented under a pivot with over head sprinklers. This allowed three metre height clearance under the pivot. It was practical to align the new shelter belt with the existing fence line. It is important that shelter belts should be selected to maximise wind and sun protection for both the cows and pasture. Jared chose to align the shelter belt with a lane way to the dairy. This will give shade and wind protection to the cows walking to and from the dairy. It will also give protection to neighbouring paddocks.

## Site preparation

Ideally planning should commence at least 6 months prior to planting the trees, this allows time for fencing and adequate weed control. The shelter belt width used in this project was 4.5–5 metres. This was sprayed with a knock down & residual chemical, 4 l/ha Glyphosate CT and 50g/ha Oust. There is a one month residual plant back on Oust for native trees. Ideally an early spraying (late summer) with a knock down is beneficial as native shrubs are slow growing and perennial pasture is highly complete during summer under irrigation.





Initial site preparation.



Peter Feast (Tree specialist for the project) holding a sample of the Swamp paperbark and swamp bottle brush used at Port Mac Dairies.

Ripping is required for most shelter belt sites if a rocky or hard pan layer is present, this allows for easy root development. Two rows, 1.5–2 metres apart were ripped to a 30cm. Soils that have a high sand content do not need to be ripped.

The fencing used replicated the existing line. If the fence is over 400 metres two irrigation springs will be needed on each end. Posts in the new fence line must not obstruct pivot tracks. A second wire was put on the fence for extra protection, this was not electrified. Single wired gates were put on both ends of the shelter belts.

<b>Fencing Cost:</b>	\$855 per 500 m
<b>Chemical Cost:</b>	\$62 per 500 m + application cost

## Species selection

Swamp paperbark *Melaleuca squarrosa* and swamp bottle brush *Callistemon ruyulosus* was chosen for this project for their short shrubby nature and high tolerance to water logging. The swamp paperback will grow to 2m x 2m and the swamp bottle brush will grow 2m x 3m. Most local species can be used however they must be tolerant of water logging and be suitable for propagation as well as short and shrubby in nature so they don't obstruct the pivot

## Tube stock

Tube stock can be purchased from nurseries. Large tube stock will cost around \$1.60 each, and small tray stock will cost \$1.00 each. Remember to look for healthy plants that are uniform in size and are not root bound.

<b>Small tube stock Cost:</b>	\$410 per 500 m
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## Grow your own seedlings

Native seeds are harvested in summer and dried on plastic sheets; seeds are then separated using sieves. Seeds are then planted into seedling trays. Potting mix specific for natives should be used. Established seedlings are later pricked out in to tube stock. Seedlings must be kept moist. An automatic watering system is the best way to ensure seedlings are not water stressed. Seedlings are ready for planting when they are approximately 10–15cm tall. Organisations such as Trees for Life can assist in growing your own seedlings.

## Planting

Planting takes place in the winter months, ideally in June. A forestry style “pottiputki” was used to plant the seedlings. Seedlings were planted 1.5 to 2m apart using a kidney tray. Trees were not planted 2.5m each side of pivot wheel tracks.

<b>Pottiputki (55mm) Cost:</b>	\$292
<b>Kidney tray for holding tube stock:</b>	\$161

## Mat lying

A 100 metre trial of black plastic weed mat was used in this site. The laying of plastic weed mat will reduce the need for further spraying and give superior weed control.

<b>Weed mat Cost:</b>	\$2050 per 500 m
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A 20 metre trial of 30cm x 30cm hessians cubes were also used. These were placed at the base of trees to give protection from weeds.

<b>Hessian cube Cost:</b>	\$225 per 500 m
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The plastic weed mat which was trialed to reduce weed competition



The benefits of tree guards was trialed on the Port Mac Dairies site.

## Tree guards

A 150 metre trial using plastic tree guards was undertaken.

Cost to use tree guards

\$328 per 500 m

## Care after planting

Management of the shelter belt after planting is essential. Snails, rabbits, cows and crows will potentially damage seedlings. Snail bait after planting is recommended. Weekly monitoring post planting will allow for assessment of any damage. A grass selective spray is recommended in late spring of the first year. During the spring survival counts need to be completed and any replacements planted, this keeps the shelter belt at the desired planting density. Importantly the site needs to be monitored carefully in the second year especially for weeds and any weed control undertaken. ■





## Additional Resources

### Dairying for Tomorrow

Dairying for Tomorrow (DFT) is the Australian Dairy Industry's national program. It helps dairy farmers meet the challenges of Natural Resource Management (NRM) on farm. Monique White, the SA DFT coordinator provides services such as:

- Coordination of industry wide programs such as the “**Resource Not Waste**” dairy shed effluent project, which developed these information sheets.
- Delivery of the **Dairy Self Assessment Tool** (DairySAT).
- Development of the **Reduce, Reuse and Recycle** (RRR) information sheets.
- Development and delivery of other local catchment NRM projects.

### Dairy Self Assessment Tool (DairySAT)

DairySAT is an environmental self assessment tool for the dairy industry. It has been developed to assist farmers to review their current environmental performance and document future plans to improve priority areas.

The tool broadly covers on farm management practices including:

- Irrigation
- Effluent
- Soils
- Nutrients
- Chemicals
- Air & Energy (greenhouse gas emissions mitigation)
- Pests & Weeds
- Farm Wastes
- Biodiversity

By working through each section the tool assists farmers identify, rate and assess current practice against industry standards. The tool provides for recognition of good practice and then guides the farmer in developing an action plan where work needs to be undertaken. DairySAT can be undertaken individually or as a group, with or without the support of a trained DairySAT facilitator.

### RRR Innovations in Dairy Design, Reduce, Reuse and Recycle

The nine RRR fact sheets are designed to assist farmers design and implement Environmental Best Management Practice in dairy shed design and operation, aiming to reduce resource use in new and existing dairies.

The information sheets cover:

- Thermal efficient design
- Construction materials
- Renewable energy sources
- Dairy lighting
- Dairy pumps and motors
- Heating water
- Cooling milk
- Water at the dairy

The sheets are available from Dairy SA or from the SA Dairy Industry or Dairying for Tomorrow websites.

**Want to know how you can improve your farms sustainability? If you would like more information on DFT resources, have a project idea, or want to undertake activities on-farm contact DFT Coordinator Monique White on 0400 972 206 or email [monique2@internode.on.net](mailto:monique2@internode.on.net).**

