

# Management of weedy *Sporobolus* grasses at Byfield

## CASE STUDY

WaterPark Farm owner-manager Jordan Slarke has successfully minimised weedy *Sporobolus* grasses (WSGs) through a single herbicide treatment followed by successive fertiliser applications.

This fertiliser-based approach has resulted in the following benefits, which may not have been possible with herbicides alone:

- competitive desirable pasture species
- higher potential livestock weight gains
- improved soil health
- longer term sustainable outcomes.

Mixed grazing and tea-tree plantation



Australian Government



Queensland  
Government



Left to right: Dense, low-productivity WSG; WSG seed heads; Scattered WSG and pasture competition

## About WaterPark Farm

WaterPark Farm is located in Byfield, 78 km north-east of Rockhampton, in Central Queensland. The property features 97 ha of predominantly humidicola (*Urochloa humidicola*), as well as other improved pastures, on poor-fertility clay Wallum soils. Grazing occurs across the property, although there are also lightly grazed tea-tree plantation areas.

The area's mean annual rainfall is 1677 mm (Bureau of Meteorology, accessed 11 March 2019).

## The problem

Giant Parramatta grass (*Sporobolus fertilis*), a WSG, was widespread across the property's cleared pastures. Pastures generally comprised 50 per cent giant Parramatta grass, although some areas had higher densities, which severely reduced livestock productivity.

## Management

### Early attempts—herbicide only

In the beginning, Jordan attempted to control WSG with flupropanate, using a spreader from a quad bike.

Results were visible in less than 12 months, but had only moderate kill rates. Follow-up was inconsistent, due to other farming priorities, so initial efforts provided no sustained benefit.

### Fertiliser trials

To fit in with competing demands on his mixed-use farm, Jordan sought alternative management options with lower labour input. In conjunction with the Department of Agriculture and Fisheries (DAF) and Livingstone Shire Council, he conducted a trial incorporating fertilisers into his pasture management regime.



In 2014–15, a single application of flupropanate was applied at label rates across some of the higher density infestations. After a test fertiliser strip was applied, sites received an application of diammonium phosphate (DAP) fertiliser and urea (each 250 kg/ha), which was repeated a year later, and for a third time in 2016–17.

Aerial application of the flupropanate cost about \$250/ha (a one-off cost), and the annual fertiliser cost was \$300/ha (for each of the 3 years).

## Results

While Jordan had limited success controlling WSG with a single application of flupropanate alone, he found that a combined application of herbicide and fertiliser created gaps in the WSG that enabled a competitive pasture response.

### Proportion of desirable pasture species to undesirable WSGs

Pasture dry matter on the fertilised site was 4456 kg/ha, 67 per cent greater than the 2664 kg/ha on the unfertilised site.



Byfield's pasture fertiliser response and matting

Fertiliser also enhanced the proportion of desirable pasture species to undesirable WSGs—humidicola comprised 93 per cent of the pasture in the fertilised area, but only 40 per cent in the unfertilised area and well below 20 per cent in the unfertilised, unstocked area. By August 2017, WSGs accounted for only 2.8 per cent of pasture in the fertilised area and 6.5 per cent in the unfertilised area, but 50 per cent in the unfertilised, unstocked area.

	Unfertilised site	Fertilised site	Unfertilised, unstocked area
Pasture dry matter	2664 kg/ha	4456 kg/ha (67% increase)	
Humidicola	40% of pasture	93% of pasture	<20% of pasture
WSGs	6.5% of pasture	2.8% of pasture	50% of pasture

## Pasture quality

Jordan found that an improvement in pasture quality was another benefit of fertilising pastures containing WSGs. Both crude protein and digestibility of the pasture were improved by fertiliser, especially during the summer growing season. Furthermore, WSGs were observed to have been grazed more by cattle after fertiliser treatment, if sufficient stocking rates were applied.

Jordan was impressed with the results.

‘The fertiliser option provided a tight but positive return on investment’, he said. ‘The use of fertilisers has given us an alternative to using only herbicides. Cattle weight gains and improved soil fertility and health was an added bonus.’

Jordan also observed very successful management of WSGs by using commonly available fertiliser at economical rates—this led to increased pasture productivity and quality.

‘Going forward, we will only need to use fertilisers periodically to maintain competitive desirable pasture and low levels of WSGs.’

## Lessons learned

1. Control of WSGs is enhanced when competitive desirable pastures are promoted through management actions.
2. Fertilisers may provide an alternative or complementary option to herbicides in country with higher annual rainfall (best results above 800 mm).
3. Costs and benefits of using fertilisers as part of a management regime for WSGs will vary, so it is important to seek expert advice.
4. The use of fertilisers may substantially reduce the time needed for WSG management, minimise ongoing herbicide costs and improve pasture productivity.



Byfield livestock

## Acknowledgements

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The case study cites trial results from Reeve, J, Buck, S & Childs, L 2017, *The potential for fertiliser to control weedy Sporobolus spp. in Central Queensland: results from Byfield*, 14th Queensland Weed Symposium, Port Douglas, Queensland, Australia.

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