

6.2 Evaluation of forage varieties in a cropping system - Mininera, Vic

Location: Mininera Research Site.

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Background/Aim

With the evolution of cropping into medium-high rainfall zones, there is some thought required on the use of alternative crop rotation options other than wheat, canola and barley. The ever increasing impact of Wimmera Ryegrass, the fluctuating prices of Nitrogenous fertiliser and impact of root/leaf diseases, highlights the need to use strategic alternatives to manage these issues. The use of forage legumes (Clover, Medic, Lucerne and Vetch) can offer nitrogen fixation, high protein forage and provide grass control options. High density prolific annual grasses have rapid growth rates and feed production, outcompeting an array of weeds, while cereals can provide large amounts of Dry matter and bulk, for relatively less rainfall. Hybrid forage rapes offer cold growth habits, quality forage and provide some natural fungicide properties in soils.

Take home messages:

- Mitika Oats and Grassmax Annual Ryegrass produced higher amounts of Dry Matter (5.36t/ha & 4.69t/ha respectively) when compared to all other forage types evaluated.
- Leafmore Hybrid type Forage rape produced 3.29t/ha DM
- Rasina Vetch produced 2.94t/ha DM with Zulu II Arrowleaf 2.43t/ha DM.
- A later sowing combined with a dry spring produced large variances, and lower DM yields than expected.
- More work required to show possible yields, both as monocultures and as mixes for rotational options

Rainfall:

Avg. Annual: 589.7mm, Ararat Prison 1969-2008

Avg. G.S.R.: 449.4mm, Ararat Prison 1969-2008

2008 Total: 534.0mm, Mininera Research Site

2008 G.S.R.: April – November = 330.5mm

Paddock Preparation: burnt wheat stubble

A randomized block design of 4 replicates, using 20m x 1.8m plots was used.

Sowing: 14th May 2008. Direct drilled using SFS cone seeder. Clover, Lucerne and Medic seed Agristrike coated with Gaucho. Leafmore Rape Gaucho treated.

Fertiliser: 75kg/ha MAP at sowing

Pesticide:

3/7/08 Fastac + Dimethoate- For extreme Lucerne Flea and Aphid pressure
Clover/Lucerne/Medic - Verdict/Select- Wimmera Rye, Vol Cereals
Cereals/Grass/Luc/Clover - Broadstrike/Buttress

Cuts: 4/11/08 - Cut whole plot, weigh. 100g Sample dried and weighed. DM calculated.



Above: From Planttech - Hayden Finlay, Lachlan Broad & Cam Conboy

Varieties: (Brackets denotes sowing rates)

Angel SUT Medic (10kg/ha)- Early- mid season strand type medic. Whilst medics are traditionally suited to neutral to alkaline pH soils, Angel has been bred by SARDI to tolerate soil residues of Sulfonyl Urea (SU) herbicides such as chlorsulfuron, metsulfuron-methyl and triasulfuron. With some of our weed spectrums, this may prove an attractive option if viable yields can be obtained.

Pegasis HWA Lucerne (5kg/ha) - Pegasis is a highly winter active (9) Lucerne, with a low crown for grazing persistence. Its rapid seedling vigour and winter growth, make it an ideal option for 3-5 year cropping phase. Lucerne produces large amounts of out of season feed with high nitrogen fixation rates.

Leafmore Forage Rape (5kg/ha)- Brassicas have traditionally been a spring sow option, but may have a fit for winter crop rotations, high quality stockfeeds- as a solo crop or in a mix. Leafmore has improved cold tolerance and quick regrowth post grazing. The natural biofumigant properties of a brassica, combined with flexible grass control options, make it an alternative rotation.

Morava Vetch (40kg/ha) - Mid-long season, purple flowered vetch, with nil hard seed. Ideal hay option to produce large amounts of bulk, assist in control of wimmera ryegrass and produce high protein feed that is in high demand by dairy farmers. Traditionally has been suited to medium rainfall cropping zones and alkaline soils - vetch tends not to handle wet cold winters and acid soils as well as some other forage legumes.

Rasina Vetch (40kg/ha) Early season purple flowered vetch, that also has nil hard seed for cropping rotations. Significantly shorter in season length than Morava, it is suited to later sowing or early finish for ryegrass topping. These vetches are suited to hay/green manuring rather than grazing.

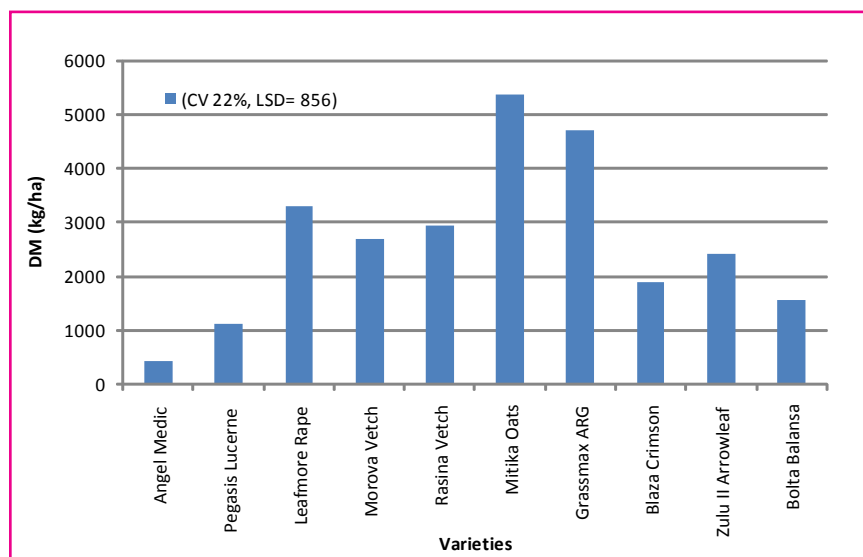
Mitika Oats (100kg/ha) Premium milling grain, dwarf oat. Mitika have a higher groat percentage and less lignin, making grain far more efficient for milling or stockfeed. Whilst forage oat varieties, such as Graza 51, will out yield for straight forage – research is examining opportunities from a grain and graze point of view.

Grassmax Annual Ryegrass (20kg/ha) Highly winter active diploid ryegrass. This ryegrass is densely tillered, making it an ideal hay rotation that actually outcompetes weeds, including Wimmera Ryegrass. Can be mixed with clovers to provide extra protein, and is still susceptible to grass herbicides when the time comes to remove it for cropping.

Blaza Crimson Clover (10kg/ha) Annual clover with early-medium growth habit. Suited to low fertility or opening a paddock up, Blaza is a low, prostrate clover.

Zulu II Arrowleaf Clover (10kg/ha) Annual clover, with erect type clover. Ideal in mixes or to improve protein in hay mixes. Ideally suited to acid, loamy reasonably drained soils.

Bolta Balansa (5kg/ha) Longer season, annual clover. Prolific growth with potential for good seed set, the season length of Bolta suits hay production very well. Tolerates heavier soils and some water logging.

Results:**Figure 1:** Evaluation of Forage Varieties (Kg of DM/ha)**Table 1:** Dry Matter Yield (4 Nov 2008 cut date)

Variety	t/ha DM	Sig Diff
Angel SUT medic	0.445	g
Pegasis Lucerne	1.222	fg
Leafmore Forage Rape	3.290	b
Morava Vetch	2.688	bcd
Rasina Vetch	2.941	bc
Mitika Oats	5.361	a
Grassmax Diploid Ryegrass	4.697	a
Blaza Crimson Clover	1.888	def
Zulu II Arrowleaf Clover	2.432	cde
Bolta Balansa	1.570	ef
LSD= .856 (P=0.05)		
CV = 22%		

Means followed by the same letter do not significantly differ.

Discussion:

Like many comments for 2008, the later break and well-below average rainfall in spring, saw disappointing yield responses. In a better season, a winter cut followed by multiple measurements in the spring, would show some more promising yields (This would also assist in reducing variance within the trial, currently at 22%). Hardier plants such as oats and ryegrass were able to produce large amounts on lower amounts of rainfall, whilst shorter season annuals legumes such as vetch and arrowleaf clover had struggled to produce bulk, before flowering and before early December rains. Bolta Balansa, would have produced far greater amounts of dry matter with an average, wetter season. Forage legumes, generally need to be sown earlier to establish before the cold of winter, and develop root and rhizobia mass to fix Nitrogen. As the amount of nitrogen fixed is dependent on the amount of dry matter produced, more growth provides the benefit of extra hay/grazing yield and extra Nitrogen fixed. All the broad-leaf crops provided excellent opportunities for in crop ryegrass control, and also could have been cut to remove any remaining Wimmera Ryegrass populations. Pegasis and Leafmore both responded to December rains and would have offered some extra grazing options right until the time of writing this report.

**Above:** Fig 2; Harvesting forage trials at Mininera