



Producer Demonstration Site

Maximising Pasture Production in a Variable Climate

2017 (Year 2)

Demonstration Site Report

Proudly Supported by:

Climate change is creating challenges for grazing business resulting in more variable seasons and pasture growth. The Barossa Improved Grazing Group (BIGG), Farmer Johns and Coopers Farm Supplies are working with producers over three years to develop a more reliable feedbase responsive to the changing climate through the Meat & Livestock Australia (MLA) Producer Demonstration Site (PDS) Project.

The aim of the three-year project is to:

- Increase annual pasture dry matter production and total grazing days on 15 properties across four sub-regions in the Barossa and Eastern Mount Lofty Ranges by establishing a feedbase that is optimised for variable rainfall patterns including late breaks, early finishes and out-of-season summer rainfall events

The demonstration sites provide information for the 'major' site component of the MLA PDS Project. This is the second year of the Project.

Background:

Three sites have been developed at Keyneton, Eden Valley and Koonunga. The sites are managed according to best practice land and soil management with soil testing, fertiliser and weed control performed prior and during the growing season. Sites were also fenced off to prevent grazing.

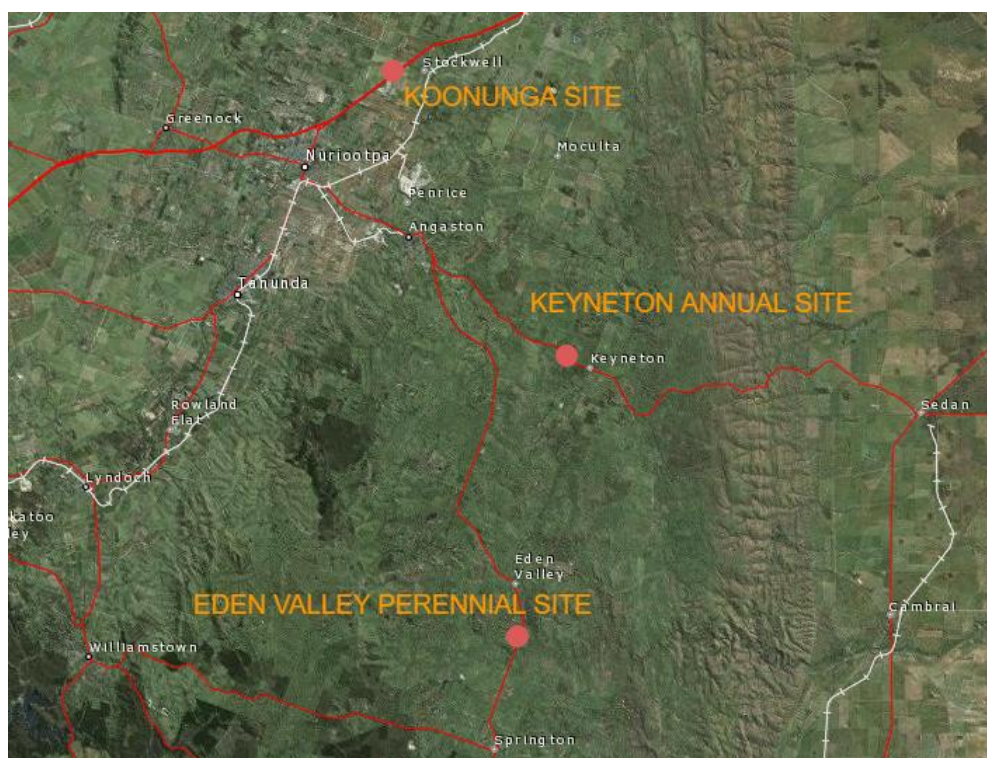


Figure 1: Map of the Major Producer Demonstration sites located in the Barossa Valley

Thank you must be extended to the producers who have provided their land, time and knowledge towards the outcomes of this Project helping to deliver improved pastures and grazing systems across the local area.

In addition, the support and guidance received from Farmer Johns, Coopers Farm Supplies, Pasture Genetics and Heritage Seeds has been invaluable.

Seasonal Condition 2017:

After an above average 2016 growing season, the 2017 season was very different with a very short growing season. According to the Bureau of Meteorology Annual Climate Summary for South Australia (Thursday 5 January 2017):

- Rainfall was above average in many parts of the state, but it was drier than average in most parts of the central agricultural districts (Figure 2)
- After a very wet end to 2016, the year began with South Australia's sixth-wettest January on record and resulted in the State's sixth-wettest summer on record
- South Australia had its driest March since 2003 and May, June, and July all had below average rainfall in most parts of the State
- South Australia's overall fifth-warmest year on record, with the State's mean temperature 1.02 °C warmer than average (Figure 3)

In summary, after an above average wet summer, the 2017 break came very late in June as opposed to the long term average or late April. This was followed by an average winter and slightly lower than average spring. This resulted in a short growing season, allowing significant differences to be seen between the 2016 year which delivered a long above average growing season.

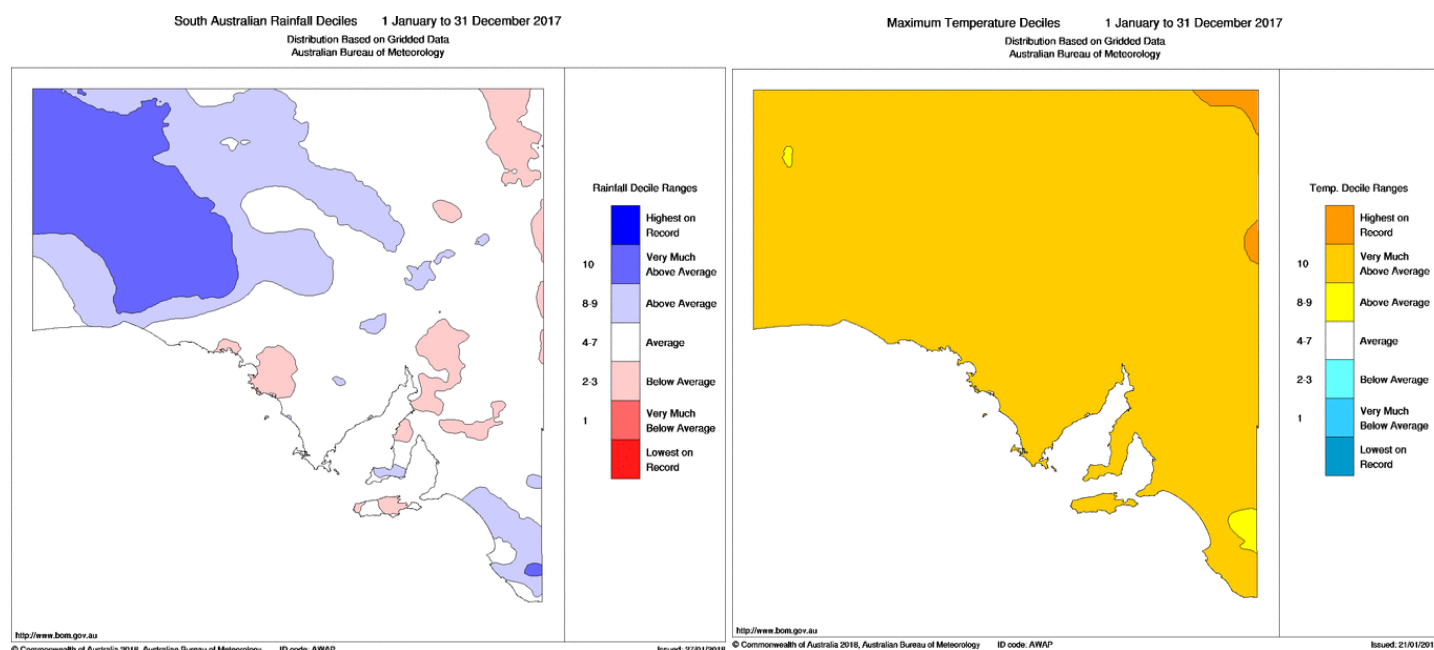


Figure 2: South Australia Rainfall Deciles 2017

Figure 3: South Australia Maximum Temperature Decile 2017

Source: <http://www.bom.gov.au/climate/current/annual/sa/summary.shtml>

Key Messages from Year 2 of project:

- In a short growing season, earlier varieties which establish and grow vigorously through the winter and early spring, produce high levels of dry matter and grazing days before the spring dries out.
- In the second year of production Lucerne varieties were producing over 6 tons Dry Matter per Hectare.
- Lucerne blended with chicory was producing the highest amount of Dry Matter per Hectare which was 1200Kg of Dry Matter per hectare more than the average for all Lucerne varieties. The chicory helps prevent bloat and provides additional vitamins and nutrients.
- The second- year perennial grass plots demonstrated the importance in having a mix of varieties to help increase annual grazing days. Both Farmer Johns blends for 550ml rainfall and 450 ml rainfall which contain mixtures of perennial grasses and clovers were producing the greatest dry matter per hectare over 700 kg/Dm/Ha above the average.
- Including ryegrasses with forage cereal varieties increases the total dry matter production, improves quality and provides opportunities for further grazing later in the season
- Increasing the seeding rate for a ryegrass hay and silage mix past 40kg/Ha will result in a decrease in dry matter, as will a low seeding rate below 10 kg/Ha.
- Using varieties which utilise current plant available water will increase number of grazing days and fodder conservation opportunities.
- Taking advantage of the above average year in 2016, when there is a large quantity of available pasture, provides the opportunity to allow annual sown paddocks to set seed, providing cheap pasture opportunities for the following year.



Early Moby Barley (left) and two self-sown from 2016 tetraploid ryegrass (middle) and Outback Forage Oats (right) in August 2017.

Koonunga Demonstration Site:

The Koonunga site is in red-brown sandy loam soil with adequate pH (6.4 CaCl₂) and marginal Phosphorus (35ppm Cowell). Prior to the demonstration site, the paddock was in an annual hay crop rotation with oats. Koonunga average annual rainfall is 450mm.

A selection of annual and perennial varieties were sown in 2016. All the perennial varieties continued growing through 2017 allowing persistence and dry matter evaluation of these varieties. The clover and medic plots from 2016 were left to evaluate their seed regeneration potential.

Annual varieties, Outback oats and Tetrone ryegrass were left in 2016 to go to head and their regeneration potential measured in 2017. Some new annual varieties including ryegrasses, brassicas and forage cereals were re-sown in 2017.

In addition, in October summer forage varieties bounty sorghum and rebound millet were sown.

The varieties and pasture mixes included:

- Annual varieties- 2 x brassicas and Moby barley sown 2017
- Annual ryegrass – 2 varieties sown 2017
- Lucerne- two varieties plus three mixes (barley, brassica and oats) sown 2016
- Clover/medic- 5 varieties (1x Cobra resown in 2017)
- Perennial grasses (phalaris, cocksfoot, fescue) and blends- 7 plots (2x resown in 2017)

The annual plots were sown on 1 May 2017 and the following inputs applied:

- 5 May- 60-70Kg/Ha DAP, 7kg Meta snail bait, 100ml/ha Verdict herbicide on legumes
- 29 May 15ml/Ha Matador insecticide
- 15 July 600ml/Ha status herbicide on legumes
- 22 August 60/70 kg/ha Gran-Am on grasses and cereals

Measurements took place on 19 August, 29 August, 19 September and 1 November. In addition, a grazing simulation using three lawn mown strips across the Lucerne and annual cereal/ryegrass plots were done through August and September.

All plots were measured using 0.1m² quadrant taking three random measurements across the plot with results averaged. Dry matter percentage was measured with 10% being used for annual varieties in August rising to 15% for the ryegrasses and 20% for the cereals in September. The Lucerne and perennial grasses were measured at 15% in August and 20% in September.



The Koonunga Major Demonstration Site in it's second year displaying over 20 different pasture varieties.

Koonunga seasonal conditions

The Koonunga soil probe is located approximately 10km north west from the demonstration site. The plant available water observed at the site indicates there was very little plant available water in the soil until the late break occurred in early June (Figure 4). However, this was followed by very little rain, so the soil moisture dropped until early August when it reached the total plant available water. This dropped off rapidly through October resulting in a short growing season. There was some follow up rainfall in November through December allowing perennial varieties and summer forage crops to utilise some available water.

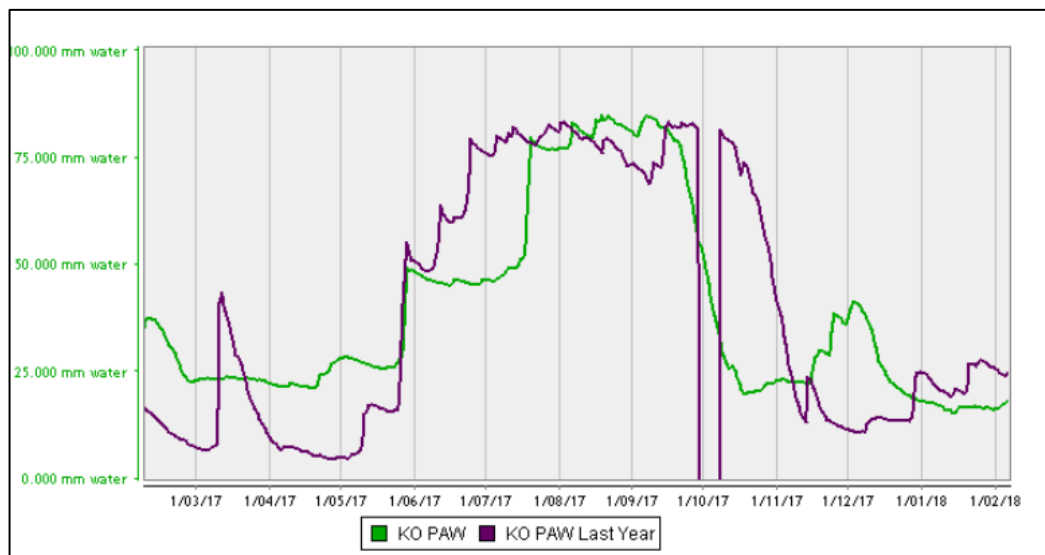


Figure 4: Annual plant available water from the Koonunga Soil Moisture Probe 2017.

Koonunga RESULTS:

Annuals:

Early varieties, such as Moby barley, can be utilised to provide feed through the early winter months, when many other traditional annual and perennial varieties are building up production for Spring. In August, Moby Barley produced 1500 Kg of Dry Matter per Ha more than the other annual varieties (Figure 5), however had gone to head by September. Interestingly, after two grazing's through spring, the barley was still producing 500 Kg of Dry Matter per Ha compared with areas ungrazed and only grazed once.

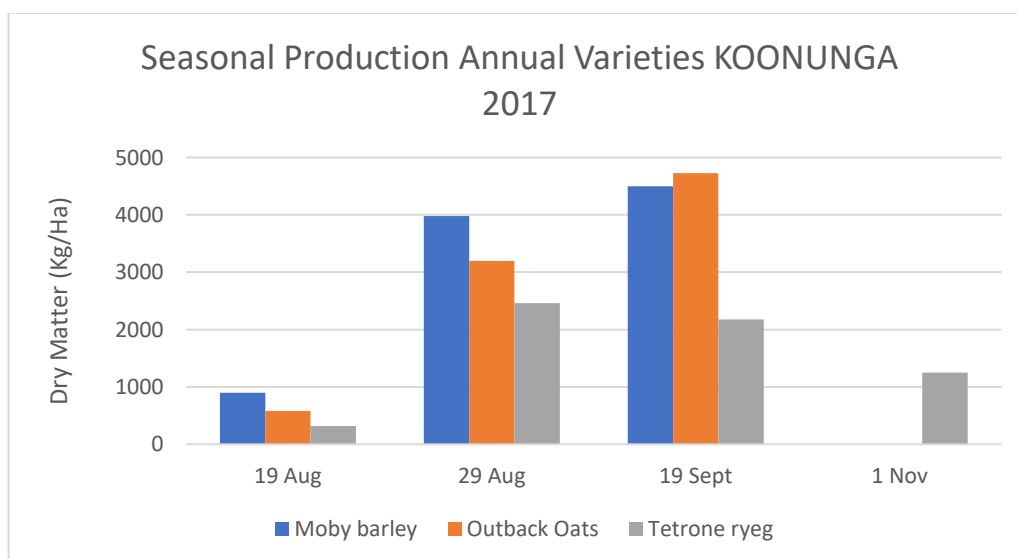


Figure 5: Moby barley produced high winter and early spring production, however the oats and ryegrass provided spring feed opportunities.

In comparison, Outback Oats, a slightly later variety, produced slightly lower levels of production but then increased through spring. Adding the ryegrass to the mix further increases grazing days as it produced over 1000 kg of Dry Matter through the late spring.



Tetrone ryegrass hanging on in November 2017 when other cereal varieties had been mown already.

The Moby barley and Outback Oat Forage cereals value increases as they utilise all the available soil moisture to provide immediate grazing opportunities but also convert the moisture into grazing opportunities for the summer months in the form of hay, harvesting the grain or grazing as a standing crop. This will increase grazing days through the conservation of fodder, particularly if moisture is limited through the spring months.

Opportunities flow from 2016

After the above average year in 2016, there was a large quantity of available pasture through spring and into early summer. This provides the opportunity to allow annual sown pastures to set seed. The Outback Oats and Tetrone ryegrass ran to head in 2016. The Outback oats produced over 4500 kg of Dry Matter per hectare and the Tetrone over 6000 kg of Dry Matter per hectare (Figure 5). When added to the 2016 production this results in a total of over 10,000 kg of Dry Matter per Hectare for the Outback Oats and over 8000 kg of Dry Matter for the Tetrone. Considering there were no sowing costs, this is very valuable pastures.



Tetrone Ryegrass in August 2017, result of set seed from 2016

Grazing increases growth rate

Grazing varieties increases spring growth rates which will increase overall dry matter production (Figure 6). Moby barley is an earlier variety, therefore grazing in August increased the average growth rate by 60 grams per day resulting in an increase of over 1000 Kg/ Dry Matter/ Ha, however this did result in it reaching maturity earlier, with it not being able to be grazed in September.

Grazing Outback oats resulted in a slight decrease in August but an increase in growth rate of 80 grams per day. This is particularly important for seasons when the sprig rainfall is decreasing rapidly, to ensure pastures are producing their greatest amount of dry matter per hectare.

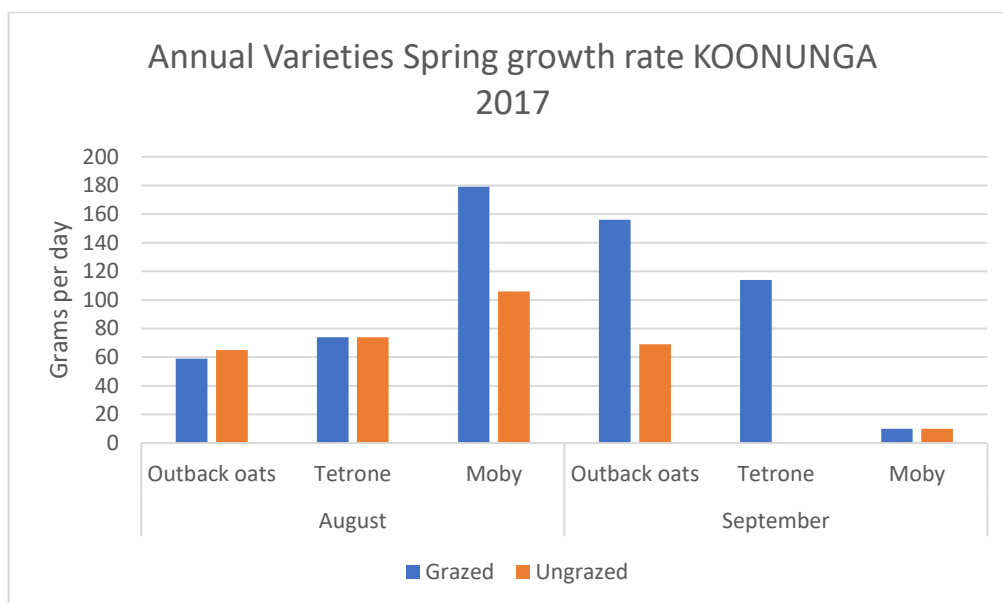


Figure 6: Grazing increases the growth rate of pastures

Lucerne/ lucerne mixes

Combining compatible species with perennial varieties provides the ability to extend the growing season, providing more feed availability.

The Lucerne varieties have performed extremely well across the 2016-2017 growing season (Figure 7). They have produced an average total of 18 tons of Dry Matter/Ha with the majority of the growth occurring in late spring and summer when feed availability of annuals has decreased.

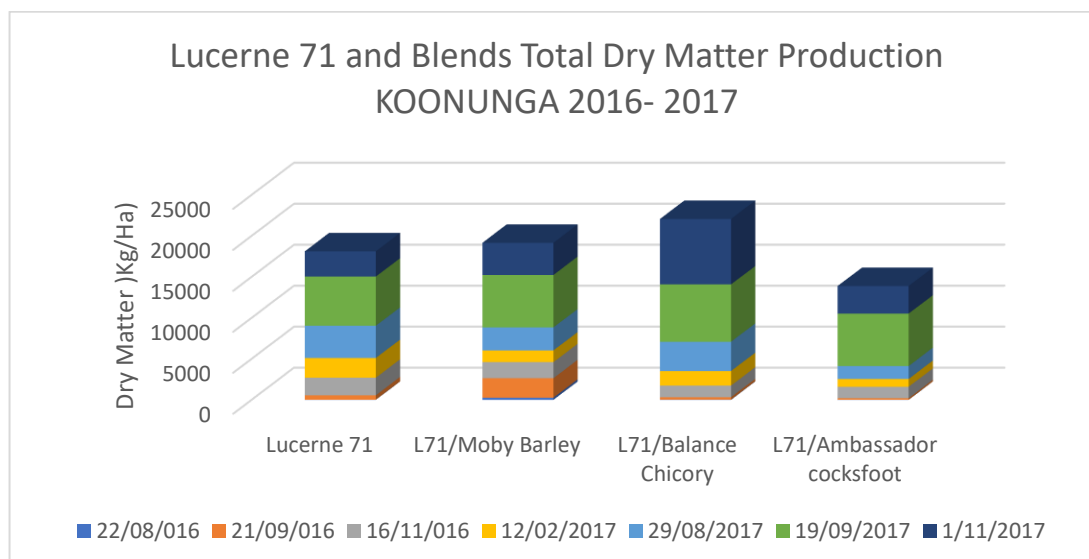


Figure 7: Over 2016/2017 the Lucerne varieties have produced an average of 18 tons of Dry Matter per Ha.

The addition of summer active Balance Chicory to Lucerne 71 produced the highest total dry matter, with 1800kg of Dry Matter per hectare of the feed being produced in February. Being a later variety, the chicory continues to provide high feed quality through early summer which is particularly obvious in November 2017 when it is producing 4,000 kg of Dry Matter per hectare more than the other Lucerne varieties. In addition to the increased dry matter, chicory helps to prevent bloat and provides additional vitamins and minerals for grazing livestock.



L71 and Chicory produced 1800kg of Dry Matter in summer. Chicory helps to prevent bloat.

The addition of early maturing varieties, such as Moby barley, to Lucerne at sowing increases the dry matter by 1800 kg/Ha in late winter, ensuring that paddocks can continue to provide a late winter grazing option, even though they are allowing a perennial pasture to establish (Figure 8). The addition of the Barley caused a slight decrease in production through the summer and winter of 2017, however has had no significant impact to the late winter production with both the L71/ Moby and straight L71 both producing 6,200 kg/Dry Matter/ha. This was compensated with the early feed provided with the blend which allowed it to produce a higher total dry matter overall over 2016/2017 (Figure 7).

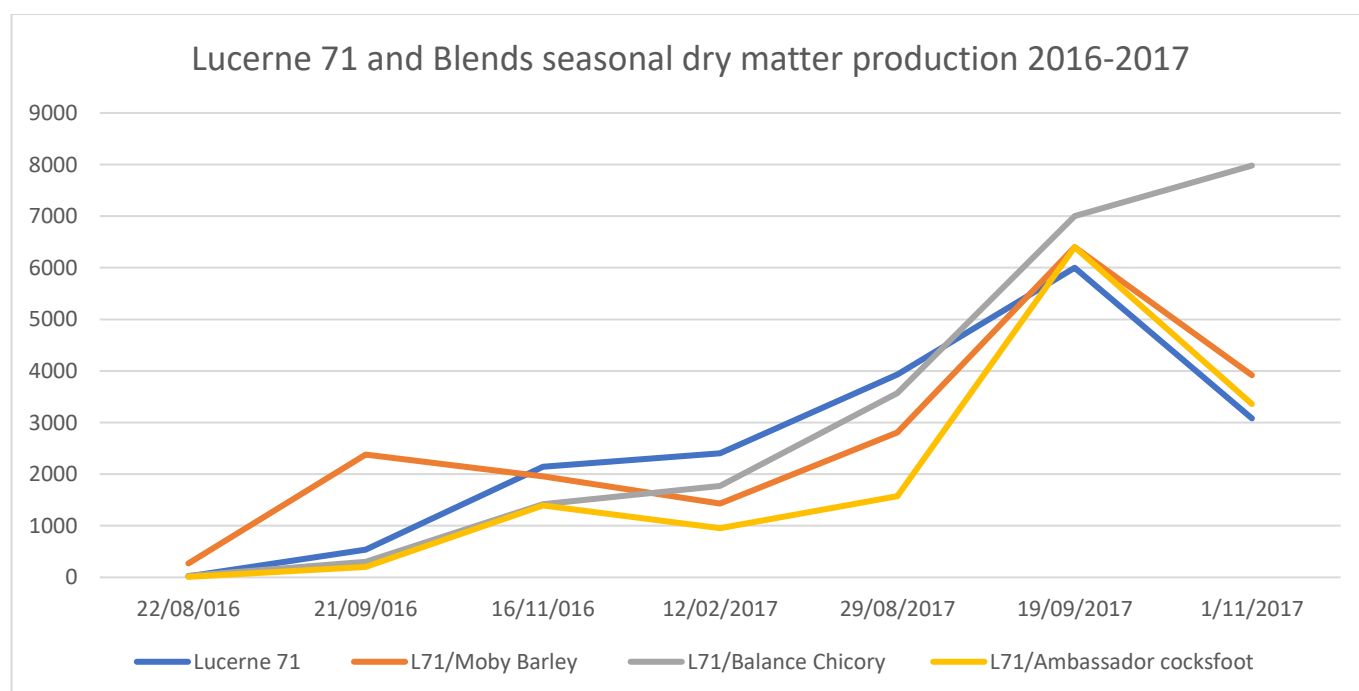


Figure 8: The addition of Moby Barley produced early feed when the Lucerne was establishing in 2016, however has not impacted its production in spring 2017.

Clovers/ Medics

Allowing clovers and medics to regenerate provides a cheap alternative to re-sowing high protein pasture components. Cavalier and Jaguar medic regenerated 10 plants per m², which if over sown with a cereal or ryegrass variety would increase the feed quality of the pastures.

Zulumax, a later arrow-leaf clover variety produced over 6000kg Dry Matter in 2016. In November 2017 it was producing 4,000kg Dry Matter at over 80 plants per m² which was a result of the previous years seed production. In addition, the Zulumax variety has a very hard seed, which ensures there will be viable seed in the ground for the coming years to maximise on later spring rainfall.



Left: August 2017- Zulumaz arrow leaf clover seed recruitment

Right: November 2017 Zulumax producing 4,000 Kg/Dry Matter/ Ha after regenerating from seed produced in 2016.



Perennials

Perennial grasses increase grazing days by utilising summer rainfall events to produce dry matter, in addition they provide dry matter production through late winter, spring and early summer (Figure 10). A mix of perennial grasses and clovers, Farmer Johns 550mm rainfall mix (FJ550) and Farmer Johns 450mm rainfall mix (FJ450) both produced over 700 kg of Dry matter per ha above the average through spring compared to the straight varieties.

The FJ 450 continued to produce through early summer, demonstrating the importance of choosing varieties which are developed for local rainfall conditions. In addition, all perennial varieties maintained over 75% ground cover which significantly reduces the risk of soil erosion.

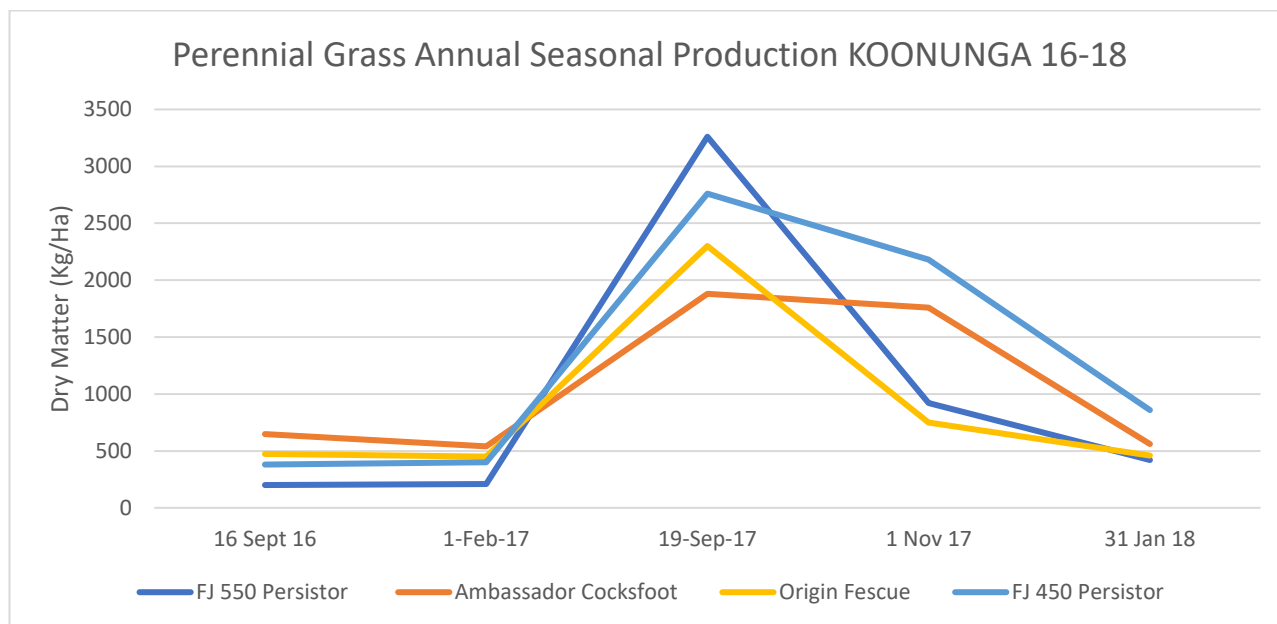


Figure 10: Perennial Grass Seasonal Production

Summer Forage Opportunities

Utilising summer forage provides opportunities to capture late spring and summer rainfall events. The forage varieties were sown late October while there was only a very small amount of soil moisture available. Considering this both varieties bounty sorghum and rebound millet established. With extra rainfall in December the Rebound Millet produced feed through November until early January, while the Bounty Sorghum was producing high levels of Dry Matter through late December and January when there was very little available feed.



1 November: Millet (L) and Sorghum (R)



31 January: Bounty Sorghum

Varieties to increase annual grazing days

A combination of different pasture varieties across a grazing system is important to provide grazing opportunities and extend annual grazing days. The 2017 results at Koonunga (Figure 11) demonstrated the opportunities for early feed varieties Moby barley and Outback oats which not only provide grazing opportunities early in the season but also the potential to store fodder in the form of hay or grain which can be fed out later in the season.

Later annual varieties, such as Zulumax arrow leaf clover, provides later feeding opportunities of high quality feed, especially if there is moisture present. Utilising perennials such as FJ 450 and Lucerne provides year-round feed opportunities, particularly later in the season when the annuals have reduced production.

If there is plant available water, summer fodder opportunities such as sorghum can also help to increase grazing days.

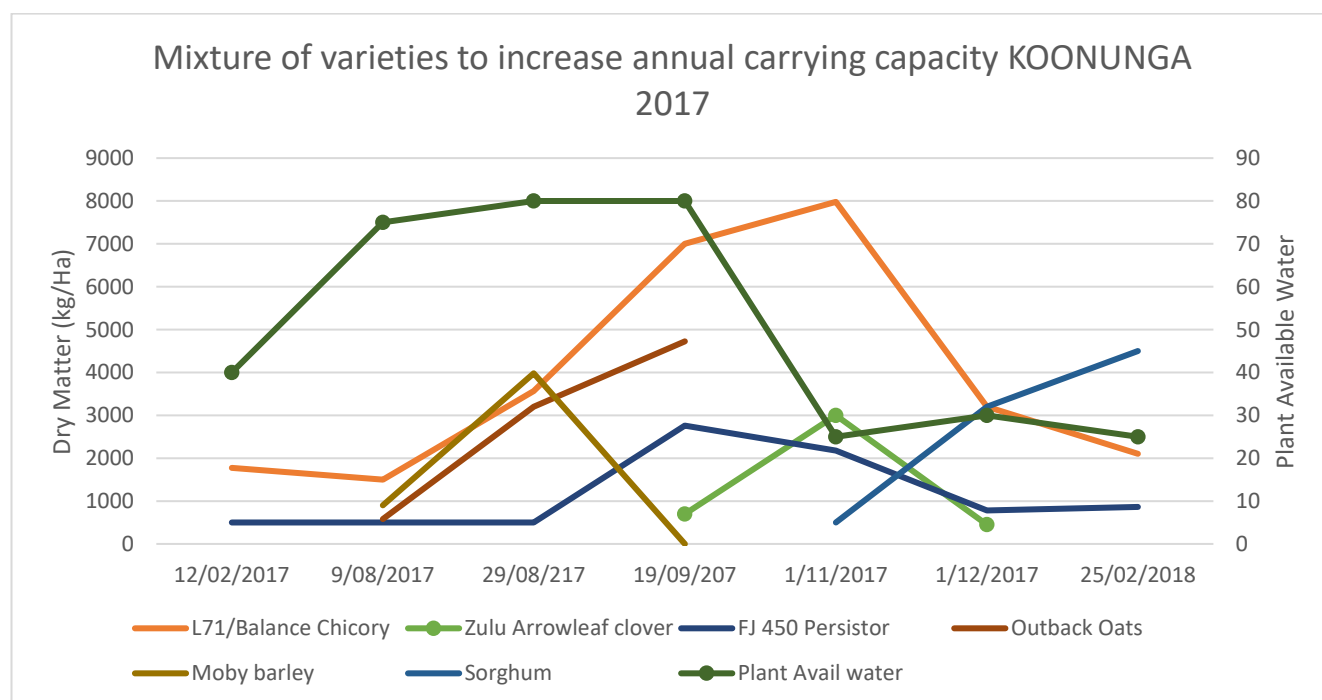


Figure 11: A combination of different varieties can provide extended opportunities for feed availability through the year.

Keyneton Annual Demonstration Site

The Keyneton site is located on a sandy loam soil with a low pH (4.3 in CaCl₂) and phosphorus (14ppm Cowell) (Appendix 1). The paddock has been in an annual hay rotation with ryegrass and cereal for the past 3 years and has very little residual clover. Keyneton average annual rainfall is 500mm.

Varieties were chosen on a basis of grazing potential, feed quality potential, and the potential for further opportunity such as hay or silage. Brassicas were included this year, however failed to provide results. In addition, a comparison of different seeding rates for a hay and silage blend (10, 20, 30, 40 kg/Ha) were included. Sub clovers and annual clovers were not sown at Keyneton this year however were sown at the Eden Valley site.

Varieties have been divided into their individual sections to allow comparisons within and between varieties, rather than being randomly allocated (Appendix 1). These include:

- Cereals (oats, triticale, wheat and barley)- 14 varieties
- Ryegrasses (annual ryegrass, Italian ryegrass)- 7 varieties
- Vetch and peas – 5 varieties
- Cereal and ryegrass mix (oats, triticale and barley)- 5 mixes
- Brassicas- 3 varieties
- Coopers hay and silage mix- sown at four different seeding rates

The site was sown 25 May 2017. Prior to sowing, the site received two complete knockdown herbicide treatments and pyrinex to control red legged earth mite.

Measurements were taken on 23 August and 18 September. Total dry matter of the plots were harvested using a lawnmower to a height of 5cm.

Dry matter was measured at 10% in August and 15% in September.

Keyneton Seasonal Conditions:

The soil moisture, measured at the Keyneton soil probe, located approximately 1km north east of the site, demonstrates plant available water in the soil profile across the 2017 growing season. Figure 12 indicates that there was low plant available water through the autumn and early winter period until it rose steadily through late July, August and September before falling quickly in late September and October, which resulted in a short growing season for annual varieties.

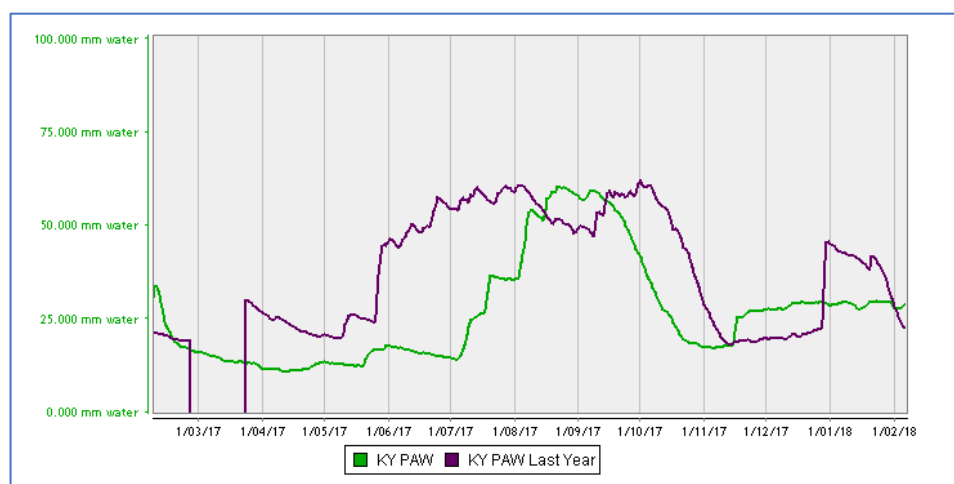


Figure 12: 2017 Plant Available Water (PAW) estimate taken at the Keyneton Soil Moisture Probe Site

Keyneton Results:

Cereals

Even after a late break, the cereal varieties provided late winter and early spring production, producing an average of over 1000 kg of Dry Matter per hectare.

Dictator 2 Forage barley, an early variety, produced the highest amount, over 1600 kg Dm per Ha, demonstrating its ability to establish under colder conditions and it's early vigour. This is important in a year with a late break and early spring finish, allowing high levels of production within this growing window.

The two triticales, Bison and Tuckerbox, produced the second highest levels of winter and early spring production with between 1400 and 1600 kg of Dry Matter per hectare (Figure 13). These produced the highest levels of winter feed which is beneficial in a late break when there is very little feed available.

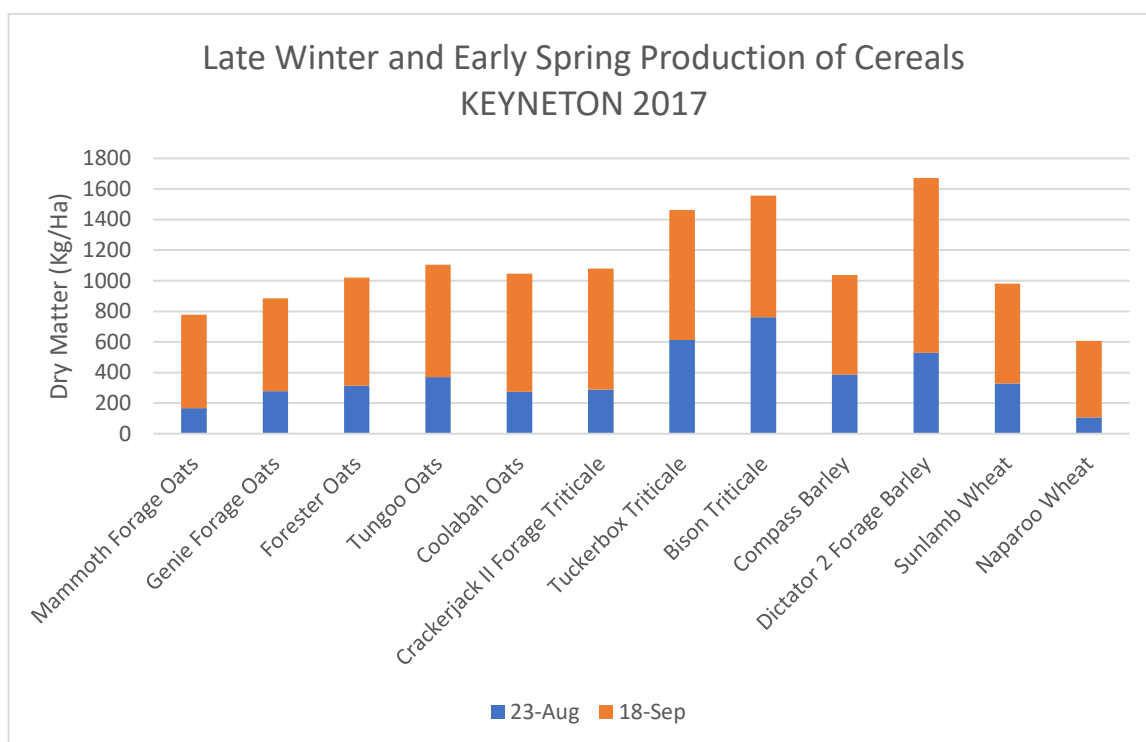


Figure 13: Dictator 2 Forage Barley produced the highest kg per ha of Dry matter through the late winter and early spring for all cereals.



Early Establishment of the cereals at the Keyneton Site August 2017

Annual Ryegrass

The annual ryegrasses produced reasonably low dry matter through winter, however through the spring exhibited a growth rate of above 25 grams per day. Vortex annual ryegrass which is an early vigour, large leafed variety, produced the highest with 980 kg of Dry Matter per hectare (Figure 14). Vortex also produced the greatest amount of early dry matter of the annual ryegrasses in 2016.

The Italian ryegrasses also performed well producing the highest amount of dry matter in August, demonstrating their strong, early, establishment rates which is beneficial in a late break.

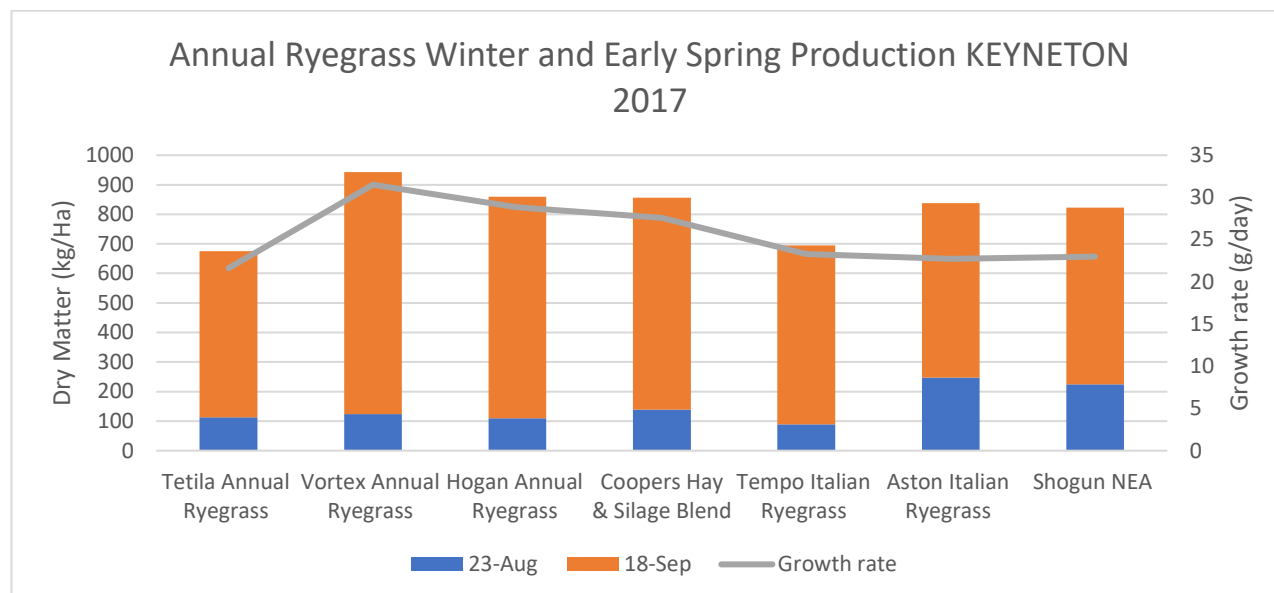


Figure 14: Vortex annual ryegrass and the Italian ryegrasses produced the greatest amount of winter and early spring feed compared to the other annual ryegrasses.

Cereal and Ryegrass blends

The addition of ryegrass to forage cereals increased the winter and spring dry matter production by a total of 600kg per hectare in the Mammoth and Genie Forage Oat plots (Figure 15). The Dictator 2 Barley plots did not demonstrate an increase however this plot did exhibit a high percentage of background volunteer ryegrass further adding to the total dry matter production.

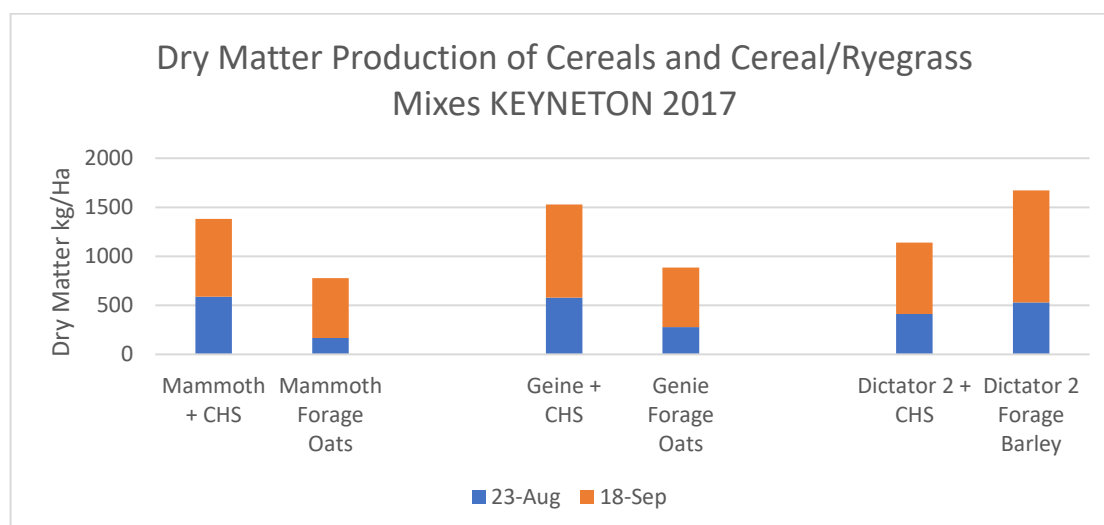


Figure 15: The Dry Matter production of Ryegrass and Forage Oats over 600kg/ha more than Forage Oat varieties.

With the late break which occurred in June, winter feed is critical. The addition of ryegrass, which has a fast germination and high growth rate provided over 400 kg of dry matter in Autumn compared with the straight forage cereals.

If there is a late spring rain, as there was in 2016, the ryegrass continued to produce an extra 6,000kg of dry matter through the late spring and into early summer. This provides an opportunity for grazing the paddock compared with a straight forage cereal which is generally removed for hay or silage.

Feed testing also indicated that as well as added production, ryegrass/ cereal combinations resulted in increased quality in the form of 1 extra MJ of energy, 1% increased protein, 1 % lower Neutral Detergent Fibre which allows livestock to consume greater quantities resulting in increased growth rates.



Sowing Rate of Annual Ryegrasses

A comparison of four different seeding rates of Coopers Hay and Silage Mix, which is a mix of early and late maturing ryegrasses, demonstrated the importance of a correct seeding rate. In 2017, the most spring dry matter was produced in the 30 kg/Ha plots producing 923 kg of dry matter per hectare with a growth rate of 31 grams per day (Figure 16). The 20kg plot was producing only slightly less with a growth rate 3 grams per day less than the 30 kg plot which resulted in 898 kg of Dry Matter per hectare produced.

As expected, due to the low number of seeds, seeding at a low rate (10 kg/Ha) reduced the total dry matter production and growth rate by 400 kg of Dry Matter per hectare. In addition, seeding at a high rate (40kg/Ha) will also reduce the dry matter production by 350 kg Dry Matter per hectare as a result of the increased competition.

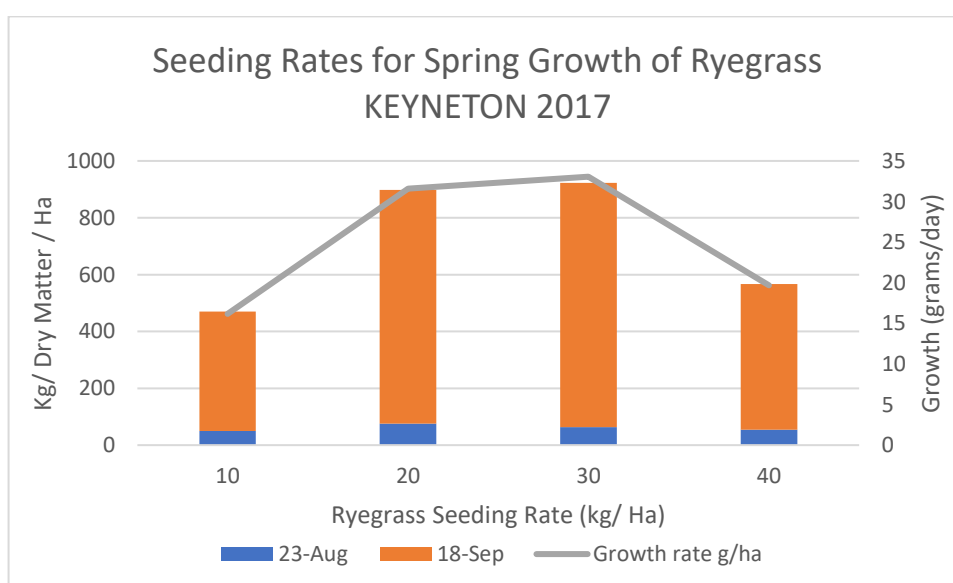


Figure 16: Seeding rate is critical for ensuring high growth rates and production of dry matter in annual ryegrass.

Eden Valley Perennial Demonstration Site:

The Eden Valley site soil test indicated good pH (5.1 in CaCl₂), however low phosphorus (18ppm Cowell), low organic matter (1.4%) and very low cation exchange capacity (2.96 meq/100g). This paddock has been in an annual hay rotation with cereals. Eden Valley average annual rainfall is 750mm.

As a result of a poor germination in 2016 the entire site, apart from a small area to allow 2016 subclover regeneration, was resown in 2017 to perennials. The total number of varieties was reduced from the 2016 figure, however the same species were included. Plots were 1m x 10m and were not replicated.

Varieties included:

- Perennial herbs (plantain, chicory)- 3 varieties
- Lucerne- 3 varieties
- Perennial grasses (fescue, phalaris, cocksfoot, ryegrass)- 20 varieties
- Subclover- 16 varieties
- Annual clover (arrowleaf, persian, balansa)- 7 varieties

The site was sown 25 May 2017. Prior to sowing the site received two complete knockdown herbicide treatments and snail and redmite control.

Eden Valley seasonal conditions:

The soil moisture, measured at the Flaxman's Valley soil probe, located approximately 10km north of the site, demonstrates plant available water in the soil profile across the 2016/2017 growing season (Figure 17). As with the Keyneton and Koonunga site, there was low plant available water through the autumn period, with a late break in July. This then reduced dramatically in October with no plant available water through the summer.

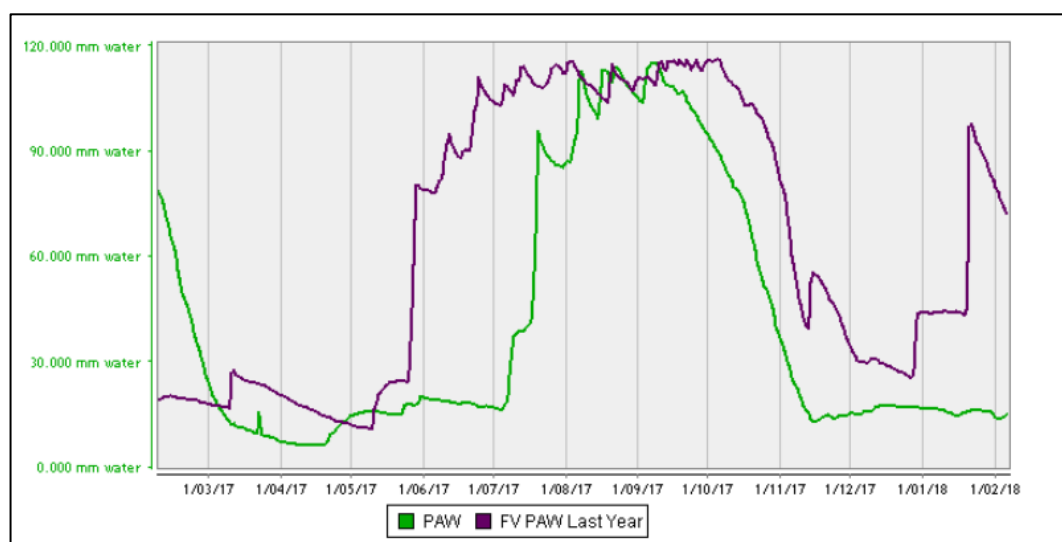


Figure 17: Annual Plant Available water for 2016/17 at the Flaxman's Valley Soil Moisture Monitoring Site

Eden Valley Results:

As a result of the late break, there were no significant figures recorded from the site through 2017. The majority of plots germinated and have established, however will be measured in 2018 to allow comparison of persistence and dry matter.



The Eden Valley site germination of perennial species on 5th July 2017.

Recommendations for 2018:

- Keyneton and Koonunga sites have found it difficult to establish Brassicas- look for the most effective way/timing/ variety to help achieve this
- Compare return on investment of different species and varieties which have performed well over the three years of the major sites
- For the Keyneton annual site, reduce the number of plots by choose varieties which have performed the best over 2016 and 2017 and demonstrate their potential with larger scale plots (10m x 3m)
- Ensure a spread of early, mid and late varieties with an aim to find cost effective varieties which will fill all the feed gaps through the year

Conclusions

To provide a year-round feed supply, a mix of pasture varieties should be considered with complimentary species that balance out feed availability. As we are unable to predict the weather, ensuring we have a range of different pasture varieties, blends and species helps to manage the risk across our property.

The 2017 year, with it's late break and early finish demonstrated the importance in having annual varieties which establish quickly, provide early, vigorous growth, providing grazing days and utilising the available soil moisture before it is gone in spring. Later maturing varieties, which performed well in 2016 by capturing late spring rainfall did not have any available moisture to grow.

Opportunities which arose from the above average rainfall in 2016 flowed through to 2017, with good establishment of perennial varieties which continued to provide feed later into the season, even with the shorter spring. Lucerne is very valuable, continuing to provide green feed and grazing days in the summer with very little rainfall whilst still producing high dry matter production through the spring months.

Disclaimer

Care is taken to ensure the accuracy of the information contained in this report. However, it is not a comprehensive guide to managing your land or pastures. These sites are for demonstration purposes and are intended to provide information and provoke thought. Always seek further advice before beginning a pasture program. All sites have been managed to try and provide the most accurate information however no legal liability is accepted for the information, errors or omissions contained in this booklet.

APPENDIX 1: Koonunga Site Plan

Lucerne				Narricup	Outback
Medic				Cobra	Tetrone
Clover				Zulumax	Moby
Other legumes				Jaguar	FJ 550 Persistor blend
Ryegrass				Cavalier	Splice
Brassica				L56	Australis
Forage Cereal				L71	Ambassador
SOWsmart				L71/Moby	Greenly
				L71/Balance	Origin
Location	Koonunga			L71/Ambassador	FJ 450 Persistor blend
TOS	1.5.2017			Busta	Drylander
				Subzero	Valley
WHITE TEXT = REGENERATION				Roadside / Perimeter fence	
BLACK TEXT = NEWLY SOWN					

APPENDIX 2: Keyneton Site Plan



10m	3m	10m
CHS 20kg/ha	20kg/ha	CHS 30kg/ha
CHS 10kg/ha	10kg/ha	CHS 40kg/ha
Tetila Annual Ryegrass	25kg/ha	Mammoth Forage Oats 100kg/ha
Vortex Annual Ryegrass	25kg/ha	Genie Forage Oats 100kg/ha
Hogan Annual Ryegrass	25kg/ha	Forester Oats 100kg/ha
CHS	25kg/ha	Tungoo Oats 100kg/ha
Tempo Italian Ryegrass	20kg/ha	Coolabah Oats 100kg/ha
Aston Italian Ryegrass	25kg/ha	Crackerjack II Forage Triticale 100kg/ha
CIB	25kg/ha	Tuckerbox Triticale 100kg/ha
Shogun NEA	30kg/ha	Bison Triticale 100kg/ha
Cape Barley	100kg/ha	Compass Barley 100kg/ha
Dictator 2 + CHS - 85/15	100kg/ha	Dictator 2 Forage Barley 100kg/ha
Mammoth + CHS - 85/15	100kg/ha	Sunlamb Wheat 100kg/ha
Geine + CHS - 85/15	100kg/ha	Naparoo Wheat 100kg/ha
Volga Vetch	40kg/ha	Morava Vetch 40kg/ha
Timok Vetch	40kg/ha	RM4 Vetch 30kg/ha
Morgan Peas	125kg/ha	Shogun NEA + RM4 - 20/15 35kg/ha
CHSB	15kg/ha	CHS + RM4 - 20/15 35kg/ha
Falcon + CHS - 2/13	15kg/ha	CACB 10kg/ha
Leafmore + CHS - 2/13	15kg/ha	Interval + CHS - 2/13 15kg/ha

GATE

STOTT HWY

APPENDIX 3: Eden Valley Site Plan



EDEN VALLEY RD							
10m		3m	10m		3m	10m	
SARDI Grazer Lucerne	10kg/ha		Tonic Plantain	10kg/ha		Barberia LRRG	20kg/ha
SARDI 7 S2 Lucerne	10kg/ha		Choice Chicory	10kg/ha		Shogun NEA	25kg/ha
SARDI 10 S2 Lucerne	10kg/ha		Commander Chicory	10kg/ha		Kidman AR1 PRG	20kg/ha
Mawson Sub Clover	12kg/ha		Losa Sub Clover	10kg/ha		Impact 2 NEA2	20kg/ha
Mintaro Sub Clover	12kg/ha		Dalkeith Sub Clover	10kg/ha		Rohan SPR NEA2 PRG	20kg/ha
Clare Sub Clover	12kg/ha		Seaton Park Sub Clover	10kg/ha		Monti Sub Clover	10kg/ha
Antas Sub Clover	12kg/ha		Urana Sub Clover	10kg/ha		Trikkala Sub Clover	10kg/ha
Nitro Plus Persian Clover	5kg/ha		Campeda Sub Clover	10kg/ha		Gosse Sub Clover	10kg/ha
Lightning Persian Clover	5kg/ha		Coolamon Sub Clover	10kg/ha		Napier Sub Clover	10kg/ha
Cefalu Arrowleaf Clover	5kg/ha		Denmark Sub Clover	10kg/ha		Paradana Balansa Clover	5kg/ha
Zulu II Arrowleaf Clover	5kg/ha		Frontier Balansa Clover	5kg/ha		Vista Balansa Clover	5kg/ha
2016 SUB CLOVER							
Prosper Tall Fescue	20kg/ha		Kasbah Cocksfoot	5kg/ha		Australian II Phalaris	6kg/ha
Quantum Tall Fescue	20kg/ha		Morroccan Cocksfoot	5kg/ha		Siroa Phalaris	6kg/ha
Persister Prairie	25kg/ha		Uplands Cocksfoot	5kg/ha		Holdfast Phalaris	6kg/ha
Bareno Brome	25kg/ha		Howlong Cocksfoot	5kg/ha		Holdfast GT Phalaris	6kg/ha
Vic Rye PRG	20kg/ha		Safin Cocksfoot	5kg/ha		Advanced AT Phalaris	6kg/ha

Sowing Date: 25th May