

Experiences with the establishment and grazing of tropical grasses on the North-West Slopes of New South Wales

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Abstract. *'Springfield' is a beef cattle operation running breeding cows and growing the progeny through to feedlot weight. Trade cattle are also bought and taken through to feedlot weight. Temperate grasses have been planted in pasture mixes over the years with limited success, as persistence has been a big problem. Our goal is to establish a pasture that gives us performance as well as persistence. The tropical grasses we have planted thus far seem to be giving us both performance and persistence.*

Outline of the farming system

I have been running 'Springfield' and 'Red Hill' together in conjunction with my father, Graham Bowman, for the past eight years. These properties cover approximately 2,400 ha. We are located on the upper slopes of the North-West Slopes and Plains between Barraba and Manilla. Our elevation ranges from 500 m to 800 m and average annual rainfall is between 650 mm to 700 mm. It is a beef cattle operation running predominately 650 Angus and Angus-cross cows whose progeny is destined for the feedlot and domestic markets. We also have scope in our operation to trade cattle when the opportunity arises.

The soils on 'Springfield' and 'Red Hill' are predominately clay-loam, high in phosphorus but with low sulphur levels. Fertiliser history on pastures on the properties includes the application of SF45 every 2–3 years, and other necessary applications of nitrogen (N) fertiliser on improved pastures as required.

Experience with temperate pastures

Typically, temperate pastures have been introduced to paddocks after 3–4 years of grazing-oats. Generally a lucerne/clover mix was planted under a cereal cover-crop, or a lucerne/clover/phalaris mix was planted after a summer-fallow. Germination was often good and the pastures performed well for 2–5 years.

With the lucerne/clover mix, after some years, lack of ground-cover was causing sheet erosion and damaging our soils. Lucerne plants were diminishing and native grasses were starting to establish themselves. With the lucerne/clover/phalaris mix, phalaris was not persisting and was unable to make it through the dry times, and then we ran into the problem (as with the lucerne/clover mix) of lack of ground-cover resulting in sheet-erosion. During the 5–10 year age of the pasture, native grasses, mainly wire grass and red grass were establishing back

into the pasture and starting to dominate.

Fletcher MaxP tall fescue has also been planted and it is persisting well. However, we are getting only limited grazing from it as rainfall events have not favored its growing-season since it was planted.

Experience with tropical pastures

In 2005, a paddock was selected to plant tropical grasses after hearing some good results from Lester McCormick's (NSW Department of Primary Industries) trials. This paddock was selected because it was probably the worst paddock on the property and was very susceptible to sheet-erosion. The paddock had gone through the lucerne/clover phases where it experienced terrible sheet-erosion and was at the end of a four-year grazing-oat phase, with the last year being locked up for harvest of grain. Tropical grasses were drilled into the oat-stubble after the grain was taken off and before a predicted rainfall event. Problems arose with establishment of these pastures as volunteer oats and barnyard grass out-competed any tropical grass.

This pasture was left till the beginning of the next summer and sprayed out and planted again – this time establishment was successful. The pasture has performed well and established on the sheet-erosion areas of the paddock. In the sheet-erosion areas, there has been an increase in the number of plants per square metre, and organic matter is starting to build up in those areas giving us more ground-cover. In the areas with better soil fertility, the pasture is well established and early indications show it is getting thicker.

Establishment of tropical pastures

The best establishment technique for tropical grasses we have found so far is explained below:

- Plant into an oat-crop stubble that has been grazed so that there is no oat seed left behind, but there is

sufficient stubble retention to protect the soil and prospective plants

- Control summer weeds 2–3 years before the pasture is to be planted
- Plant when the soil temperature is a stable 20°C (around October–November), or otherwise the appropriate temperature for the species to be planted.

Different seed depths and ground disturbance were trialed with high disturbance and shallow seed depth creating the best establishment in our soils. The ground can set very hard so there needs to be sufficient tillage for the seedling to get started. Our planter is based on the soil-flow system as it seemed to show the best results with the harder setting soils. The planter is a John Shearer Trashworker (chisel plow) with a 50 mm spear point, a deep banding fertiliser-boot and a shallower adjustable seed-boot where fertiliser can also be placed with the seed. A Garnelle in-frame press wheel is used to firm the seed and gain soil-seed contact.

We have used bare seed and had trouble with the flow of the material through the seeder, so a blend (1:1) of seed and fertiliser was used which rectified the problem. Since then, we have been using coated seed and have had good results. When planting, the spear point of the planter is put in at a depth of 75 mm to 100 mm and 70 per cent of the fertilizer is placed at the bottom of the trench. Some 30 per cent of the fertiliser and the seed are placed just in front of the press wheel and pressed into the soil so they do not get too much soil cover (0–10 mm is desirable). The seed then is ready for when it rains, and if you get a heavy rainfall event after planting, soil may wash into the seed trench but not give the seed so much soil cover that it hinders germination.

The most successful species have been Katambora Rhodes grass and Premier digit grass. A mix of Premier digit grass, Katambora Rhodes grass, Bambatsi panic, Gatton panic and Bisset bluegrass have been sown at rates of 10 kg/ha of treated seed.

Nitrogen applications in grass pastures

Nitrogen has been applied annually to the tropical grass pastures in the form of urea at a rate of around 50 units of N per hectare. This has given us good results and boosted growth dramatically. The application of N was not undertaken this year due to the prices, and established tropical grass pastures fell short in dry matter and feed quality.

Efforts have been made to broadcast subterranean clover into the pasture to fix some of the N required. This has had limited results as rainfall has been the limiting factor. Before broadcasting subterranean

clover you must have the canopy of the pasture opened up to allow the clover to germinate. Sowing a summer-legume like burgundy bean will be something we will try in the future.

Some facts of relevance from NSW Department of Primary Industries are:

- Compared with using nil N, 50 kg N/ha gave the highest increase in herbage production for Premier digit grass (147 kg herbage/kg N/ha) (S.P Boaschma, personal communication)
- Subterranean clover in a grazed pasture produces approximately 2 t herbage/ha/year – that is equivalent to about 40–50 kg N/ha for the tropical grasses (Boschma and McCormick 2008).

Animal performance from tropical grasses

Animal performance has been good with the rates of growth a little less than 1 kg/head/day. This is a little lower than growth rates from temperate pastures and legumes, but the tropical pasture is able to hang on for a longer period of time. I am able to use tropical grasses when legumes have a risk of bloat in cattle, this still gives me a pasture with good performance. When the period of bloat-risk has passed, I am then able to put cattle on the temperate legumes.

The future

We will be trialing organic and biological ways to provide soil fertility. Composts and organic minerals will be used to provide the pasture with its nutrients. Companion planting with summer-legumes will be something else we will pursue.

Conclusions

Tropical grasses have a place in our pasture program because of their performance and persistence. When establishing tropical grasses, attention must be given to correct sowing time, weed control (24 months in advance) and sowing depth. These factors along with a little moisture should produce a robust pasture. When established, a lack of N is the main factor limiting performance.

References

- Boschma SP, McCormick LH (2008) Towards a tropical grass package for northern New South Wales. In 'Proceedings of the 23rd Annual Conference of the Grassland Society of NSW'. (Eds SP Boschma, LM Serafin, JF Ayres) pp. 51–57 (Grassland Society of NSW Inc.: Orange)