# Alternative Pasture in the Upper North

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RESEARCH

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**Location:**
Upper North
Farmer: Gilmore Catford
Upper North Farming Systems
**Rainfall**
Av. Annual: 325 mm
Av. GSR: 233 mm
2010 Total: 379 mm
2010 GSR: 255 mm
**Yield**
Potential: 3.2 t/ha (W)
Actual: 3 t/ha Wheat (farmer Paddock)
**Paddock History**
2009: Fallow
2008: Fallow
**Soil Type**
Alkaline, red clay loam
**Plot size**
15 m x 2.2 m x 4 reps
**Livestock**
Enterprise type: Crossbred lambs
Stocking rate: 4 DSE/ha
Type of stock/breed: 1st cross Merino
**Water Use**
Water use efficiency: 11.7 kg/ha/mm

## Key messages

- **Amount and quality of feed are important considerations when grazing livestock.**
- **Trade off between dry matter produced and nitrogen fixed by legumes.**
- **Barley and canola/vetch had fastest early growth rate to mid August.**
- **Oats/vetch and canola had the fastest growth rate between August to September.**
- **Alternative pastures produced more dry matter overall than current medic varieties.**

## Why do the trial?

In low rainfall areas, growth and development of annual regenerating medic pastures is often slow due to hard seed content and naturally slow early growth rates. In the Upper North this often occurs under cold conditions resulting in delayed development until warmer temperatures and longer days later in the season enable faster growth rates and more dry matter production. Medic pastures often provide an abundance of feed at a time when growers already have a lot of feed. This trial was established to compare the growth rates and dry matter production of alternative pastures with traditional medic pastures, attempting to provide more feed earlier in the growing season to help reduce the 'feed gap' between late summer and winter.

## How was it done?

The treatments included in the trial are shown in Table 1. A range of alternative pastures were selected including some pod retention medic varieties (Cheetah barrel and Jaguar strand). All treatments were sown on 6 May at appropriate seeding depths into soil with a dry surface but moist seed bed. Medic plots were scratched into the surface and were sown in two passes (half seed and fertiliser rate each time) with the second pass being sown 'inter-row' of the first (to simulate a regenerating pasture). DAP was applied at 50 kg/ha to all plots at seeding. The site was treated with 1 L/ha PowerMax and 50 mL/ha Lemat prior to seeding. A follow up application of 500 mL/ha Select, 250 mL/ha Targa and 1% Hasten was applied on 3 July.

Pasture cuts were taken from each treatment at various stages during the growing season to determine dry matter produced per hectare. Each sample was dried and weighed. These measurements were also useful to compare growth rates between treatments. Plots containing oats and barley were harvested on 19 November while all other treatments were harvested on 23 November.

## What happened?

Barley and canola/vetch produced the greatest dry matter by 21 August and also had the fastest growth rates of all treatments. Oats/vetch had overtaken barley, canola/vetch and canola by 28 September and remained the highest producer all season (Figure 1). Table 2 includes the total dry matter produced for all treatments until the beginning of November.

After 28 September, growth rates of oats/vetch, peas and Cheetah medic began to plateau while canola, vetch and Angel medic SR2 began to decline, indicating senescence of plant material had occurred. This means less dry matter that livestock could consume. Dry matter of barley and canola/vetch however continued to keep increasing.

Figure 1 shows that canola/vetch had a more steady and consistent growth rate than canola when grown alone. Overall dry matter was the same by 4 November, however the vetch in the mix would have increased the quality of the feed. In terms of plant establishment in the canola/vetch mix, the ratio was approximately 5:1. Although canola plants were superior in this mix, vetch still added value to the pasture.

*Table 1 Treatments sown in the Morchard pasture trial 2010*

| | Treatment | Seeding rate (kg/ha) |
|---|---|---|
| **1** | Jaguar medic | 10 |
| **2** | Tarcoola canola | 4.5 |
| **3** | Wintaroo oats + Morava vetch | Oats: 60<br>Vetch: 20 |
| **4** | Angel medic sowing rate 1 (SR1) | 10 |
| **5** | Hindmarsh barley | 60 |
| **6** | Cheetah medic | 10 |
| **7** | Angel medic sowing rate 2 (SR2) | 20 |
| **8** | Oasis juncea | 4.5 |
| **9** | Morgan forage peas | 100 |
| **10** | Jester medic | 10 |
| **11** | Tarcoola canola + Morava vetch | Canola: 2.5<br>Vetch: 25 |
| **12** | Morava vetch | 30 |

Of the medic varieties grown, Angel SR2 produced slightly more dry matter by 21 August however by 28 September Angel SR1 had a slight advantage and continued to all season. Cheetah and Jaguar medics (pods retained on plant runner so they can be harvested with a conventional header) competed well with traditional varieties throughout the season, until the last month when they remained greener for longer and maintained their bulk (as is their nature). The higher seeding rate of Angel SR2 (compared with Angel SR1) appeared to cause Angel SR2 to senesce (die off) earlier.

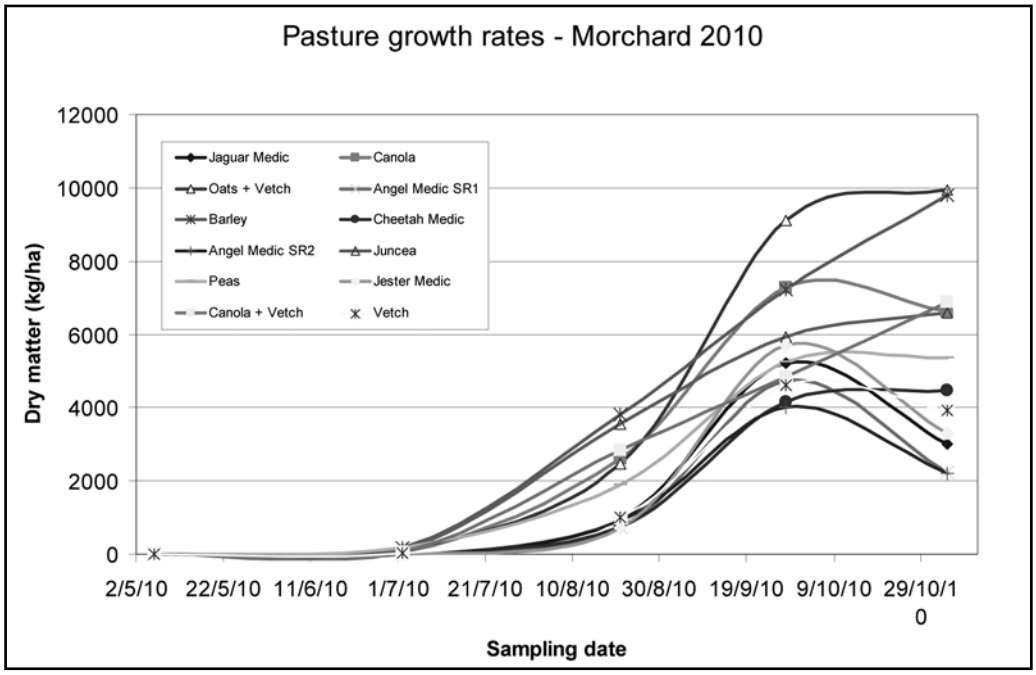


***Figure 1 Dry matter production and growth rates for selected pastures grown at Morchard to 4 November 2010.***

*Table 2 Full results of pasture dry matter production at Morchard up until 4 November 2010*

| Treatment | Dry Matter (kg/ha) | | | |
|---|---|---|---|---|
| | 2 July | 21 August | 28 September | 4 November |
| Angel medic SR1 | 0.6 | 748.9 | 4719.4 | 2243.1 |
| Angel medic SR2 | 0.7 | 914.3 | 3997.3 | 2218.8 |
| Cheetah medic | 0.7 | 751.1 | 4158.0 | 4479.1 |
| Jaguar medic | 0.7 | 956.7 | 5217.9 | 3013.9 |
| Jester medic | 0.7 | 710.9 | 5710.3 | 3288.2 |
| Tarcoola canola | 64.6 | 2603.1 | 7263.9 | 6604.7 |
| Canola + vetch | 68.8 | 2825.9 | 4839.8 | 6879.4 |
| Oats + vetch | 145.8 | 2457.9 | 9113.6 | 9949.6 |
| Morava vetch | 40.3 | 998.3 | 4602.8 | 3923.6 |
| Oasis juncea | 100.7 | 3562.8 | 5923.8 | 6578.2 |
| Hindmarsh barley | 159.7 | 3806.3 | 7210.8 | 9794.9 |
| Morgan peas | 159.7 | 1891.3 | 5238.2 | 5365.4 |

## What does this mean?

Some of the alternative pastures (to medics) such as oats/vetch, barley and canola produced more dry matter; however they also required nitrogen to achieve this. Medic and vetch based pastures fix atmospheric nitrogen in the soil; however non legume based pastures cannot do this. Therefore the cost of nitrogen must be factored in.

The benefit of legumes in a rotation is an important consideration, not only for nitrogen fixation but also for a root disease break. In 2010, in low rainfall areas, the benefits of legumes grown in 2009 really showed up in 2010 wheat crops. Therefore if some non-legume pastures are grown to maximise dry matter, the absence of suitable disease breaks and cost of additional nitrogen must be considered.

Barley and canola/vetch had the fastest early growth rates of all treatments meaning these feed sources would have helped reduce the feed gap in this season. While pastures cannot be grazed immediately from emergence, barley and canola/vetch would have provided feed for livestock for around three to four weeks before medic pastures could have been grazed. This would reduce the amount of time spent supplementary feeding livestock to prevent them grazing poor quality pastures in autumn and losing condition.

Areas in plots where dry matter cuts were taken indicated how well these pastures would recover from grazing. All medic varieties recovered well from early and late grazing throughout the season, as did cereals; however Morgan forage peas and canola/vetch pastures only recovered from early grazing.

While medic pastures have feed quality benefits and are tolerant to grazing and trampling, particularly in good seasons like 2010, some alternative pastures have other advantages such as providing abundant feed early in the season and allowing livestock to graze earlier and for longer periods. While medic pasture is high in quality and has benefits for paddock rotations, a grazier must be patient for it to grow bulky enough before it can be grazed.

When pasture production reaches its peak in mid-late spring, growers often struggle to utilise all the available feed due to insufficient livestock. In favourable seasons such as 2010, cutting some paddocks for hay (or making silage) is a good option to ensure plenty of feed is on hand for when grazing options are scarce.

In a drier season or on a different soil type, the above results and trends are likely to be different, however the relative comparisons between different pasture types is likely to remain similar.


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## Product acknowledgement

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