

# Case Study

Greater Sydney LOCAL LAND SERVICES

## Pasture Trial

With more than 6,000 beef farms in the Greater Sydney region as well as large numbers of sheep, horses and other livestock on properties, it is important landholders have access to information and advice on all aspects of sustainable grazing, including pasture production. There are many factors that can compromise the quality and quantity of pasture production in grazing systems. These include drought and natural disasters, weed spread, overgrazing, pest damage and so on. Choosing the right pastures species combined with building good soil health is a fundamental consideration for any grazier looking to sow, rejuvenate or recover their pastures.

### Trialing the effect of compost and irrigation on different pasture species blends.

#### Trial design

The aim of this trial is to observe the response of selected pasture blends with the application of compost and irrigation. Four pasture blends are utilised in this trial: Cattle and Sheep blend, Hawkesbury blend, Windsor horse blend and Native grass blend. These blends were selected to reflect not only the grazing enterprises in the Greater Sydney region but also the combination of grass and legume species appropriate for parts of the region. These blends also consist of species that provide key benefits in quality and production, increased persistence, disease resistance, palatability etc. The native grass blend was chosen for forage quality and tolerance to drought.

The trial is being conducted at the Greater Sydney Local Land Services Demonstration farm in Richmond and consists of 16 plots measuring 9 x 18m. Each plot consists of the four pasture blends and are treated in one of four ways; irrigated, composted, composted and irrigated and no treatment (control site). The trial also planted single seed lines to showcase the selected pasture species.

#### Trial establishment

Prior to sowing, planning and preparation was undertaken and included

- 1) Seed bed preparation for the plots included deep ripping, discing and rotary hoeing.



- 2) Soil sampling. The soil test results showed a sandy clay loam soil with a pH of between 5.4 to 6, the soil has moderate fertility with low levels of nitrogen, calcium and sulphur, as well as trace elements, boron and copper.
- 3) A selective herbicide was used to control broadleaf weed to assist grasses to establish.
- 4) Fertiliser and soil amendments were applied. A granular fertiliser, CropLift 15 and a single superphosphate was applied to all plots. Due to low levels of calcium, lime was blended with compost and applied at 2-2.5 tonnes per hectare and incorporated 80-120mm into the soil profile. To reduce potential compaction, these two soil amendments were combined to limit the number of times that machinery passed over the plots treated with compost (see above photo).

The trial site was sown using a Cone seeder to direct drill seeds with rollers and settle the seed into the seed bed. The sowing rate varied from 3-30 kgs per ha, depending on the species. After sowing, external fencing was installed to prepare for the livestock to be introduced to manage

pasture growth. Maintenance of the site includes 10mm of irrigation 2-3 times a week over the irrigated treated plots. No additional fertiliser has been applied since the preparation phase, however, some further broadleaf weed control has been undertaken.



### Field day

After the trial site was sown, more than 70 people attended a field day on the 11 September 2019 to hear about the pasture trial as well as the stages and techniques required for pasture establishment. The attendees consisted primarily of graziers, with a smaller number of industry and educational advisors. In a follow up survey, more than 95 per cent of respondents said they would make changes as a result of attending the event. For many of the attendees, the field day reinforced the importance of adequate planning and preparation prior to sowing, particularly in conducting a soil test. "What stood out for me on the day was how much time you need, and the level of preparation involved to sow and establish your pastures. pasture nutrition and production" (grazier-Ross). The field day also demonstrated best sowing practices. Although machinery was used in the trial, the information shared on the day demonstrated how a grazier without machinery could undertake the practices manually.

### Preliminary results

Initial results of the pasture trial showed a high percentage of weedy annual grass species. These are annuals such as summer grass, crabgrass and crowsfoot grass that emerged on all plots during the summer period, making it difficult to identify the sown species. Given the extreme heat, low humidity and drought conditions over the summer period of 2019/20, followed by torrential rainfall in February 2020 (over 300mm in a relatively short period of time), it is important that the site responded with good ground cover

despite the weed presence. Ideally, weed control is required up to two years prior to sowing in order to reduce the soil seed bank of weed species. (Department of Primary Industries, 2016. Temperate perennial pasture establishment guide). This initial result in the trial reflects real-life scenarios for many graziers. The weeds have diminished over autumn and winter 2020 with sown species emerging (see below photo). Over time, the weed seed source will be reduced further by increased competition with sown species as well as follow up weed control.

Other initial results include patchy germination across some of the plots regardless of the treatment. This patchy germination is most noticeable in the native grass plots. There are any number of reasons why this might occur such as seed suitability and viability, sowing rate, depth of planting, soil conditions including pH and therefore it is difficult to determine the exact cause.

### Next steps

Sheep will be used to manage pasture growth within the plots using a combination of electric and wire mesh fencing. Plots will be re-assessed for suitability and some plots may be re-sown with more suitable species. The plots will then be monitored and grazed according to the extent of pasture cover and height. These plots will then be monitored to gather data on ground cover density and record observations of pasture recovery. A follow up soil test will be undertaken to make comparisons with the baseline soil test results to observe how the soil has responded to the application of fertilisers and soil amendments. Additional soil amendments will be used as determined by the new soil test results.



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