Dryland Pasture Legume Systems - Case Study

Brett Broad
Wongoondy

Farm Size: 8800ha

Rainfall: 320mm

Growing Season Rainfall: 250mm

Crop & Pasture Area:
- Crop 5000ha
- Improved Pasture 1000ha
- Natural Volunteer Pastures 2800ha

Main Crops:
- Wheat (60%)
- Lupins (30%)
- Barley (10%)

Main Pastures
French Serradella (60%)
Sub-Tropical Perennial Pasture Grasses

Livestock System:
1500 self-replacing Merino Ewes
30 Angus X cows

Lambing Date:
20th May - onto improved pastures

Grazing Strategy:
Rotationally grazed - rotations vary based on food on offer, season and herd size.

What improved pastures are you incorporating into your grazing program?

In 2005, the first sub-tropical perennial grass pastures were planted to make use of sandier soils. In 2017, 300ha was planted to a pasture mix including Margarita Serradella, Hykon Rose Clover, Ismir Sub-Clover and Dalkeith Sub-Clover. Of these the serradella and the rose clover performed the best and were planted again. This system has developed and now just serradella is planted each year.

Why did you start growing dryland pasture legumes? What was the reason for change?

Number one reason was to improve livestock nutrition in pastures. Previously, annual volunteers (mostly weeds like cape weed, blue lupin, wild radish and ryegrass) were relied upon for pastures. Nutrition in this was low and stocking rates were not as high. By adding serradella into the system, there is also the benefit of extra nitrogen where lupins traditionally did not do very well. Weed management was also a consideration for change as previous pasture rotation only allowed for weed seed bank to increase.

Margarita serradella at Broad's property in November 2021

Self regenerated serradella in wheat stubble after harvest 2021. Serradella is adding extra benefit to traditional stubble grazing after harvest.

Dryland Pasture Legume Systems - Case Study

Serradella paddock where there has been a blocked seeding head. The bare area represents what the entire paddock would look like if left to volunteer annual pastures

Brief history of pasture improvement

In 2005, the first sub-tropical perennial grass pastures were planted to make use of sandier soils. In 2017, 300ha was planted to a pasture mix including Margarita Serradella, Hykon Rose Clover, Ismir Sub-Clover and Dalkeith Sub-Clover. Of these the serradella and the rose clover performed the best and were planted again. This system has developed and now just serradella is planted each year and own seed is harvested for summer sowing the following season.

Why did you start growing dryland pasture legumes? What was the reason for change?

Number one reason was to improve nutrition in pastures by not relying on annual volunteer pastures (cape weed, radish, ryegrass etc.). Also there is the added benefit of nitrogen fixation from a legume added to the rotation. Weed control also becomes easier as serradella brings the option of imi chemistry and selective herbicides that don't compromise biomass of the pasture.

What is the history of your most improved paddock?

- 2018: Margarita serradella, 300mm growing season rainfall (GSR), summer sown
- 2019: Scepter wheat, 150mm GSR, 30kg of Nitrogen, yield 1.5t/ha
- 2020: Margarita serradella, 250mm GSR, summer sown
- 2021: Chief wheat, 260mm GSR, 40kg of Nitrogen, not yet harvested

What have been the observed benefits?

Profit - ability to run more livestock. Crops do better with less nitrogen fertilizer applications.

Weeds - still in the process of tidying things up. Radish seems to be under control but still figuring out ryegrass management.

Nitrogen - Using less nitrogen fertilizer in comparison to continuous cropping paddocks (roughly 20 kg N less, depending on conditions)

Soil Improvement - Improving traditionally poor soil types. Reduced summer erosion compared to lupin stubbles.

Risk - Reduced risk in comparison to lupins. Even poor serradellas can be grazed where poor lupins don't always do well.

Animal Health - More food on offer, increased quality, higher lambing and weaning percentages, growth rates are higher. Overall animal nutrition increase has resulted in anecdotally better wool clip.