

Agricultural extension advice for producers in the

Hunter

SPRING 2020



SILAGE PRODUCTION TIPS FROM SINGLETON PASTURE SITE

Silage is a popular option for farmers conserving fodder this spring and Hunter Local Land Services (LLS) is looking forward to once again sharing practical silage production and storage tips with producers from our Singleton Pasture Demonstration Site.

The virtual field day video package and Challenge Series fact sheet will feature LLS staff, Farmers Warehouse and industry partners, harvesting pasture and forage crops on-site, processing silage, and discussing production, feeding and forage testing methods. These resources will be widely available via our Hunter LLS and partner's Facebook and YouTube channels with links available on our website and by request.



David Deane inspects the crops with Kyle Ropa, local agronomist and manager of the trials at the Singleton pasture demonstration site.

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Tune in & subscribe to our Hunter LLS YouTube channel for a series of videos from recent events, project updates and advice from our LLS team and guest presenters.

All eyes are on the skies coming into this bumper season after one of the best autumn-winter pre-season openers in years. Farmers are enjoying a bulk of feed and it is not difficult when weighing up the alternatives to land on silage. Most weather models predict the La Nina weather pattern will deliver above average rainfall to Eastern Australia through to summer so the trend towards silage is likely to continue. Many farms destocked during the drought and with feeder cattle and lambs both pricey and in short supply, silage weighs up as the perfect method to conserve excess paddock feed for sale or to top up storage to cover the next feed gap.

Well-made silage is a nutritious feed for ruminant livestock produced by acidification of cut green foliage crops through fermentation in sealed low-cost pits or in plastic wrapped bales for easy transport.

When compared to hay production, silage often retains a greater percentage of crop and pasture nutrients with plants able to be harvested early at an optimal phase of development. The sweet fermented feed is a very palatable energy source, efficiently utilised by livestock. Forage crops must have approximately 30% dry matter to be ensiled successfully.

In the Hunter, ryegrass, oats, lucerne and legumes are the main forage crops grown in spring for silage. Growth stage at harvest has a major impact on crop quality and yield with crops able to be harvested post-grazing or grown stand-alone for silage production.

Feed quality tests are a very important step in conserving any fodder, especially silage. Feed sampling is currently being funded through the Hunter LLS Drought and Recovery Support program for local producers to encourage a better understanding of nutrient and energy levels and to check for potential toxicities prior to and after ensilage. The NSW Department of Primary Industries has Feed Quality sample bags that can be collected through your local LLS office or ordered online. LLS is offering technical advice for interpreting results and decision-making. Fodder testing is the only way to verify nutrient and energy levels in the fodder crop you are conserving and feeding out to your livestock or offering for sale.

The main components of fodder testing are Metabolisable Energy (ME) and dry matter. A reading of 10-11 ME is going to give you an extra 100kgs of beef produced for every ton of silage dry matter you feed so it can be very efficient if your quality is good. Protein content is another very important factor as we need to ensure there is enough protein to meet the animals' needs.

Cost of production

Taking out the actual costs of sowing and water and fertiliser which varies as per type of pasture or fodder crop you are growing, the average cost of a contractor in the Hunter Valley in 2020 is as follows -

- Mowing, Raking and Teddering \$140 /hr. The reason this an hourly rate is the contractor does not know how many times they may need to come back to repeat this process to achieve the correct moisture level.



Silage making equipment at the Singleton Pasture Demonstration Site.

- Baling and wrapping is approximately \$36 a bale and \$2-3 per bale for inoculant. It would be a good idea to engage with your contractor to book a date in as there will be a high demand for making silage this spring.

Storage options for silage

The first and most important decision is to choose a chopped or baled silage storage system that best matches your farm enterprise:

- Above ground bulk storage and underground pits involve minimal construction costs and locations are flexible. Hillside or underground pits can be an inexpensive long-term option however, in areas where a high-water table or poor soil type are an issue, they are not an option.
- Baled silage, either round or square bales can be stored individually by using stretch wrap plastic, stockpiling in many locations to be fed out easily. Although the most expensive form of storing silage, the bales are a very saleable product and transport can be simple using existing hay making equipment. Speak to your local supplier to choose the type of wrapping best suited to your silage production. Bale storage on the flat side will prevent slumping. Bale systems are not suitable for all crop types such as maize and is preferably suited for short term storage as can be more susceptible to vermin and mechanical damage.

For more information on silage visit the NSW DPI website: <https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/silage>

And tune in to the new NSW DPI Silage webinar series:

<https://www.ils.nsw.gov.au/news-and-events/news/statewide/2020/silage-secrets-unearthed/silage-webinar-series>

For information and links on the Singleton Pasture Demonstration Site package visit the Hunter LLS website or contact Hunter LLS Pastures officer at Paterson, David Deane. David has been working on pasture trials and measurements over the past 10 years.

For all your pasture inquiries email: david.deane@ils.nsw.gov.au or Ph: 0411 108 961.



FALL ARMY WORM ALERT

Farmers across the Hunter should be on the lookout for fall armyworm (*Spodoptera frugiperda*) after a positive identification of a single male moth, trapped near Moree in northern NSW.

The moth was trapped near a sorghum crop during routine surveillance of the early warning trapping network established by Local Land Services and the NSW Department of Primary Industries in Autumn 2020.

Fall armyworm larvae are known to feed on more than 350 plant species, particularly maize, cotton, rice, sorghum, sugarcane and wheat, as well as vegetable and fruit crops.

While this is the first detection in NSW, populations of fall armyworm have already been established in northern Western Australia, Northern Territory and Queensland since first being identified in Australia in early 2020.

It is anticipated that migratory flights of the pest will occur across NSW annually and fall armyworm may establish in some of the warmer parts.

As this is the first confirmed case of fall armyworm in NSW, early detection is vital to minimising the spread and impacts across the state.

If you suspect fall armyworm you must report it immediately to NSW DPI.

For more information about fall armyworm, how to identify it and how to report suspected cases, visit <https://www.ils.nsw.gov.au/faw> and www.dpi.nsw.gov.au/biosecurity/plant/insect-pests-and-plant-diseases/fall-armyworm



UNDERSTANDING A CLIMATE GAME CHANGER: THE EAST COAST LOW

A run of east coast lows (ECL's) has hit the climate 'reset' button for Mid-coast farmers this winter, presenting a real opportunity to set-up coastal pastures for a bumper spring production season. These intense low-pressure weather systems all but disappeared off the radar during the recent drought so although they often herald wild seas and flooding, their return is a welcome reprieve for coastal famers. The challenge now is to prepare to make the most of these rainfall events and take advantage of the benefits as soil profiles fill, catchments recharge and irrigation flows return. In the ECL cost versus benefit wash-up, the results ultimately come down to timing and pasture management and how producers harness the potential on offer.

When an ECL delivered falls in the Mid-Coast region of 60 to 150mm on July 28, farmers instinctively understood this rain would fill the soil profile, storing 80 to 150mm, setting them up for spring production. At this time of year with evapotranspiration (ETo) of only 1.5 to 2.5mm/day, this moisture will result in high growth rates in August as the weather warms up and continue delivering results right into September. From a production perspective, there will be much to prepare for in contrast to the past two years. Ryegrass silage will now be a real option and there should be confidence with fertilising with nitrogen and in all probability at higher rates that normal.

Even a seven to 10 day forecast of an ECL event, can be a very useful management tool as there is much farmers can do to prepare in that period. While an ECL can be unpredictable, the possibility of widespread heavy rainfall should trigger a flurry

of planning and preparation to maximise production potential. Acacia Pepler of the Bureau of Meteorology has studied 36 years of ECL data to provide this summary that provides some very useful guidelines: ECL's can impact an area once or twice a year and with landfall totals ranging from 100 to 300mm, they can provide 23% of annual coastal rainfall. Erratic in timing, size and location, ECL's lessen the effect of El Nino - Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) on coastal rainfall and so reduce climate model accuracy for NSW. ECL's occur all year round however show winter dominance south of Sydney and to the north, occur 50 to 60% in the warmer months from November to March.

Understanding the potential impacts of ECL's: *Soil Profile Refill*

The most significant effect of ECL is that the soil profile and irrigation reserves are refilled across a wide area. Soil of 1 to 1.5m depth can store 100 to 150mm of rainfall. 100mm of soil stored moisture can be expected to produce 2200kg DM/ha from well fertilised ryegrass without further rain. Once in the soil profile this soil moisture does not evaporate readily in winter, so it provides a significant boost to spring production expectations.

These rainfall events refill the catchments and contribute to irrigation flows for weeks after the event so for most farms that extends the period of good ryegrass growth. Any rain received in the following weeks, can then top up the soil profile and so extend that growing period and provide surplus growth for silage production.

When an ECL occurs in March it can "set up" the winter and if they occur in winter, they "set up" the spring. This provides greater confidence to fertilise well after the event as plants utilise soil-stored moisture.



Waterlogged pasture after an ECL that can take several days to week to drain leaving the soil saturated for some time.



When ryegrass sits in saturated soils, growth slows but nitrogen is also lost and needs replacing when the soil dries to the point you can traffic the field.

Local Land Services is extending its Hunter Soil Moisture Network with the installation of soil moisture probes on five dairy farms in August 2020 in the Manning and more across the Hunter. The data from these probes and the broader network can be viewed on the Hunter Local Land Services website <https://www.lls.nsw.gov.au/regions/hunter/projects-and-programs/Soil-moisture-network-project> with updates every 15 minutes. Farmers can log in for local climate data from the on-property weather stations, rainfall totals and live readings of how full the soil profile is at any point in time at each site. A better understanding of the water available in the soil profile of a local pasture system will help indicate to farmers how much fuel is left in the tank, adding another useful layer of information to predict future pasture growth, fodder and grazing management.

Nitrogen loss

One of the downsides of large rainfall events in an ECL is that in poorly drained soils or low-lying topography, waterlogging can occur for several days or even weeks. Plants do not grow well in waterlogged conditions so slow growth can reduce fertiliser responses. At the same time, denitrification turns soil available nitrate nitrogen, into nitrogen gas that is no longer available to the plant. This means stores of soil nitrate and fertiliser applied before the rain, can be lost so that greater than normal amounts of fertiliser are needed after the rain to resume production.

It is difficult to put a figure on the losses as every situation is different. Research at QUT has measured 4-7kg N/ha/day loss due to denitrification in saturated soils with a total of 28 kg N/ha over 21 days. This can be higher in warmer weather and if more nitrogen is applied before the event or the water logging event

follows a long dry spell when nitrates accumulate in the soil and then are subject to waterlogging.

Greatest losses occur when the soils move from saturated to dry then saturated again which can occur in wet seasons. This is because nitrate is produced in the dry spells and lost in the saturated conditions.

In well drained soil nitrogen is lost as leaching. This can be increased under irrigation if the soil profile is already full, fertilised before and then an ECL occurs driving large drainage losses through the soil.

High rainfall events also cause fertiliser loss in runoff, especially if the soil was wet before application. Often ECL will come when the catchment and soils are dry so it can take 100 to 150 mm of rain before there is significant runoff or flooding. Until runoff occurs in those events, the losses are minor, and urea is washed into the soil by the rain. However, when the soil is already wet, runoff can occur with relatively small rainfall events of 25 to 50 mm and fertiliser losses can be high because it does not move into the soil but dissolves into the runoff water.

It is difficult to avoid these losses other than avoiding fertilising in the week before an ECL. Even then, that is not always practical. The important thing is to recognise nitrogen may have been lost and respond accordingly after the event knowing the soil profile is full.

In the coming months, Local Land Services will be reviewing recent research and developing better guidelines to explain these risks in more detail with a series of webinars called "Making the Most from Nitrogen".

Peter Beale, SLSO Agronomy Taree Ph 0427 007 468

SELECTING A BETTER KIKUYU CULTIVAR

Kikuyu grass was first introduced into Australia from Africa in the 1920s and has subsequently spread widely along the east coast, from east Gippsland in Victoria to the Atherton table lands, in far north Queensland. Kikuyu grass became a very important dairy pasture and from a survey in 1994, it was concluded that kikuyu formed the base for 70% of pastures on the north coast of NSW and in summer, 30% of milk production came from kikuyu grass. The attraction of kikuyu as a dairy pasture was due to its drought tolerance, high forage quality, relative to other C4 summer grasses, and greater tolerance to cold conditions.

The original kikuyu variety introduced into Australia, named Common, set little seed so farmers had to rely on propagation by planting the stolons. This remained the method of establishing kikuyu until Graeme Wilson, at Grafton Research Station, selected a seeding variety, named Whittet in 1958.

The area of kikuyu in the subtropics has gradually declined due to:

1. A decline in soil fertility, particularly on beef farms where fertiliser application has been considered to be 'uneconomic'.
2. The practice of setting back kikuyu growth in autumn by application low rates of Glyphosate to establish over sown ryegrass.
3. Probably the most important factor was the spread of the fungal disease, kikuyu yellows.

Thus, a study commenced in 2015 to select a kikuyu line that was resistant to kikuyu yellows from 1,600 lines that were available from a previous study.

This research was managed by the far north coast Dairy Industry Group and conducted by Bill Fulkerson and Mark Callow-Milk supply, Norco Co-operative, Nathan Jennings of north coast Local Land Services. The assistance and input of Dr Karen Harper, University of Queensland, Dr Percy Wong and Dr Peter Martin, Plant Breeding Institute, University of Sydney, is also acknowledged.

The aim was to select a kikuyu line that was resistant to kikuyu yellows but with yield, and particularly forage quality, at least as good as Whittet.

In 2015, individual plants were screened for yield and forage quality at the Gatton campus of the University of Queensland and for resistance to kikuyu yellows infection in the glasshouse at University of Sydney at Camden.

In 2016, four kikuyu lines, that were shown to be resistant to kikuyu yellows in the glass house, were tested against Whittet in the field on the dairy farms of Greg and Todd McNamara (Lismore site) and Paul Arber (Kyogle site). Only one kikuyu line, 12A, was found to be incredibly resistant to kikuyu yellows at the Kyogle site (see photo and Table 1) but not at the Lismore site. However, at the Lismore site the number of plants infected and the severity of infection was lower and most of those that were infected recovered in the autumn, presumably because it was a different strain of kikuyu yellows (three strains have been identified), whereas at the Arbour site nearly all plants died, except none of 12A plants died.



Bill Fulkerson, Research Agronomist with Norco LTD, formerly NSW DPI and a Professor at Uni Sydney in his 12 A plots at Wollongbar. Bill persisted and developed 12A now named "Fulkerson" in his honour. Bill has had a long and distinguished career in dairy and pasture research and has been a great mentor to many in the industry.



Early screening for kikuyu yellows showed vast differences between lines. 12A (far left row in both pictures) remained green and resistant to disease, whereas other lines were greatly affected.

Table 1

Kikuyu line	Kyogle site on 20 April				Lismore site on 11 May			
	Green	Yellow	Dead	Recovered	Green	Yellow	Dead	Recovered
12A	17	2	0	1	3	0	7	10
11C	3	3	12	2	6	4	5	5
Whittet	3	0	17	0	6	0	8	6
15A	1	3	15	1	5	1	10	4
25D	6	1	12	1	8	0	2	6

The first photo shows the four lines of kikuyu and Whittet in replicate two at Kyogle Site at 38 days after planting (left) and 130 days after planting (right), from left to right, 12A (all green), 11C (1 green, 2 yellow and 2 dead), Whittet (all dead), 15A (1 yellow, 4 dead) and 25D (1 yellow and 4 dead). There were four replicate plots/site.

In 2018, kikuyu yellows-infected leaves were collected from along the north coast of NSW and SE Queensland and used 'inoculate' 12A and Whittet plants. From 33 plants, 20 Whittet plants were infected by kikuyu yellows and five 12A plants. This indicated the broad geographical distribution of kikuyu yellows resistance by 12A.

In 2017, we compared the yield, forage quality and other traits in a major field study on the Lismore site. The results of the seasonal yield are shown below (Table 2).

Over summer, 12A was 24% higher yielding than both Acacia and Whittet and for the total 11 months, 12A was 24% higher yielding than Whittet and 12% higher than Acacia. In addition the yield of 12A was double that of Whittet in the first harvest coming out of winter (2,335 versus 1,322 kg DM/ha) but not Acacia.

The metabolisable energy (ME) and neutral detergent fibre (NDF) for early, mid and late season are shown in the table below (Table 3).

Table 2

Kikuyu Line	YIELD (kg DM/ha)			
	Summer (24/11 to 29/3)	Autumn (30/3 to 9/5)	Winter/Spring (9/5 to 24/10)	Total (24/11 to 24/10)
12A	10,212	1,395	7,480	19,088
Whittet	8,226	1,245	5,963	15,434
Acacia	8,258	1,460	7,283	17,000

Table 3

Date	27/02/2017	24/04/2017	2/12/2017
Kikuyu Line	Summer	Autumn	Winter/spring
Metabolisable energy (MJ/kg DM)			
12A	10.5	9.8	10.4
Whittet	10.0	9.7	10.3
Acacia	10.6	10	10.4
Neutral detergent fibre (% DM)			
12A	61.1	65	57.3
Whittet	62.2	65	57
Acacia	65	67	57.3

Table 4

Kikuyu Line	Black Spot (Severity)	Stolon (Number)
12A	0	11.7
Whittet	1.7	20.1
Acacia	0.1	6.8

The ME of 12A was half a MJ higher than Whittett in the middle of the summer season but not Acacia and in early and late season they were virtually the same. The NDF was higher for Acacia than Whittett and 12A in mid and late season but the same in winter/spring.

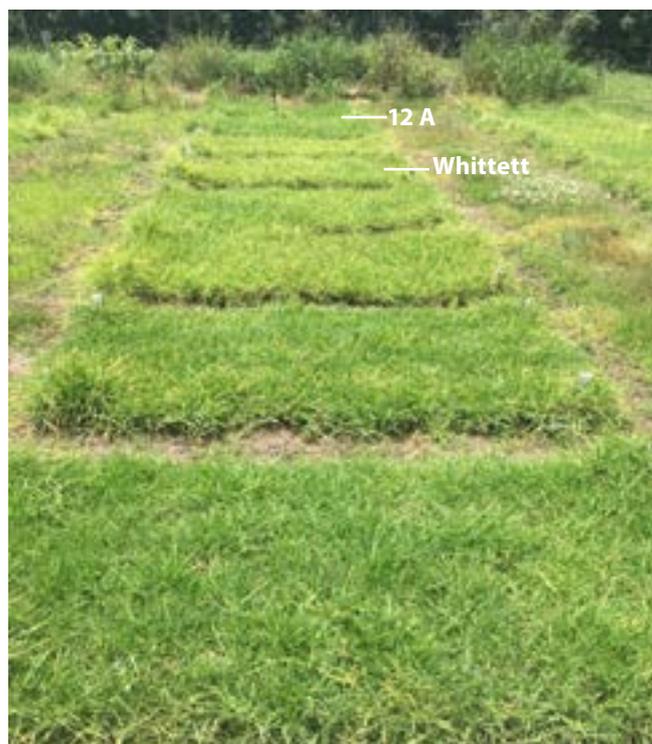
Their other traits tested (see Table 4 pg 7) were black spot fungal infections (proportion of leaves/ plot infected with black spot) and stolon vigour (number of stolons protruding outside the plots each harvest).

The infection of black spot was nil for 12A (see photo right), slightly for Acacia but severe for Whittett and the difference was significant. Stolon vigour was better for Whittett and there was no real difference in cow preference although 12A was grazed more often (the 12A and Whittett plots are indicated in the photo below).

We acknowledge the input of Dr Percy Wong and Dr Peter Martin in the project.

The Eykamp Kikuyu Company at Quirindi, NSW is growing out 12A for seed production and seed should be available in October and is registered under the name Fulkerson.

Please contact Bill Fulkerson on 0417 810 047 and billf@norco.com.au



Kikuyu yellows is a serious disease affecting kikuyu stands on the east coast. It can spread over each season and lead to large losses in kikuyu production.

DECISION MAKING IN THE LIVESTOCK INDUSTRY -

Hunter Livestock Forum 2020 Resource Toolkits available

The theme for the Hunter Livestock Forum 2020 was Decision Making in the Livestock Industry and a range of industry experts delivered presentations about on-farm decision making and tools available for developing practical strategies and solutions for challenging scenarios.

A resource toolkit USB is available that includes the webinar recordings and a suite of resources including management plans and links to useful online resources such as tools on the Bureau of Meteorology website and the Hunter Soil Moisture Network. The toolkit also comes with a Pasture Ruler and fact sheet, courtesy Meat & Livestock Australia. Please contact the Hunter LLS Paterson office on 1300 795 299 to have a free resource toolkit posted out to you.

Decision Making on the Farm was the theme for the first webinar and keynote speaker Cam Nicholson from Nicon Rural Services presented the topic 'The science of decision making – the head, heart and gut.' Cam encouraged all livestock producers, whether small or large scale, to implement the Decision Matrix together with the publication *Farm Decision Making*, as demonstrated in his presentation. Hunter LLS Chair Tony Hegarty talked about enhancing farm decision making skills and the process he uses on his farm at Cassilis. Tony's key message was 'use the good seasons to prepare for the bad'. Hunter LLS has a range of products available to help you plan ahead.

The theme for the second webinar was *Your Head in Decision Making* with Matthew Milne from Rural Adversity Mental Health Program (RAMHP) and Graham Creed from ABC Weather. This year has been particularly challenging with bush fires, drought and the current global pandemic taking its toll on running the farm and potentially leading to decision paralysis. Matthew presented on rural adversity and how to minimise the stress of decision making in these difficult times. RAMHP resources together with LLS publications on drought and support services available to farmers are available on the USB. If this topic raises concerns for yourself or someone else, consider speaking to your general practitioner or contact the NSW Mental Health Line 1800 011 511.

'Where's the rain you promised?' was the title of Graham Creed's presentation and how to use and interpret weather forecasts and the latest weather-related tools for decision making on the farm was demonstrated. These tools are readily available on the Bureau's website and the links to access them are included in the Online Resources page on the USB.

Decision Making in the Paddock was the theme for the third webinar and our own Hunter LLS Agricultural Extension Officers Teresa Hogan and Sarah Giblin delivered presentations on this topic. Soil Moisture Network was discussed live from the paddock with Sarah on her farm and Teresa talked about 'Feeding Ruminants: Pasture Assessment & Supplementary Feeding' including a segment on 'Perennial Grasses in Rotational Grazing' by Tanya Hayes from Seedforce. Nikki Henderson, Livestock Nutritionist with Pinnacle Ag also gave a presentation titled

'Decision Making for Stock Requirements & Supplementary Feeding.'

Animal Health & Decision Making was the theme for the fourth and final instalment of the webinar series, presented by our own Hunter LLS team of District Veterinarians, including

- Vaccinations: Which Animals? Which Vaccines? by Dr. Kristi Arnot
- Goat Health and Decision Making by Dr. Kylie Greentree
- Biosecurity Essentials - how to put together a Biosecurity Plan by Dr. Jane Bennet, and
- Bull selection with James and Ted Laurie, Knowla Livestock by Dr. Jim Kerr

The webinars are also available to view on the Hunter LLS Youtube channel. Visit the link here and search Hunter Livestock Forum <https://www.youtube.com/channel/UckJXs500C5WmAlsxNNYny6Q>

We also encourage you to subscribe to our Youtube channel to automatically receive notifications when a new video is available. The Agricultural Extension team would like to thank all the speakers who generously gave their time to the Hunter Livestock Forum 2020 webinar series. We hope the viewers found this new format of information delivery engaging and innovative. To all those who participated in the webinars, thank you for your support.



Decision making in the paddock to better manage cattle.



Hunter LLS District veterinarians Dr. Kristi Arnot and Dr. Kylie Greentree deliver presentations for Animal Health and Decision Making.

LEGUME NODULATION: Paddock Survey

Pasture legumes

Legumes play an important part in many pastures in the Hunter. The root nodules on legumes house symbiotic nitrogen-fixing bacteria called Rhizobia which provide nitrogen to the plant and later to the pasture grasses and other non-leguminous pasture species.

Pasture legumes are commonly said to fix between 20-40 kg of nitrogen per ton of dry matter they produce. So if you have some legumes in your pastures then you would be expecting this level of nitrogen to be provided to your pastures.

Well maybe... It all depends on the nodules. There can be very few nodules on a legume plant or sometimes none at all. And legume appearance above ground is not a reliable indicator of nodulation below the ground, as healthy looking plants can actually have very few nodules.

Nodulation survey results

Surveys of legume nodulation were conducted in the Central West, Central Tablelands, Monaro and Riverina regions recently by Local Land Services, MLA and Monaro Farming Systems. 225 paddocks were tested and they found that around 90% of all paddocks had inadequate nodulation. In some regions up to 20% of paddocks had no nodules present on legume plants. The

results of the survey indicate that the provision of nitrogen via biological fixation may be considerably less than is commonly expected.

In seeking to explain this, Dr. Belinda Hackney of Central West Local Land Services suggested that the rhizobia associated with sub clovers performs optimally where pH is above 5.5 and once it falls below pH 5 the population of rhizobia declines.

This survey found that more than 70% of paddocks sampled had a soil pH that is sub-optimal for the function of rhizobia associated with clover and medic. So, while the plants might grow well at the pH in the paddock, the rhizobia would not.

Addressing the issue of poor nodulation is likely to require amelioration of soil acidity issues and provision of soil nutrients (particularly sulphur) essential for symbiotic nitrogen fixation.

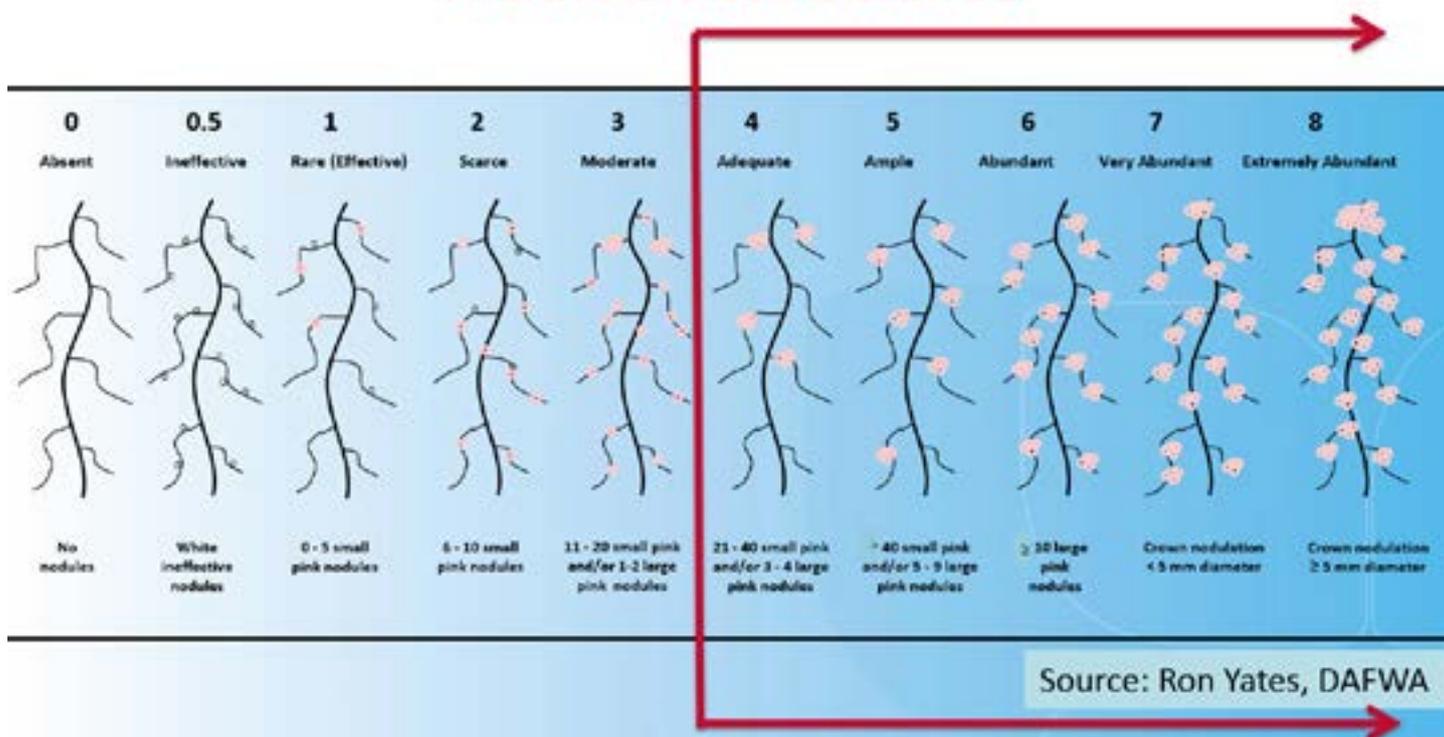
Checking for nodules

You can check the nodulation on the legumes in your pastures. Dr. Susan Orgill of NSW Department of Primary Industries advises:

“To check for nodulation use a shovel, a bucket of water and some elbow grease, dig up some plants, wash the roots and inspect. Adequate nodulation is something like 20 to 30 small pink nodules on the root system of any individual plant.” Refer to guide below.

If your legumes are not nodulating well, then test your soil for pH, aluminium, sulphur, phosphorous and molybdenum. Late winter, when the plants are mature, is the ideal time to look for nodules.

Nodulation scores



How to do it

- Dig up some plants, being careful to keep the root system intact.
- Gently wash the roots and inspect.
- Use the chart below to assess the nodulation.

Adequate nodulation is something like 20 to 30 small pink nodules on the root system of an individual plant.

The photo on the right shows adequate nodulation.

Nodulation Score Chart from Dr Ron Yates, DAFWA (Yates et al 2016).



References: Hackney, B, Jenkins, J, Powells, J, Edwards, C, Orgill, S, DeMeyer S., Edwards T., Howieson J. and Yates R. (2017), *Nodules or not – a survey of pasture legume nodulation in central and southern NSW.*

Yates, R, Abaidoo, R, Howieson, J (2016), *Field experiments with rhizobia in 'Working with rhizobia.'* (Eds J Howieson, M Dilworth.) pp. 145-166. Australian Centre for International Agricultural Research: Canberra, Australia

GETTING THE MOST OUT OF YOUR PASTURE

A look at the importance of pasture assessment for improved pasture utilisation and livestock production.

We have hit spring and our temperate and tropical grasses have kicked into gear in the warmer weather and there is a welcome abundance of livestock feed in many parts of the Hunter region. Producers alike are soaking up a well-deserved break from the years of drought the region has endured. However, now is not the time to become complacent in your pasture management because inevitably it is how we utilise this feed that will determine production success moving forward.

Pasture Assessment

Why is it important to know what is in your paddock?

Knowing what is in your paddock is the first step towards making grazing management decisions to optimise productivity and ensure that you are meeting the nutritional requirements of your livestock. Understanding the quantity and quality of the feed on the ground assists in determining stocking rates, length of time livestock can graze the pasture, and when and if supplementary feed may be required.

The aim is to find a sustainable balance between feed availability and livestock demand. We want to optimise pasture utilisation

without impacting pasture recovery in the future. This requires a sound knowledge of pasture growth rates according to the season as well as the nutritional demands of the class of livestock you are feeding.

How do we make a good estimate of what is in the paddock?

There are various ways to estimate the amount of pasture in our paddocks. Eyeballing the pasture as you drive past does not give the clearest picture of what is really going on. Jumping out of the ute and getting down on ground level, allows you to see what growth is happening particularly in dry standing feed. Make a note of the season and what is actively growing in your pasture. If there are plants you cannot identify, take a photo and get in touch with your Local Land Services Ag extension staff for a correct identification. Knowing what plants are growing and when they are growing is the first step to grazing management and improved utilisation of the pasture.

Once you have a good understanding of what is in your paddock, be that a mixed native pasture or an improved pasture, we need to determine how much feed is available and whether that will meet the nutritional demands of your livestock. There are simple tools available that you can use to help with decision making.



Tools for measuring pasture availability

The Meat & Livestock Australia (MLA) Pasture ruler is specifically designed to measure pasture height and equate that into a useable pasture quality guide. Using the height, an estimate of the green feed available can be made for a moderately dense pasture. The ruler can be accessed by getting in touch with Hunter LLS Livestock Officer Teresa Hogan or by ordering directly from MLA. The ruler is a free MLA resource that comes with an information pack on how to get the most out of using your ruler.

We can also estimate pasture availability by measuring the dry matter per hectare, we do this by getting a 50cm x 50cm quadrant (you can make one using sticks or wire) and following the step by step process below. Again, if you are unsure about how to get started on any of these pasture assessment processes get in touch with your LLS Ag extension staff who will be happy to work through this with you.

1. Find an area representative of whole paddock
2. Use 50x50cm quadrant, cut herbage, place in brown paper bag
3. Dry samples in microwave (be careful not to put sample in microwave for too long as samples have been known to catch light- advise not doing this in your kitchen)
4. Weigh dry sample in 10-15 second intervals
5. Repeat step three until you record the same weight twice in a row
6. Use the formula to calculate kg/DM/ha

$$\text{DM(g)} \times 4 = \text{g/square m}$$

$$\text{g/square m} \times 10000 = \text{g/ha}$$

$$\text{g/ha}/1000 = \text{kg/ha}$$

Matching feed available to livestock demand

To find the right balance between feed available and livestock demand it is important to plan-ahead and carefully monitor your livestock and the pasture. Sustainable grazing management requires a thorough understanding of pasture growth rate, stocking rate and time on pasture as well as livestock nutritional requirements according to age and reproductive status.

For the short term, a feed budget will assist in ensuring that you are meeting those nutrition demands. A feed budget allows you to monitor and adapt to changes in pasture availability quickly and fill feed gaps without productivity loss. For example, reassessing your feed budget through winter will help you to recognise a feed gap and implement supplementary feeding early to prevent production loss in your livestock. Longer term grazing plans assist in determining paddock allocation according to nutritional demand. i.e. lactating cows allocated to higher quality pasture, grazing time and movement of livestock between paddocks. Grazing plans are essential in preparing for dry conditions and drought. Consistent monitoring and record keeping, minimising over grazing will assist in pasture recovery and ensure feed is available when you need it most.

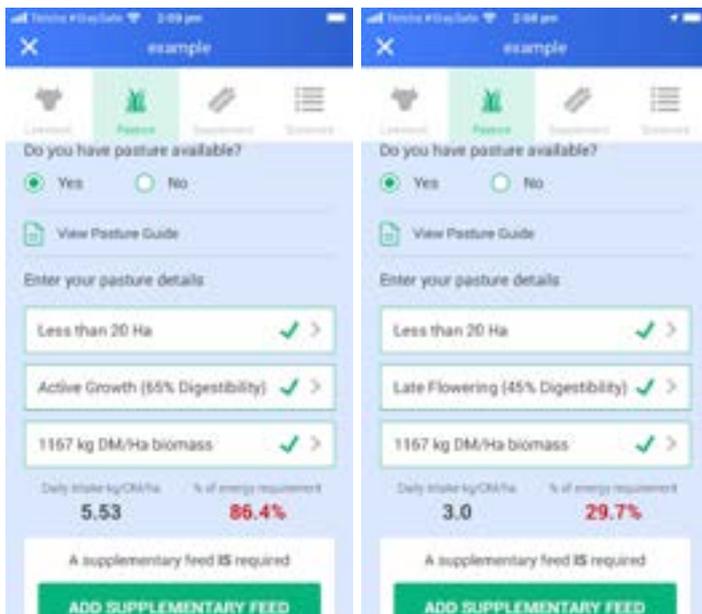
Pasture assessment in the Manning Great Lakes with Albert Mullen

There is untapped potential for many producers in the Manning Great Lakes to improve pasture management with strategic grazing and pasture improvement. By managing leafy pasture growth before it goes to head, stocking rates can be vastly increased with attention to paddock size, pasture type and quality.

On most hilly coastal farms, low-quality late-flowering pastures of a mixture of Seteria, Blady grass, Kangaroo grass and Kikuyu exist and can be difficult at times to manage at any sort of quality for animals to maintain weight into the spring and summer periods. Assessments can be made on how many animals can maintain weight or improve condition on these pastures, however care must be taken to analyse the results.

On a recent farm visit, we used the calculator from Prograze to assess the potential for a 9ha paddock to support 90 cows. The calculator results alone told us the 9ha paddock could support the cows for approximately 10 days leaving 1300kg DM residual, growing at 5kg DM/ha per day. However, the pasture we were looking at consisted of rank summer grasses left behind through winter. This estimate was more likely based on a Rye grass paddock showing good winter growth.

To assess the quality of paddock feeds and not just the dry matter available, we can use the Drought and Supplementary Feed Calculator. The calculator can be found in the app store and is free to download, just search for Drought and Supplementary Feed Calculator (DASFC). For this pasture of rank summer grass types on hilly coastal country, we get three warnings alerting us that this feed does not have enough energy or protein to maintain weight on these animals for the nine days on this feed. But looking at the stock on this farm, the animals are in great condition. So, is the DASFC wrong? And if so, is the Prograze assessment of this wrong too?



If through grazing, the animals can access the better forage available in this pasture that has a low fibre content with an improved digestibility, then they can select the better less fibrous pasture component to provide them with the energy needed. This will, however, affect the number of days the animals will have in that paddock. Stems and rougher grasses will be left in the paddock (spoilage or excess).

The DASFC figures indicate this pasture would only fulfil 29% of the animal's energy needs. If we assume the cows can selectively graze the paddock to get the best leafy components, as the current cow condition shows, then the 9ha paddock will only have a reduced time to browse the paddock from the 10 days indicated by the Prograze tool. This smaller component of the field provides 86% of energy and increases the intake per animal from 3kg to 5.5kg. They may still lose some weight off their backs during winter until the grass growth rate improves over subsequent grazing and conditions improve in spring.

Improving pasture quality will increase grazing days, reaching the potential for it to be a six to 10-day grazing paddock, and reducing the area needed to feed the 90 cows. Due to the rougher grasses dominating the paddock, the herd has approximately two days in a 9ha area to consume the energy needed or the green leafy elements of the pasture.

If a rotational grazing system of 30 days is implemented to meet pasture growth needs and meet each animal's energy and protein requirements, then it would take 15 x nine hectare paddocks to make up a 30 day rotation: 15 moves for of livestock with 2 days spent grazing in each 9ha area - $15 \times 9ha = 135ha$ of land to support the 90 cow herd.

Pasture improvement can decrease the area of land needed to meet the herd's requirements by boosting the quality of available feed. The cows could then graze for four days consuming more nutritious pasture reducing the land needed for a 30 day rotation, 7.5 moves for 4 days in each 9 ha - $7.5 \times 9 ha = 67.5 ha$.

To increase the days per paddock, by improving the quality of grass several practices can be implemented: -

- Improved pasture species to flatten out the feed gap curve (cocksfoot, rye, clover etc)
- Improved nutrients (N,P, K) and clover content
- Improved grazing to reduce waste, trampling (rotational grazing, paddock subdivision, stock time in one area)
- Mechanical (slashing to improve pasture height if cattle can't manage) and increase clover content
- Addition of ruminant enhancers ie loose licks, fortified molasses for standing feed paddocks before growth can be managed

If you have a series of paddocks, an assessment of pasture growth and quality is needed in front of the herd to determine grazing days for each paddock thus increasing or decreasing the area needed to support the herd.

In high producing pastures, it is recommended to have cattle grazing an area for approximately three to four days in each section or paddock, after this time the new shoots of grasses are long enough to be re-grazed by stock, which in turn reduces the regrowth rate of the pasture. If stock are left for extended grazing period, then re-grazing and trampling the new shoots can occur and growth rate is stalled until the herd moves to the next section or paddock.

At the very least to improve pasture quality, herd management can enhance the amount of the green leafy material component in a pasture on subsequent rotations. Paddock time can vary across a rotation and the area needed for a set group of animals can fluctuate depending on conditions. Improving overall pasture utilisation will increase stock numbers. Paddock rotations needn't be one large herd across a property but a series of paddock herd groups matching herd cattle classes and land capability. Fencing these into matching areas can assist in improving carrying capacity and matching stock and paddock pasture quality.

A useful link:- <https://mbfp.mla.com.au/Pasture-utilisation>

Hunter Local Land Services continues to provide advisory services to landholders. Contact your local office to discuss your needs and make an appointment.

Hunter LLS puts together a feed availability and costing report monthly that is available to livestock owners. These reports give a general idea of current feed availability and pricing that will assist in making on farm decisions.

For further details and to discuss your individual livestock and pasture needs, please contact Hunter LLS:

Livestock officer, Teresa Hogan on Ph: 0417352694 or email: teresa.hogan@lls.nsw.gov.au

Landholder Extension officer, Manning Great Lakes, Albert Mullen on Ph: 0427 496 549 or email: albert.mullen@lls.nsw.gov.au

THE ROAD TO DROUGHT RECOVERY, IT'S ALL IN THE PLANNING

Time invested exploring available assistance options may pay dividends when putting together your farm business recovery strategy.

Over two years of drought have set farmers and land managers back on their production and farm development goals however there are now many opportunities available to access subsidies and interest-free loans, free financial counselling and business advice, and fully funded local skills training, to get back on track with a drought recovery plan.

Planning and preparation are key whether you are restocking, upgrading fodder and feeding infrastructure, improving pastures or farm water condition and availability, advice is accessible locally to get inspiration and finetune budgets for your on-farm investment.

Hunter Local Land Services Drought & Recovery Support Flyers are regularly updated with an overview of key links to services and support agencies in your local region for both internet-savvy researchers, and those preferring telephone advice or face-to-face appointments with local professionals. Our LLS drought support, agricultural extension, livestock, biosecurity and vet teams are available to discuss your recovery management issues over the phone or by pre-arranged farm visits.

There is an array of free confidential business advisory services available to get you started down the recovery planning path from local Northern Region Rural Financial Counsellors in Scone, Tocal and Taree, to The Business Centre's small farm and agribusiness support through the NSW Government's Business Connect Program with local one-on-one advice and online event options. They can help you customise a recovery strategy, manage cashflow and marketing, or access finance, grants and loans for new projects, refinancing or operating expenses.

Your financial advisory services and accountant can be key supports when putting together your recovery plan especially when preparing cashflow budgets and finance applications. The main drought resilience government finance loans on offer for primary producers to consider are the NSW Rural Assistance Authority's (RAA) Drought Assistance and Farm Innovation loans, and the Commonwealth's Regional Investment Corporation (RIC) loans. The RAA Drought Assistance Fund interest-free loans of up to \$100,000 were introduced on 1 July 2020, for farmers to implement systems and management practices to enhance sustainability. Producers with existing Drought Assistance Fund loans can also apply for this round. The loan term is seven years and there are no repayments required in the first two years. This loan can fund re-stocking and other activities promoting on-farm profitability and resilience, transport of stock, fodder and water, genetic banking, installing of fodder and water infrastructure. Applications can take 16 weeks to be reviewed so take this into account when in your strategy. For larger permanent infrastructure projects, the RAA Farm Innovation loan is a long

term, low interest loan of up to \$1M to improve farm productivity and ensure sustainability. RIC farm investment and drought loans can refinance up to 50% of farm debt and provide new debt for operating expenses or capital improvement. These 10-year-term loans include interest-free and interest-only, then principal and interest repayment periods.

On the farm production front, your local rural advisors, industry organisations, producer and Landcare groups can be an important source of management advice and knowledge sharing. Look out for the next round of AgriSkills, AgSkilled and drought support training workshops and online webinars. There are a great array of local rural skills workshops coming up. Remember, if new loans are not part of your business plan, consider joining a group for a local partnership project for one of a range of grant programs including National Landcare Program Smart Farms Small Grants - Round 4.

Don't forget our Hunter LLS Drought Administration Officer, Anne Lantry is assisting landholders submit Round 3 applications for NSW RAA's Emergency Drought Transport Subsidy. Under Round 3 from 1 July 2020, eligible primary producers can now include transport for restocking in their claims of up to \$25,000 while funds are still available, remembering the closing date may be brought forward from December 2020 if allocated funds are exhausted. The 50% subsidy can be applied to transport costs for purchased stock to a farm business, in addition to freight for farm chemicals, fertiliser and seed, fodder and water for stock or domestic use, stock to and from agistment, and stock to sale or slaughter. Owner/carriers can base claims on up to \$5 per kilometre.

Make sure you register for the Hunter LLS Drought & Recovery Matters e-newsletter for another great local source of news updates and events and look out for upcoming LLS workshops and webinars. If you would like to be linked with local industry networking options in your area or for any further information contact Hunter LLS Regional Drought Support Officer, Maria Cameron 0409 636 765 or maria.cameron@lls.nsw.gov.au



Our Hunter LLS team can get you on track with recovery management planning and advice.

ARE YOU SOWING SEEDS FOR WELLNESS?

We welcomed spring and, like clockwork I received an email from my local nursery. It reminded me of all the garden chores I need to get started in order to have a productive and bountiful veggie garden come mid-Summer.

It's easy enough to follow along with:

- Basil, capsicum, chilli, lettuce and tomatoes – start undercover in seed trays and plant out in 4-6 weeks;
- Beetroot, coriander, spring onions – sow seed directly into garden in rows;
- Cucumber, horseradish, rhubarb – plant seedlings and crowns directly.

It also contains general garden maintenance reminders for the upcoming season:

- Check irrigation system for wear and tear
- Change water timer batteries
- Service mower/whipper snipper
- Mix and aerate compost bin
- Pull remaining winter veg from garden and turn through fertilizer
- Start mulching for weed control/water saving

I took my time reading through the list and planning what I'd like the plant this year. Having had some decent rain over winter, there should be a reasonable amount of moisture in the soil to plant most things. I also started allocating time on the weekends for the garden maintenance I need to do. Some things I'll be able to do myself, but having neglected my mower and whipper snipper all winter, leaving them out in the weather, I know I'm going to have to take them down town for a full service.

As I sat there, I started to realise that I was putting a lot of consideration and effort into growing plants. Don't get me wrong, nothing is more satisfying and rewarding than growing your own food - which takes a lot of preparation, but it's also a simple process. You put the plant in the ground, add some nutrients and water. In a few months, you can eat it.

But, how many of us put this effort into looking after ourselves? Do we get reminders for maintenance on ourselves? If I'm honest, I don't think I put as much effort into these other important aspects in life as I do the gardens.

Wouldn't it be nice to get an email each season with a list of things we need to do to make sure we can grow, be productive and harvest goodness from life? It could be really simple. In summer, we get reminders for being sun safe, being encouraged to spend some time outdoors and get some regular exercise. As autumn and winter comes along we could get reminders about needing a flu shot, washing hands and to check our level of activity. Perhaps in spring we'd be reminded to visit the doctor or build our support networks to stay mentally healthy.

Or maybe those reminders could be a little more in depth? Like, are we feeling more anxious than usual? Is stress making it hard to find positivity and happiness each day? Are we having trouble regulating the amount of alcohol we're drinking?



What happens when we get these reminders? What do we do then? Is it a simple job that we have the skills to fix? Or is it like my mower and whipper snipper – too far gone, weathered and worn which needs the assistance of a professional to help get back on track?

The list could help! Like the gardening reminders, our health reminders could include practical things to do like:

- Staying connected with friends and family
- Make sure you get 8 hours of sleep a night
- Aim to exercise for 30 minutes each day
- Plan something fun to look forward to
- Practice meditation or mindfulness
- Do something you're good at or enjoy doing
- Take care of our physical selves
- Ask for help if you need it

From little things, big things grow! And our health can grow from the little things we do each day. Some small, considered changes that we tend to every week and maintain each month could soon become a flourishing garden of self-wellness. But life always tends to get in the way, so a nice reminder every few months about staying well probably wouldn't hurt come to think of it.

Now, back to that dang mower...

Matthew Milne is a Registered Psychologist and has spent the last six years providing on-farm counselling across the New England North West region to farmers and their families doing it tough during the drought. Since 2019, Matthew has worked as a coordinator for the Rural Adversity Mental Health Program where he provides education and information to rural people and communities about mental health and wellbeing in the Hunter Valley. At the Hunter Livestock Forum 2020 Matthew gave a presentation on decision making during these tough times. Matthew's presentation and resources are available on the Resource Toolkit, together with all four webinars delivered for the Forum. Please contact Hunter LLS at **1300 795 299** to have a kit posted out to you, free of charge.

For more information and to access services provided by the Rural Adversity Mental Health Program please contact

Matthew Milne Ph 0437 989 044
email: matthew.milne@health.nsw.gov.au
Website: www.ramhp.com.au

Hunter Livestock Forum 2020

Visit our Hunter LLS Youtube channel for presentations from the recent Hunter Livestock Forum 2020 webinar series – Livestock and Decision Making. Subscribe to the channel to receive alerts as new videos become available.



Webinar 1. Your Business and Decision Making

Full recording - <https://www.youtube.com/watch?v=KzlyQ1Nc3k&list=PLC7J5DHnrm63gus8A9Nabuije4RpS5aNa>

The Science of Decision Making – the Head, Heart and Gut, Cam Nicholson, Nicon Rural Services
<https://www.youtube.com/watch?v=oisCTYiwFcc>

Preparing and Planning for Decision Making, Tony Hegarty, Hunter LLS Chair
<https://www.youtube.com/watch?v=KzlyQ1Nc-3k&t=146s>

Webinar 2. Your Head in Decision Making

Full recording - <https://www.youtube.com/watch?v=MSoyZp04ni8&t=34s>

Where's the Rain You Promised, Graham Creed, ABC Weather
<https://www.youtube.com/watch?v=naOsSk-Yon8&t=31s>

Minimising the Stress of Decision Making, Matthew Milne, Rural Adversity Mental Health Program
<https://www.youtube.com/watch?v=r6TqP2LCZ0o>

Webinar 3. Decision Making in the Paddock

Full recording - <https://www.youtube.com/watch?v=9nsLqQFPGpA&t=47s>

Hunter Soil Moisture Network, Sarah Giblin, Hunter LLS
<https://www.youtube.com/watch?v=wpuFcjwl-C4&t=451s>

Webinar 4. Animal Health and Decision Making

Full recording - <https://www.youtube.com/watch?v=hqxbSN24HJU&t=453s>

Selecting the right bull and reading EBVs - with DV Jim Kerr and Ted Laurie
<https://www.youtube.com/watch?v=v2Xs-8UAjHM>

Legume Nodulation - field sampling, Grains Research and Development Corporation
<https://www.youtube.com/watch?v=bfnsEM64t0&list=PL2PndQdkNRHEWgUonXZ0pWekB1LMme6>

For more information about Hunter Local Land Services:



1300 795 299



admin.hunter@lls.nsw.gov.au



www.lls.nsw.gov.au/regions/hunter



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