Forages for a changing climate

Changes in our climate, such as recent summer rainfall and years of drought, has raised questions about the forage and pasture species we produce, As part of a local 'Forages for a new climate' project funded through Grain & Graze 2, we're trialling both traditional crops and more tropical species on a dryland basis as well as looking at how we might vary sowing timing, fertiliser regimes, crop selection, and length and timing of grazing to get better results.
If there is a change to climate patterns, such as warmer winters and wetter summers, we're offering options for farmers by trialling crops under different circumstances to see how they respond.

Three sites were selected across Northern Victoria – Kooloonong (dryland Mallee), Kerang (dryland but with the capacity to be irrigated) and Tungamah (dryland).

There is an immense range of potential crops and varieties that could have been included in the trials. From the traditional summer grasses such as millet and sorghum, winter cereals, new brassica hybrids and to temperate and tropical legumes; the range increases as if you start to go down the climate change path of more summer storms that may increase the chances of the crops actually surviving.

Originally we intended to look at approximately 30 options but sourcing seed is easier said than done, particularly for the legumes.
Another consideration is the cost of some of the options, and the chance that they will actually provide a return under dryland conditions. In hindsight, we may have gotten away with growing rice in the Mallee!

Given the seed availability and having a trial that was not too "blue sky", the following crop types/varieties were selected for sowing at the three sites:

Millets	
Shirohie (Japanese) Millet	Sown at 10 kg/ha
French Millet	Grain millet, sown at 10 kg/ha
Pearl Millet	Grazing millet, sown at 10 kg/ha
Sorghums	
Forghum	Forage sorghum sown at 10 kg/ha
Pacer	Grain sorghum sown at 10 kg/ha
Maize	Sown at 25 kg/ha
Winter cereals	
Hindmarsh barley	"Cheap", two sowing rates of 50 and 100 kg/ha.
Urambie barley	Winter habit, sown at 50 kg/ha
Wedgetail wheat	Two sowing rates of 50 and 100 kg/ha.
Brassicas	
Bouncer	Hybrid brassica (turnip x chinese cabbage) sown at 5 kg/ha
Taurus	"Dual purpose" winter habit canola sown at 2 kg/ha
Legumes	
Soys	Sown at 50 kg/ha

Mung Beans Sown at 30 kg/ha

The trials were sown on November 10 (Kerang), 11 (Tungamah) and 16 (Kooloonong). Rain fell on November 13-14 (30mm at Kerang). The plots were sown with 60 DAP kg/ha.

Locusts were sprayed at sowing (chlorpyrifos) and again approximately 2 weeks later with a chlorpyrifos/fipronil mix. Unfortunately many varieties were still eaten out by the locusts.

Assuming the moisture at sowing would produce some sort of growth but the likelihood of getting much follow-up rain was poor, it was intended that the plots were to be harvested when they were almost on death's door. As we all know, it didn't stop raining, then access to some of the trials became difficult in January. For the period November to February, Kerang received 374 mm, Swan Hill 325 mm and Yarrawonga 528mm.

Dry matter assessments were taken on February 17th, as well as grain samples for the mung beans.

The following dry matter and yield data should be regarded with caution as there is a high degree of variability in the trial results. However they can be used to give an indication of what can be grown given moisture.

All results are in t/ha. The millets and sorghum have not been harvested for grain yet.

Crop	**Kooloonong**	**Kerang**	**Tungamah**
Shirohie Millet			5.3
Pearl Millet	13.3		7.1
French Millet	3.7		
Mung Beans DM	4.0	6.3	6.1
Mung Beans Grain		0.9	0.4
Forghum	25.8	21.4	30.1
Pacer Sorghum	10.4	13.2	10.6
P	0.03	0.22	0.62
lsd	12.07	8.8	ns
cv%	46.5	28.4	54

Kooloonong site in March

Tungamah site in February