

# Stubble Management Guidelines



## Maireana

### Key facts

- » Maireana species are well adapted to a range of soil types and low-rainfall environments.
- » Maireana can be used as fodder shrubs but they have high salt and oxalate levels and their ability to spread quickly and form dense stands where there is no cultivation makes Maireana species a potential weed in no-till cropping systems.
- » No herbicides are registered to control Maireana and these shrubs can tolerate heavy grazing. Mechanical disturbance, such as using prickle or disc chains, can be used to break up the shrubs.



Yanga bush (*Maireana brevifolia*). Photo: Hannah Mikajlo (UNFS).

**Maireana are a genus** within the Chenopodiaceae family, alongside other plants such as saltbushes, fissure weeds and samphires. There are about 20 Maireana species found throughout the Upper North region of South Australia, but by far the three most common are Yanga bush (*Maireana brevifolia*), black bluebush (*M. pyramidata*) and cotton bush (*M. aphylla*).

These small, evergreen perennial shrubs grow to roughly a metre high and up to 1.5m wide. The stems are often woody and the leaves are usually fleshy or succulent. The roots are shallow and spreading.

Maireana tend to flower and fruit during summer and autumn. Species such as Yanga bush are well adapted to lower-rainfall environments (250–450mm), can grow in a wide range of soil types and are moderately–highly salt tolerant. They can also tolerate hot conditions and some frost, but are sensitive to waterlogging.

Although Maireana will grow naturally on bare or uncultivated ground, they can also be sown or planted as fodder shrubs. Species such as Yanga bush have relatively high levels of crude protein, but are not a complete feed source on their own.

While not normally viewed as a problem in livestock situations, Maireana's ability to spread quickly and form dense stands makes it a potential weed in cropping systems, particularly where zero-tillage is practised.

### Project information

This *Maireana* guideline has been developed for the Upper North Farming Systems Group (UNFS) as part of the Maintaining Profitable Farming Systems with Retained Stubble Initiative, funded by the Grains Research and Development Corporation (GRDC UNF00002).

The Stubble Initiative involves farming systems groups in Victoria, South Australia and southern and central New South Wales, collaborating with research organisations and agribusiness, to address challenges associated with stubble retention.

The GRDC, on behalf of growers and the Australian Government, is investing \$17.5 million in the initiative that has been instigated by the GRDC Southern Regional Panel and the four Regional Cropping Solutions Networks that support the panel.



Maireana spreads across undisturbed areas. Photo: Hannah Mikajlo (UNFS).

### Maireana in the Upper North

Maireana shrubs will grow and spread over uncultivated ground, easily becoming weeds in no-till and stubble-retained systems, where ground is left undisturbed. Where Maireana does invade farmland, colonisation tends to occur in a series of waves, determined by how easily each variety spreads.

Commonly, Maireana will be accompanied by other colonising weeds, including thorny saltbush (*Rhagodia spinescens*), cannon-ball (*Dissocarpus paradoxa*) and Dillon bush (*Nitraria billardierei*).

#### Yanga bush (*Maireana brevifolia*)

Yanga bush is an early coloniser and will often be the first Maireana type to appear. It spreads easily due to its light-weight and fan-shaped fruiting bodies, which can disperse across wide distances.



Yanga bush has slender branches and fleshy oval-shaped leaves. Photo: Hannah Mikajlo (UNFS).

Yanga bush grows to roughly one metre. It has slender, red-tinged branches, which can have sparse, woolly patches. The oval-shaped leaves are 2–5mm long and fleshy.

Although drought resistant, in times of water-stress Yanga bushes will often only have green leaves on the tops of the branches, while the lower leaves are dry and brown.



Yanga bushes often have outer green leaves with dry brown leaves underneath. Photo: Hannah Mikajlo (UNFS).



Black bluebush (*Maireana pyramidata*).



Cotton bush (*Maireana aphylla*).



Black bluebush leaves are a characteristic blue-grey colour.



Spiny, leafless branches on a cotton bush. Photos: Hannah Mikajlo (UNFS).

### Black bluebush (*Maireana pyramidata*)

Black bluebush often appears in the second phase of colonisation. This variety spreads more slowly due to its heavier fruiting bodies, which are not as easily dispersed as those of Yanga bush. Although this shrub is a prolific seed producer, supporting rapid infestation, the seeds lose viability after only a few months.

A long-lived perennial, black bluebush will grow to around 1.5m. The branches are rigid and often carry spikes. The fleshy, oval leaves are 2–4mm long and are a characteristic blue-grey colour.

### Cotton bush (*Maireana aphylla*)

Cotton bush is the third most common variety of Maireana in the Upper North region and typically colonises undisturbed ground later than either Yanga bush or bluebush.

This variety of Maireana grows to roughly 1.5m and is characterised by its almost complete lack of leaves. For this reason, it is also known as 'leafless bluebush'. Where leaves are present they are usually 1–4mm long. The stems have spines.

## Control options

### Chemical

- » At present, there are no herbicides registered to control Maireana

### Grazing

- » Although Maireana are sometimes used as fodder shrubs, many species are not particularly palatable and livestock can be reluctant to graze on them until they become more familiar with them. Maireana will tolerate heavy grazing, but contain high levels of oxalates (9–12 per cent in the leaves), which can prove toxic to livestock. These shrubs also contain potentially high salt levels.

### Cultivation

- » Cultivation can be used to control Maireana. Mechanical disturbance, such as using prickle or disc chains, can also be used to break up the shrubs.



# Cropping clean-up control Maireana

## Barry Mudge, Port Germein

Maireana grows as a weed on Barry Mudge's property near Port Germein. Early colonising varieties appear on land removed from the cropping phase for more than one year, growing first along the fence lines then spreading towards the middle of the paddock. Maireana can quickly colonise entire paddocks, depending on how many years the land is left uncropped.

Barry has found applying a mix of glyphosate and metsulfuron to clean up paddocks during spring, before they come back into the cropping program, offers a successful control option. This may need to be followed by cultivation with either a chisel plough or a blade plough.

For thicker and more-difficult-to-control infestations, Barry uses further mechanical disturbance with prickle or disc chains to break up the dead plants. This stops the residual woody stems from causing problems during sowing.



Maireana growing on Barry Mudge's property. Maireana, alongside species such as saltbush and cannon-ball, will colonise undisturbed soil. Photo: Hannah Mikajlo (UNFS).

## References and further information

- » Botanic Gardens of South Australia plant database (2007). [Click](#)
- » G. M. Cunningham, W. E. Mulham, P. L. Milthorpe & J. H. Leigh (1992) *Plants of Western New South Wales*, Inkata Press.
- » Department of Water, Land and Biodiversity Conservation (South Australia) *Saltland Pastures for South Australia Manual* (2007). [Click](#)
- » Electronic Flora of South Australia *Maireana* genus fact sheet (2007). [Click](#)
- » Jason Emms (SARDI) (2008), Small leaf bluebush factsheet, collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia. [Click](#)
- » Florabank *Maireana brevifolia* fact sheet (c. 2010). [Click](#)

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