Lucerne is the largest forage crop in the world for animal production, in Australia we still under utilise lucerne to drive livestock production. Given the adaptive ability of lucerne, most agricultural areas can successfully establish productive lucerne stands and impact farm profitability through increased livestock performance. We are currently seeing evidence of its wonderful adaptation and drought tolerance as many drought affected areas that have had some recent rains have seen an immediate response from dormant lucerne stands. In what looked like bare fields in the dry, now have lucerne emergence and feed on the way. The Pasture Genetics portfolio, ranges from more winter dormant material used in hay and pasture enterprises through to highly winter actives for cropping rotations. Pasture Genetics has the right fit for any option with lucernes now being bred for purpose grazing, hay production, irrigation or dryland. Pasture Genetics varieties come with “attributes built-in” to ensure livestock performance and persistence.

Pasture Genetics has the right lucerne to fit all requirement’s. All Pasture Genetics lucernes have a minimum 90 percent germination. This far exceeds current industry standards. L56 has the highest levels of multiple pest and disease resistance of any lucerne variety in Australia and produces very high yields and exceptional forage quality. Grazing tolerant GTL®60 is a lucerne specifically bred for its grazing tolerance with a broad and low-set crown and excellent palatability. ML99 Multileaf® is a good quality option in the highly winter active category while L71 is a dryland specialist targeting grazing and hay production. Technical information sheets for all Pasture Genetics lucernes are available on our website and also follow up on Facebook and other social media for regular updates.

As a further commitment to Australian Farmers, customer service and seed quality, Pasture Genetics is now the only company in Australia to offer a 30 day Establishment Guarantee® on all our proprietary lucernes. Unfortunately establishment failures can occur, this half price seed replacement is offered on all proprietary seed that fails to establish satisfactorily - regardless of drought, drift, planter malfunction, insect damage, chemical residue, chemical drift, excessive rainfall, stock damage and more. Pasture Genetics provides farmers with substantial savings if they need to replant their paddocks. Why plant Aurora when L70 has Establishment Guarantee® or Sequel when L91 has Establishment Guarantee®. With superior genetics, high seed quality, germination standards and the latest seed technology in Goldstrike®, Pasture Genetics is committed to guarantee its lucernes through to successful establishment in the paddock. Check out our website for more information on this unique safety net for our key farmer customers.

SELECTING THE RIGHT VARIETY FOR YOUR PADDocks

1. What do I want the lucerne in this paddock for? (Hay or grazing, or dual-purpose)
2. When is the hay or grazing needed? (summer only, autumn and summer, etc)
3. How long do I want the stand to last? (3 year rotation, permanent pasture, etc)

Photographs above courtesy of Success with Lucerne Publication 2000

LUCERNE VARIETAL SELECTION CHART

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>Q31</th>
<th>L56</th>
<th>GTL®60, L70, L71, Q75, L91, ML99 MULTILEAF®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment Vigour</td>
<td>Good. Best sown alone - not recommended for winter sowing</td>
<td>Very good - suitable for cover cropping and pasture mixes with perennial grasses</td>
<td>Excellent - suitable for cover cropping &amp; pasture mixes with annual pastures</td>
</tr>
<tr>
<td>Growth</td>
<td>95% summer, 5% winter</td>
<td>90% summer, 10% winter</td>
<td>80% summer, 20% winter</td>
</tr>
<tr>
<td>Winter-Hardiness</td>
<td>Very high</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Maturity</td>
<td>Shorter growth. Delayed maturity for maximum cutting and grazing flexibility</td>
<td>Similar regrowth rates to most winter actives. Extended cutting schedule and grazing period</td>
<td>Fast regrowth, early maturity</td>
</tr>
<tr>
<td>Crown</td>
<td>Below ground and broad - excellent grazing tolerance</td>
<td>Low and broader - good grazing tolerance</td>
<td>High and erect - strict rotational grazing</td>
</tr>
<tr>
<td>Forage Quality</td>
<td>Premium grade hay, chaff and silage</td>
<td>Very good quality hay, chaff and silage</td>
<td>Good quality hay and silage if given the best cutting management</td>
</tr>
<tr>
<td>Adaptation</td>
<td>Irrigation/coastal/cold climates. Best suited to medium and heavy soils</td>
<td>Dryland and irrigation. Suitable for soils ranging from deep sands to heavy clays</td>
<td>Dryland and irrigation. Suitable for most soil types</td>
</tr>
</tbody>
</table>

Photographs above courtesy of Success with Lucerne Publication 2000

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>WINTER DORMANT</th>
<th>SEMI WINTER DORMANT</th>
<th>WINTER ACTIVE</th>
<th>HIGHLY WINTER ACTIVE</th>
<th>VERY HIGHLY WINTER ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation - High Quality Hay</td>
<td>Q31</td>
<td>L56</td>
<td>GTL®60</td>
<td>Q75</td>
<td>L91, L92</td>
</tr>
<tr>
<td>High Quality Dryland</td>
<td>Q31</td>
<td>L56</td>
<td>GTL®60</td>
<td>L71, Q75</td>
<td>L91, L92</td>
</tr>
<tr>
<td>Heavy Grazing Tolerance</td>
<td>Q31</td>
<td>L56</td>
<td>GTL®60</td>
<td>L71</td>
<td>-</td>
</tr>
<tr>
<td>Price Competitive Dryland</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>L70</td>
<td>L91</td>
</tr>
</tbody>
</table>
Goldstrike® is the premium seed treatment in the Australian market. The treatment process and technical advances with Goldstrike® are ongoing. Pasture Genetics Goldstrike® seed treatment range comes standard with the Nutrient Enhanced package. It includes a complete starter package with macro and micro nutrients.

- Total genetic package in pasture legumes exclusive to Pasture Genetics
- More reliable and stronger stand establishment
- Proven effective nodulation and nitrogen fixation
- Improved potential for maximum yield
- Tougher, more durable protective seed coating
- Superior flowability for faster, hassle-free planting
- The ultimate in convenience, flexibility and confidence
- XLR8 insecticide available on request.

**DISPELLING A MYTH: SEED COAT**
Goldstrike® vs untreated seed

<table>
<thead>
<tr>
<th>SEEDS/KG</th>
<th>UNTREATED</th>
<th>GOLDSTRIKE®</th>
</tr>
</thead>
<tbody>
<tr>
<td>300,000</td>
<td>450,000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEEDS SOWN/M² @ 10KG/HA</th>
<th>300</th>
<th>450</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PLANTS/M² ESTABLISHED</th>
<th>200+ and effectively nodulated (60% + of seeds becoming established plants)</th>
<th>180 (40% of seeds becoming established plants)</th>
</tr>
</thead>
</table>

Lucerne seed with 95% germination sown at 10kg/Ha sown under irrigation. Penfield Research Station 2007.

The trial confirmed that Goldstrike® treated seed achieved a higher actual plant establishment, with less seeds per kilogram planted than untreated seed. This demonstrated the superior technology encapsulated in the Goldstrike® process.

**Goldstrike® XLR8® Seed Treatment**

The XLR8® seed treatment package utilising Gaucho 600FS, has been used successfully over many years. Pasture Genetics are always looking at new technology to help bring even better performance to our leading forage products. The new insecticide package Poncho Plus® is such advancement in the seed treatment market. The XLR8® treatment will now include Poncho Plus® as the main insecticide utilised as part of this package, which is applied directly to pasture grasses and legumes.

Over many years research has confirmed that the addition of an insecticide to the seed before sowing significantly benefits the plant during establishment and early growth. The XLR8® treatment will protect emerging seedlings for 3-4 weeks after sowing against sucking and biting insects, like red legged earth mites (RLEM) and blue oat mite (BOM). The additional protection now with Poncho Plus® offers grass pastures protection from cutworm, yellow headed cockchafer, and african black beetle. Broadleaf pasture will also notice additional protection from Cutworm. Poncho Plus® also offers suppression against lucerne flea in grass, broadleaf and brassica pastures.

This time period is critical for seedling establishment, and reducing the impact from insects is a key to successful pasture production. The benefits from XLR8® not only comes from the insect protection, but has also shown long term benefit with early seedling plant growth. This has been demonstrated with stronger root systems in seedlings, leading to higher overall pasture establishment and long term pasture production. The success with high plant populations is critical to firstly reduce impact from in crop weed infestations and leads to longer term biomass production. The XLR8® seed treatment comes standard on Pasture Genetics forage brassicas, herbs, phalaris, sub tropical grasses and premium proprietary lucerne lines. These plants have demonstrated excellent seedling performance when XLR8® has been applied. This has led to quicker seeding vigour and rapid growth in the critical establishment phase. The XLR8® Seed treatment can be applied on request to all seed products where registration is applicable.

**PONCHO® PLUS COMPARISON CHART**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Redlegged Earth Mite</th>
<th>Lucerne Flea</th>
<th>Blue Oat Mite</th>
<th>Cutworm</th>
<th>Yellowheaded Pasture Cockchafer</th>
<th>African Black Beetle</th>
<th>May other Stress Shield™ benefits</th>
<th>Up to 6 weeks systemic protection for emerging seedlings</th>
<th>Protection against some soil pests</th>
<th>Low impact on beneficial species</th>
<th>Targeted chemical placement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>
It demonstrates greater persistence than winter active varieties, when persistence is more important than winter growth. Q31 is ideally suited to irrigation and dryland pastures in cold climate areas. The superior leaf retention trait leads to improved quality lucerne to be sold into premium markets. Q31 was bred for specialist irrigated haymaking, silage or chaff where premium quality is required and where hay cannot be made in winter.

Q31 is the leading hay and chaffing variety for premium markets. Q31 has a superior leaf retention trait and the highest nutritive value in retained leaf in feed and hay, combined with high yields and excellent quality for hay, chaff, silage and grazing.

Q31 has quickly been adopted as the leading hay and chaffing variety for premium markets.

Q31 has a superior leaf retention trait and the highest nutritive value in retained leaf in feed and hay, combined with high yields and excellent quality for hay, chaff, silage and grazing.

It demonstrates greater persistence than winter active varieties, when persistence is more important than winter growth.

Q31 was bred for specialist irrigated haymaking, silage or chaff where premium quality is required and where hay cannot be made in winter.

Q31 is ideally suited to leaders in forage quality.

Comas standard with Goldstrike® XLR8 Longlife treatment – (Poncho® Plus insecticide)

- Better option than S4Q33, WL342HQ-MF, Cimmaron, Prime

From the lucerne across the summer period and would also provide green chop options to a neighbouring dairy as the stand went into winter.

He said the minimum stand life he would expect from the Q31 lucerne was five years, although with good agronomic management and pivot irrigation, that number could increase.

Paddock preparation and weed control have been critical in achieving the good stand with the area originally deep ripped twice on an angle and the seed then broadcast at a rate of 22 to 25 kilograms per hectare.

The strip had not been utilised for many years prior to planting so a number of herbicides were used prior to and after establishment to ensure a clean crop.

BILLS: Bill Greed and Bruce McCracken, of Katunga, VIC, use Q31 to produce premium hay for the race horse industry.
L56 is a high yielding variety with excellent forage quality and greater persistence on all soil types. It offers greater management flexibility than winter active varieties and excellent seedling vigour for quick establishment.

**L56 - SEMI WINTER DORMANT**

| Semi winter dormant (Medicago sativa) | EX |
| Winter Activity | 5 |
| Min Rainfall (mm) | 350 |
| SEEDING RATE kg/ha | 4 - 8 |
| Dryland | 10 - 20 |

L56 is an excellent dual-purpose variety for high quality hay, chaff and grazing. It is ideally suited for prime lamb enterprises especially where persistence and forage quality are important. L56 has faster recovery after cutting or grazing than other semi-dormant varieties and similar year-round yields to most winter-active varieties. It has excellent seedling vigour in pasture mixes and under sowing crops. The performance of L56 is proven in all areas and on a wide range of soil types, including heavier less than well drained soils.

**QUALITY HAY FROM L56 AT LAIDLEY**

The high quality of hay produced on a range of seasons and conditions has made L56 the lucerne of choice for Peter Wood at Laidley, in the Lockyer Valley of south-east Queensland.

Mr Wood said he had grown L56 for the past 10 years and has been pleased with the quality of hay over the many seasons.

"Hay quality is one of the main reasons we grow it," he said. "It doesn’t seem to get stalky and it tends to hang onto its bottom leaf. We’ve found it as good as any and we’ve stuck with it. There’s no reason to change."

Lucerne is harvested into small square bales and sold to the horse industry.

"THE HORSE PEOPLE LOVE IT," MR WOOD SAID. "IT HAS NICE FINE LEAFY HAY. THAT TENDS TO BE WHAT THEY ARE LOOKING FOR."

Generally lucerne is sown at just over 30 kilograms per hectare in the winter time and they are able to take their first cut off in spring.

The establishment phase is vitally important to ensure maximum production in the years to follow and care is taken to prepare the seed bed and ensure adequate irrigation.

L56 provides three years of excellent production before the area is rotated through to barley or forage sorghum for a number of seasons and then put back into lucerne.

Mr Wood said he could get up to nine cuts of hay throughout the year and the winter activity of L56 allowed them to produce forage in the cooler months.

He said they would cut hay every four weeks in the summer and every six weeks in the winter time.

"In the summer we can get 50 to 60 bales per acre and then it drops down to 20 or 30 bales per acre in the winter," he said.

The time between cutting and baling is three to four days in the warmer months and about a week as the temperatures drop.

Over many seasons L56 has demonstrated an excellent ability to adapt to the varied weather conditions and held on well under some extreme heat in February of 2016.

Mr Wood said L56 showed excellent pest and disease resistance and they hadn’t had any trouble with the lucerne in that regard.

The lucerne is often situated in a number of paddocks across the farm and mowed at different times to reduce work load and risk.

**L56 SHINING IN LUCERNE COMPARISON ON GIPPSLAND PROPERTY**

The L56 lucerne variety has shown excellent growth, as well as pest and disease resistance, in a comparison with other cultivars on the property of Matt Bechaz, at Maffra in the Gippsland region of Victoria.

“We put in three different varieties and visually, L56 is out performing the other two,” Mr Bechaz said. “I think it is because of its pest and disease resistance. L56 didn’t have the pests that the other two had. L56 was part of a trial plot with each area grown across one hectare. The remainder of the paddock was also grown to lucerne with eight hectares in total.

Mr Bechaz said he had always wanted to grow lucerne as an option for his dairy cows and was able to sow the crop three years ago in a well-drained area on a property they had just purchased.

He said initially it was grown under a lateral with very little irrigation but in recent years it was replaced by a pivot which has allowed for full production across summer.

The lucerne is cut predominantly in the autumn-reared calves graze the area before the lucerne is cleaned up.

The lucerne is cut and baled in four days in the spring and drop it down to three in summer.”

The first lucerne cut of the season occurred in late September and continued every four weeks across the summer.

Six cuts of quality silage are expected across the season with the last harvest in the autumn.

“Can you certainly utilise a small area of land very productively,” Mr Bechaz said.

Across the winter months autumn-reared calves graze the area before the lucerne is cleaned of weeds with an application of herbicide in August.

Mr Bechaz said the lucerne silage was an excellent option in the dairy and is used as part of the ration in times where grazing options or other silage was limited or unavailable.

“It is the first place I go to increase the feed,” he said.

At the start of 2015, the lucerne silage was in such high demand that it was being utilised in the dairy straight from the paddock.

This season the feed situation was improved so the lucerne silage was able to be saved for the late autumn and winter period.

**IMAGE: L56 has performed well on the property of Matt Bechaz, at Maffra, Vic where it is utilised for silage production and fed to dairy cows.**
The parent germplasm was tested under an arduous series of strict grazing protocols over a number of years. This enabled tolerant parent plants to prove their integrity and expression of true grazing tolerant characteristics. To meet the criteria of the grazing tolerant lucerne GTL®60 trial protocol. The final stage of testing was a 3 year grazing trial where it was grazed on a 3 week set rotation. This continuous stress load put immense pressure on all the candidate lines and was very quick to expose lines with minimal tolerance. The 3 year time frame was set up to simulate traditional Australian practices, where the expectation on plant survivability was more than 3 years and beyond. Bred in Australia, GTL®60 is ideal for extensive grazing farming where rotations cannot be as rigorously implemented as in more intensive rotation systems. GTL®60 is the first grazing tolerant lucerne to be released from the Pasture Genetics program, having originated from such a strict and lengthy selection and trialling criteria system to specifically prove grazing tolerance in lucerne.

- Selected for a broad and low set crown, high forage values, high ruminant palatability with high disease and pest resistance ratings.
- Tested under an arduous series of strict grazing protocols over a number of years
- Ideally suited as a dual-purpose variety for grazing & hay operations
- Quick recovery after defoliation gives the ability to store plant energy into the crown
- Retain leaf through the drying and baling process
- Good adaptability to a wide range of soil types
- GTL®60 has demonstrated excellent grazing tolerance with 74% residual plants measured after 3 year grazing trial
- Comes standard with Goldstrike™ XL8R Longlife treatment
- (Poncho® Plus insecticide)
- Better option than Stamina GT6

The new grazing tolerant lucerne GTL®60 was selected and bred by Pasture Genetics Pty Ltd. Parent germplasm was selected for a broad and low set crown, high forage values, high ruminant palatability with high disease and pest resistance ratings.

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GRAZING TOLERANT LUCERNE SELECTIONS TRIAL – Pasture Genetics has taken the term “Grazing tolerant”, very seriously with its selection of new lucerne material. The ability to select plant germplasm through a 3 year intensive grazing trial, has proven critical to give farmers confidence in new lines coming through the Pasture Genetics Research program. The strength of this trialling model will be replicated in the future with more selections being made with this key grazing tolerance trait.

PENFIELD RESEARCH STATION
SOWN 14/9/2011
GRAZING FROM THE
24/11/2011 TO 1/8/2014

The trial protocol was established in conjunction with NSW DPI and IP Australia to give a measure of true grazing tolerance. After lucerne was established, it was grazed every 3 weeks to a residual height of about 30mm. Approximately 20 Merino wethers were used to graze the trial each time, this was the number of animals adequate to graze the trial down within at least a 3-4 day period so we could manage frequent grazing but not extended periods of time of animals being set on the trial. There were sometimes longer periods of time between grazings depending on grazing recovery time in the colder months. The idea being that the trial was frequently grazed and put under grazing pressure regularly, but not set stocked. This resulted in the trial being grazed 32 times over the trial duration.

The trial will now be managed to continue to collect long term data, with sheep being used in a more set stocking routine with low stocking rates to see what sort of results will come of this type of management and if the information we have collected on varieties so far remains consistent. Plant counts were taken initially, during and after the trial. All varieties were sown at 4kg/ha with adjusted seeding rate based on germination percentage, there were 3 replications of each variety. This resulted in an average starting plant count of 37 plants/m².

The ideal result was to end up with somewhere between 30-40 plants per square metre, as this trial was run under dry land conditions in an approximately 420mm rainfall zone.

The plots were irrigated at some stages throughout the trial but only to prevent plants actually dying due to moisture stress. There were significant differences between the residual plant numbers of many varieties as seen in the graph.
L70 LUCERNE

Winter active (Medicago sativa) EG
Winter Activity 7
Min Rainfall (mm) 350
SEEDING RATE kg/ha 4 - 8
Dryland 10 - 20
High Rainfall/Irrigation

L70 is available to the Australian domestic market having been a successful export replacement for Aurora.

L70 HAY FOR QUALITY CHAFF AT KALBAR

The hay made from L70 lucerne has proven to be ideal for chaff making on the Moore property, at Kalbar, in the Fassifern Valley of southern Queensland.

Scott Moore said they moved across to L70 lucerne four years ago and have been very impressed with the variety over that time.

“It has been a good all-rounder with decent yields and good quality.” He said they had initially wanted to try something different and needed lucerne with nice fine stems and good leaf to use in their chaffing operation.

“You can tell a lot about a lucerne variety when you chaff it,” he said.

“With the chaff we like a bit of nice, fine lucerne.” A bag of chaff is generally made from one and a half lucerne bales and is delivered to produce stores and sold to horse customers.

Mr Moore said they also sold a lot of small square bales to horse people around the region and had very good feedback on the product made from L70.

Lucerne on the property is normally sown in late autumn and is ready to cut from September through to the autumn of the following year.

The majority of production comes in the first three months of the season with the hay cut every four weeks.

L70 lucerne was also planted on the property last season and has impressed in its first full year of production.

“I think it is going to be similar to L70 but it does have a bit more growth during the winter,” Mr Moore said.

The winter growth will be a good option this season with Moby forage barley planned to be direct drilled straight into the lucerne stand.

As a quicker forage option, the plan is to harvest the Moby and lucerne for hay in late August or early September.

This provides an option for a barley / lucerne blended hay bale which is in demand by customers at that time of year and also provides a handy cash flow.

“It would be good to have hay coming in at the start of spring,” Mr Moore said.

The property also has established a long-term lucerne trial comparing varieties of different dormancies for persistence and hay quality.

Mr Moore said it was an interesting exercise to look at the more dormant varieties with their lower crown, in comparison to the winter active ones utilised in the commercial crop.

FANTASTIC PRODUCTION IN FIRST YEAR OF L70 LUCERNE

L70 lucerne was used for silage and grazing and produced well in its first year on the property of Paul McCulloch, at Nundle, south of Tamworth in the New England region of New South Wales.

Lucerne was used as the main grazing option through the spring, summer and autumn periods and in August last year two paddocks were sown down to L70.

It was the first time L70 had been grown on the property and the variety impressed with its strong establishment and early growth.

Mr McCulloch said the lucerne received 35mm of rain a week after planting and, with the ground soaked, did an excellent job.

He said the forage was first utilised in early summer with both paddocks cut and made into four foot bales of silage.

“It made good silage and the cut also helped the lucerne really get away.”

Lucerne on the property is made into either silage or hay if there is excess production but is predominantly used as a grazing option for merino sheep and lambs.

The Merino ewes will normally lamb in July and August and initially feed on oats during the winter period before being turned onto the lucerne in the spring.

“I rotate the lambs around four or five paddocks and rely on lucerne to get us through the summer,” Mr McCulloch said.

January made the lucerne sit up nicely. Lucerne is the king of our summer feed here. There is nothing better for fattening lambs.”

The ewes and lambs are sheared in April and then the males and culled females are sent to market in July.

“It is a self-replacing flock with one main lambing and one main shearing,” Mr McCulloch said.

A bag of chaff is generally made from one and a half lucerne bales and is delivered to produce stores and sold to horse customers.

Mr Moore said they also sold a lot of small square bales to horse people around the region and had very good feedback on the product made from L70.

Lucerne on the property is normally sown in late autumn and is ready to cut from September through to the autumn of the following year.

The majority of production comes in the first three months of the season with the hay cut every four weeks.

L70 lucerne was also planted on the property last season and has impressed in its first full year of production.

“I think it is going to be similar to L70 but it does have a bit more growth during the winter,” Mr Moore said.

The winter growth will be a good option this season with Moby forage barley planned to be direct drilled straight into the lucerne stand.

As a quicker forage option, the plan is to harvest the Moby and lucerne for hay in late August or early September.

This provides an option for a barley / lucerne blended hay bale which is in demand by customers at that time of year and also provides a handy cash flow.

“It would be good to have hay coming in at the start of spring,” Mr Moore said.

The property also has established a long-term lucerne trial comparing varieties of different dormancies for persistence and hay quality.

Mr Moore said it was an interesting exercise to look at the more dormant varieties with their lower crown, in comparison to the winter active ones utilised in the commercial crop.

IN THE PAST LUCERNE HAS BEEN UNDERSOWN TO A CEREAL CROP, HOWEVER LAST SEASON IT WAS PLANTED ON ITS OWN AND PRODUCED A VERY GOOD RESULT.

Each paddock on the property is approximately eight to nine hectares and is crash grazed by the flock of ewes and lambs before they are rotated to the next area.

L70 lucerne for hay and chaff.
L70 AN UNDERSOWN OPTION ON CENTRAL WEST PROPERTY

L70 lucerne is being used as an undersown option each season on the property of Jeff Foran, at Curban, north of Gilgandra in the central west region of New South Wales.

Mr Foran said lucerne had been undersown to wheat for many seasons on the property and formed an excellent pasture option for their sheep and lamb operation.

It also provided nitrogen benefits for the wheat crops which typically followed the lucerne phase of the paddock rotation.

Wheat is sown at between 35 and 45 kilograms per hectare and the L70 Goldstrike® treated seed dropped just before a press wheel, at a rate of approximately 4 kilograms per hectare.

Plants time is normally early May and the lucerne grows through the wheat during the season and is then utilised after the cereal crop has been harvested.

Mr Foran said they had experienced some excellent results from lucerne in the past and on one occasion the legume resembled a green carpet as the heads of the wheat were being harvested.

He said ewes were put into the paddock immediately after harvest to clean up any wheat grain and also give the established lucerne a prune.

“They knock it back and then we wait until the next good rain.”

Sheep and lambs are then able to graze the lucerne at different times throughout the year, with the majority of the paddock lasting at least three years and some providing feed for much longer.

A key is to choose a paddock that is relatively clean and also have good summer weed control for added moisture at sowing.

Wheat and lucerne are the rotational options used on the property with the lucerne normally undersown on the third year of wheat in preparation for the pasture phase.

Mr Foran said he had found lucerne was an excellent option for his paddocks and the cereal crops that followed.

“We’ve grown some fantastic lucerne. If you get the lucerne right it will give you a lot for your country. You are still getting a nitrogen benefit. I think it’s great.”

The last two seasons have been challenging for the lucerne with 2014 being very dry and 2015 inundated with rain in the months that followed sowing.

On both occasions Mr Foran was able to access the Pasture Genetics Establishment Guarantee® program that provides replacement seed at half price if the crop doesn’t establish satisfactorily.

During the severe dry and flood conditions some of the lucerne struggled to establish and was claimed under the program.

L70 V AURORA

• L70 offers higher disease and pest package compared to Aurora
• Superior forage genetics - higher leaf to stem ratio
• Minimum 90% germination standards exceed current minimum certified standard for Aurora - 60%
• L70 seed production is derived from dryland seed production stands only.

This is to ensure the dryland integrity and performance of L70, when utilised in standard cereal undersowing practices and marginal dryland grazing enterprises

• These attributes, combined with superior plant genetics, makes L70 an excellent lucerne option over Aurora.

This gives Australian farmers higher returns and extra confidence with the Establishment Guarantee® program that commons based lucerne cannot offer or compete against.

GERMINATION STANDARDS COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>GOLDSTRIKE® L70</th>
<th>COATED AURORA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds/kg</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Seeds Sown/m² @ 4kg/Ha</td>
<td>120</td>
<td>120</td>
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<tr>
<td>Minimum Germination %</td>
<td>90%</td>
<td>65%</td>
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<tr>
<td>Variable Seeds/m² Sown</td>
<td>108</td>
<td>78</td>
</tr>
<tr>
<td>Established Rate 50%</td>
<td>54</td>
<td>39</td>
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</tbody>
</table>

▲ 38% INCREASE IN PLANT ESTABLISHMENT /m²

DISEASE RATING COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>L70</th>
<th>AURORA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spotted Alfalfa Aphid</td>
<td>HR</td>
<td>HR</td>
</tr>
<tr>
<td>Blue Green Aphid</td>
<td>HR</td>
<td>HR</td>
</tr>
<tr>
<td>Phytophthora Root Rot</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Anthracnose</td>
<td>R</td>
<td>R MR</td>
</tr>
<tr>
<td>Bacterial Wilt</td>
<td>R</td>
<td>LR</td>
</tr>
<tr>
<td>Stem Nematodes</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>

YIELD RESULTS & PRICING COMPARISON

L70 offers very competitive pricing to Aurora lucerne and therefore similar per Ha input seed costs.

TRIAL RESULTS

L70 offers the establishment guarantee unlike Aurora.

98% YIELD INCREASE

L70

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L70</td>
<td>18.5</td>
</tr>
<tr>
<td>Aurora</td>
<td>17.0</td>
</tr>
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</table>

Hay Returns/Ha @ $200T

<table>
<thead>
<tr>
<th>Source</th>
<th>Data Source</th>
<th>Hay Returns/Ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>L70</td>
<td>Pasture Genetics – 4 Locations</td>
<td>$3700/ha</td>
</tr>
<tr>
<td></td>
<td>46 cuts (irrigated sites)</td>
<td></td>
</tr>
<tr>
<td>AURORA</td>
<td></td>
<td>$3400/ha</td>
</tr>
<tr>
<td>Increased Forage Quality</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Better Disease Profile</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Higher DM Production</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Increased Germination %</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Establishment Guarantee</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

▲ EXTRA HAY RETURNS $300 Ha/yr

L70 WINTER ACTIVE

L70 - Curban, NSW, uses L70 lucerne undersown to wheat as a long-term pasture option for their sheep and lamb operation.

IMAGE: Jeff Foran, of Curban, NSW, uses L70 lucerne undersown to wheat as a long-term pasture option for their sheep and lamb operation.

L70 (LEFT) EXHIBITING HIGHER LEAF CARRYING TRAIT COMPARED TO OLDER PLANT GENETICS EXHIBITED IN AURORA (RIGHT)

EXTRA HAY RETURNS

8% YIELD INCREASE

L70 lucerne is being used as an undersown option each season on the property of Jeff Foran, at Curban, north of Gilgandra in the central west region of New South Wales.

Mr Foran said lucerne had been undersown to wheat for many seasons on the property and formed an excellent pasture option for their sheep and lamb operation.

It also provided nitrogen benefits for the wheat crops which typically followed the lucerne phase of the paddock rotation.

Wheat is sown at between 35 and 45 kilograms per hectare and the L70 Goldstrike® treated seed dropped just before a press wheel, at a rate of approximately 4 kilograms per hectare.

Plants time is normally early May and the lucerne grows through the wheat during the season and is then utilised after the cereal crop has been harvested.

Mr Foran said they had experienced some excellent results from lucerne in the past and on one occasion the legume resembled a green carpet as the heads of the wheat were being harvested.

He said ewes were put into the paddock immediately after harvest to clean up any wheat grain and also give the established lucerne a prune.

“They knock it back and then we wait until the next good rain.”

Sheep and lambs are then able to graze the lucerne at different times throughout the year, with the majority of the paddock lasting at least three years and some providing feed for much longer.

A key is to choose a paddock that is relatively clean and also have good summer weed control for added moisture at sowing.

Wheat and lucerne are the rotational options used on the property with the lucerne normally undersown on the third year of wheat in preparation for the pasture phase.

Mr Foran said he had found lucerne was an excellent option for his paddocks and the cereal crops that followed.

“We’ve grown some fantastic lucerne. If you get the lucerne right it will give you a lot for your country. You are still getting a nitrogen benefit. I think it’s great.”

The last two seasons have been challenging for the lucerne with 2014 being very dry and 2015 inundated with rain in the months that followed sowing.

On both occasions Mr Foran was able to access the Pasture Genetics Establishment Guarantee® program that provides replacement seed at half price if the crop doesn’t establish satisfactorily.

During the severe dry and flood conditions some of the lucerne struggled to establish and was claimed under the program.

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L71 LUCERNE

High pest and disease resistance allows L71 to be utilised in high rainfall / irrigation situations. L71 was formed from the partnership between the NSW DPI lucerne Breeding Program and Pasture Genetics Pty Ltd.

Selected through a rigorous breeding process from many sites across NSW. L71 outperforms its predecessor Genesis by 4% on average in both dryland and irrigated conditions. L71 has been selected for its solid disease and pest resistance, which will allow it to thrive in all conditions and areas. Its development will bring a high quality, high performing lucerne with rugged characteristics for the crucial long term pasture rotation market. L71 will become a necessity on all mixed farming enterprises.

L71 will become the new 7 dormancy benchmark for dryland grazing in low - medium rainfall areas (350-550mm annual rainfall). Ideally suited to light textured red brown earth or sandy soils.

SELECTIONS TRIAL
GRAZING TOLERANT LUCERNE

The trial protocol was established in conjunction with NSW DPI and IP Australia to give a measure of true grazing tolerance. After lucerne was established, it was grazed every 3 weeks to a residual height of about 30mm. Approximately 20 Merino wethers were used to graze the trial each time, this was the number of animals adequate to graze the trial down within at least a 5-6 day period so we could manage frequent grazing but not extended periods of time of animals being set on the trial. There were sometimes longer periods of time between grazings depending on grazing recovery time in the colder months. The idea being that the trial was frequently grazed and put under grazing pressure regularly, but not set stocked. This resulted in the trial being grazed 32 times over the trial duration.

The trial will now be managed to continue to collect long term data, with sheep being used in a more set stocking routine with low stocking rates to see what sort of results will come of this type of management and if the information we have collected on varieties so far remains consistent. Plant counts were taken initially, during and after the trial. All varieties were sown at 4kg/Ha with adjusted seeding rate based on germination percentage, there were 3 replications of each variety. This resulted in an average starting plant count of 37 plants/m2. The ideal result was to end up with somewhere between 30-40 plants per square metre, as this trial was run under dry land conditions in an approximately 420mm rainfall zone.

The plots were irrigated at some periods of time between grazings to prevent plants actually dying due to moisture stress. There were significant differences between the residual plant numbers of many varieties as seen in the graph.

| Winter active (Medicago sativa) | EX |
| Winter Activity | 7 |
| Min Rainfall (mm) | 350 |
| SEEDING RATE | kg/ha |
| Dryland | 4 - 8 |
| High Rainfall/Irrigation | 10 - 20 |

L71 V GENESIS – YIELD RESULTS & HAY RETURN COMPARISON

L71 is the premium dryland specialist and compares favourably to Genesis and Aurora.

TRIAL RESULTS

4% YIELD INCREASE
> NSW DPI 21 sites over 3 years 2007 – 2010

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L71</td>
<td>7.31 t/ha</td>
</tr>
<tr>
<td>Genesis</td>
<td>7.04 t/ha</td>
</tr>
</tbody>
</table>

NSW DPI 21 sites over 3 years 2007 – 2010

Hay Returns/Ha @ $200T

| L71 | $1462/ha |
| Genesis | $1408/ha |

EXTRA HAY RETURNS $54 HA/yr

PENFIELD RESEARCH STATION % RESIDUAL PLANTS AFTER 3 YEARS
Lucerne stands are grazed to restrict flowering over a three year period to increase pressure on plants.

GRAZING TOLERANT TRIAL - L71

GRAZING TOLERANT TRIAL - AURORA
**LUCERNE GRAZING TRIAL** – Throughout the duration of the trial, all varieties were exposed to the same environmental conditions and assessed equally by being grazed simultaneously by the 3 grazing groups; one group on each variety at any time. Also with each cattle group grazing each different variety for a 4 week rotation, this allowed us to exclude the differences in the grazing performance of the different cattle groups from being a variable factor.

**PENFIELD RESEARCH STATION**

**LIVEWEIGHT GAIN TRIAL 2014**

- An irrigated 61 ha paddock was divided into 12 half Ha sections. On the 23rd of May, 4 of these sections were each sown with L71 lucerne, Aurora lucerne, and SARDI7 Series II lucerne.
- Sowing rate was 15 kg/ha.
- 24 Hereford steers were split into 3 grazing groups of 8 steers, with an average starting weight of 299kg.
- The 3 groups simultaneously grazed each of the varieties throughout the duration of the trial.
- The trial ran for 12 weeks, in which each variety at least would be grazed for a 4 week duration by each group of cattle.
- No other sources of feed or supplements were given to the animals.

**DISCUSSION**

Throughout the duration of the trial, all varieties were exposed to the same environmental conditions and assessed equally by being grazed simultaneously by the 3 grazing groups; one group on each variety at any time. Also with each cattle group grazing each different variety for a 4 week rotation, this allowed us to exclude the differences in the grazing performance of the different cattle groups from being a variable factor. The trial focused on the true variable being the variety of lucerne that was being grazed. During the trial measurements on dry matter production of the varieties were also taken, as well as samples taken for feed quality analysis. All varieties established well, and the cattle performance in the first 4 week rotation was good all round. Prior to the trial commencing there was a very dry early spring period, without much natural rainfall. The trial was irrigated, but there was still a lack of soil moisture deep in the soil profile and this caused some periods of moisture stress between watering.

This resulted in particularly the 2nd rotation showing a drop off in dry matter production from all varieties, but also daily weight gain in the Aurora and SARDI7 Series II. However, dry matter production and weight gain began to increase again in the 3rd rotation across all varieties.

The results indicate that the L71 was able to maintain quality and resulted in higher levels of intake during these times. The feed analysis shows lower % ADF and % NDF values and this could likely account for the higher levels of kg/Day weight gain achieved by the L71 throughout the trial. The results are consistent with the key features of L71 lucerne; which is a highly persistent and high quality variety, able to perform in both irrigated and dryland conditions that are less than ideal.

**FEED TESTS**

<table>
<thead>
<tr>
<th></th>
<th>L71</th>
<th>AURORA</th>
<th>SARDI 7 SII</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Dry Matter</td>
<td>17.20</td>
<td>16.40</td>
<td>14.70</td>
</tr>
<tr>
<td>ME (MJ/kg)</td>
<td>11.50</td>
<td>11.70</td>
<td>11.25</td>
</tr>
<tr>
<td>% Crude Protein</td>
<td>30.20</td>
<td>31.40</td>
<td>31.70</td>
</tr>
<tr>
<td>% ADF</td>
<td>24.9</td>
<td>26.5</td>
<td>26.7</td>
</tr>
<tr>
<td>%NDF</td>
<td>30.5</td>
<td>31.8</td>
<td>30.7</td>
</tr>
<tr>
<td>RFV</td>
<td>212</td>
<td>199.7</td>
<td>208.7</td>
</tr>
</tbody>
</table>

Average results from feed tests info taken prior to grazing throughout the trial (3 tests)

**LUCERNE AVERAGE KG DM/HA/DAY**

<table>
<thead>
<tr>
<th></th>
<th>1ST ROTATION</th>
<th>2ND ROTATION</th>
<th>3RD ROTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L71</td>
<td>62</td>
<td>57</td>
<td>60</td>
</tr>
<tr>
<td>Aurora</td>
<td>57</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>SARDI 7 SII</td>
<td>60</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>

**AVERAGE KG/DAY WEIGHT GAIN**

<table>
<thead>
<tr>
<th></th>
<th>1ST ROTATION</th>
<th>2ND ROTATION</th>
<th>3RD ROTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L71</td>
<td>1.41</td>
<td>1.23</td>
<td>1.07</td>
</tr>
<tr>
<td>Aurora</td>
<td>1.23</td>
<td>1.53</td>
<td>1.71</td>
</tr>
<tr>
<td>SARDI 7 SII</td>
<td>1.26</td>
<td>1.07</td>
<td>1.41</td>
</tr>
</tbody>
</table>

Total DM t/ha produced

Average results from feed tests info taken prior to grazing throughout the trial (3 tests)

**HIGHER RFV (RELATIVE FEED VALUE) EQUALS HIGHER WEIGHT GAIN**

1ST, 2ND & 3RD Rotation

1ST ROTATION – 06.10.14 to 02.11.14
2ND ROTATION – 02.11.14 to 30.11.14
3RD ROTATION – 01.12.14 to 28.12.14

**DISCUSSION**

Throughout the duration of the trial, all varieties were exposed to the same environmental conditions and assessed equally by being grazed simultaneously by the 3 grazing groups; one group on each variety at any time. Also with each cattle group grazing each different variety for a 4 week rotation, this allowed us to exclude the differences in the grazing performance of the different cattle groups from being a variable factor.
Q75 LUCERNE

Winter active (Medicago sativa)  EX  
Winter Activity: 7  
Min Rainfall (mm): 350  
SEEDING RATE: kg/ha  
Dryland: 4 - 8  
High Rainfall/Irrigation: 10 - 20  

Q75 has set a new benchmark in forage quality for the Australian lucerne industry with the highest forage quality, Relative Feed Value (RFV) and protein in the winter active group.

- Excellent seedling vigour for quick establishment and high resistance to multiple pests and diseases for maximum stand persistence.
- Ideal lucerne for dairy, beef and sheep producers looking for high yields and top quality forage
- Q trait reflecting high quality forage
- Winter active with winter activity - 7
- Ideal on a wide range of soil types
- Excellent leaf holding capacity in the bale
- Comes standard with Goldstrike® XLR8 Longlife treatment

Better option than Aurora, Genesis, Sardi 7, WL525HQ

MACRAX 32 days & Will have its final hay cuts 32 days after the first cut. 

Areas of L56 and Q75 lucerne are being utilised to produce high quality hay for the racehorse industry on the Woods property near Maitland in the Hunter Valley region of New South Wales.

Mr Woods said they initially grew L56 lucerne after acquiring the property and then moved to Q75 lucerne in the years that followed.

“L56 is quite a good all-rounder,” he said. “It is a trait I like and a trait my customers like. It is quite noticeable in the bale. Q75 produces leaf right down to the ground. It has similar yields to L56 and, in terms of pest and disease resistance, it is almost as good as L56.”

High Quality Hay from Pasture Genetics Lucerne

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Tom Woods said they initially grew L56 lucerne after acquiring the property and then moved to Q75 lucerne in the years that followed.

“L56 is quite a good all-rounder,” he said. “It is hardy in terms of disease and pest resistance and can take a lot of rainfall without losing population, particularly in the seedling lucerne stage. L56 also has unbeatable yields.”

Q75 was planted in the March of 2015 and another area planted in August and has also performed particularly well.

It was sown at a rate of 35 kilograms per hectare and produced a population of nearly 200 plants per square metre. Mr Woods said they sowed their lucerne at quite a high rate and it would naturally thin out so that only the strongest plants survived.

“It was an unbelievable stand.”

He said both varieties were in the early stages of establishment when the super storm of April 2015 hit the area and they handled the extreme conditions surprisingly well.

The area also received 450mm of rainfall in January of 2016 and the lucerne again coped well.

Local, high-end hay markets have been targeted with the produce from the Q75 lucerne stand and it has consistently delivered across the summer.

“Q75 is quite a soft hay, even the stem itself,” Mr Woods said. “It is a trait I like and a trait my customers like. It is quite noticeable in the bale. Q75 produces leaf right down to the ground. It has similar yields to L56 and, in terms of pest and disease resistance, it is almost as good as L56.”

Hay produced on the property is sold as a premium product to local race horse businesses who insist on fine stems and the maximum amount of leaf.

Mr Woods said he would expect a five year lifespan from both L56 and Q75 although the adverse weather conditions over the past twelve months will likely take its toll.

He said they could expect six to seven good sized cuts of hay across the summer, with the area harvested every 25 to 28 days, if conditions are favourable.

Yields of 50 to 60 small square bales per acre are common throughout the period and there is a real emphasis on the property to ensure all is done to maximise yield and quality from the lucerne.

This included herbicide programs in the seedling and established phases to knock out grass and broadleaf weeds as well as proper paddock preparation, irrigation and nutrition.

“Q75 lucerne is being utilised to produce high quality hay and grazing through winter on the property of Ryan Jeffree, at Wagga Wagga, in southern New South Wales.

Mr Jeffree has two 30 hectare irrigation pivots which were sown down to Q75 lucerne in April of 2013 and is predominantly being used to produce high quality hay.

He said they harvest small square and round bale hay from the areas across the summer and sell it to local customers as well as produce stores as far afield as Sydney.

“To supply produce stores is cheaper as far as the hay goes,” he said. “It is very leafy and the holding up well.”

Q75 is normally cut every 28 to 32 days and will have its final hay harvest in late March or, if weather conditions are favourable, in early April.

Mr Jeffree said after the hay harvest they normally give the lucerne a spell for an eight week period to allow it to regenerate and then shut down.

The winter activity of Q75 does allow some growth in the cooler months and that is taken advantage of with mows of ewes or lambs allowed to graze the area from early April.

“We like to steadily graze it,” Mr Jeffree said. “I don’t like to knock it around too much.”

The stock take to the lucerne well and also have cereal hay available in the paddocks to supplement their diets.

A grazing option at that time of year was very favourable and provided a good lead in to the winter weed herbicide program which occurred just prior to spring.

The herbicide is applied in August and the stock reintroduced to the paddock to clean it up after the withholding period has passed.

Hay cuts will depend on the conditions during the year and the grazing opportunities and will vary from September through to November.

Mr Jeffree said they had three excellent seasons of growth from the Q75 areas and expected them to persist for some time.

“This is its third season and it hasn’t dropped off at all. It looks the same as that first year.”

He said Q75 held on particularly well when the weather was a bit unsettled and they had to wait a few days to cut for hay.

“We keep the water up to it and it hangs in really well.”

Q75 for High Quality Hay and Grazing at Wagga Wagga

Q75 lucerne is being utilised to produce high quality hay and grazing through winter on the property of Ryan Jeffree, at Wagga Wagga, in southern New South Wales.

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The stock take to the lucerne well and also have cereal hay available in the paddocks to supplement their diets.

A grazing option at that time of year was very favourable and provided a good lead in to the winter weed herbicide program which occurred just prior to spring.

The herbicide is applied in August and the stock reintroduced to the paddock to clean it up after the withholding period has passed.

Hay cuts will depend on the conditions during the year and the grazing opportunities and will vary from September through to November.

Mr Jeffree said they had three excellent seasons of growth from the Q75 areas and expected them to persist for some time.

“This is its third season and it hasn’t dropped off at all. It looks the same as that first year.”

He said Q75 held on particularly well when the weather was a bit unsettled and they had to wait a few days to cut for hay.

“We keep the water up to it and it hangs in really well.”

To supply produce stores is cheaper as far as the hay goes,” he said. “It is very leafy and the holding up well.”

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L91 the “Easy Grow” winter active lucerne, bred by Pasture Genetics L91 replaces L90, as the leading winter active variety for dryland grazing of cattle and sheep in low to medium rainfall areas.

L91 USED AS PART OF POPPY CROP ROTATION

L91 lucerne is proving to be an excellent rotational option with poppies, for Sam Burrill on a property at Tunbridge, in the Midlands of Tasmania.

For some time lucerne has been used as a three to four year break crop, and in the past two seasons L91 has been the preferred option. Mr Burrill said L91 fitted well into the rotation and was planted to the area immediately after the poppies were harvested in late January or early February.

“The area is raked and burnt and lucerne planted at the earliest opportunity. He said L91 established quickly and was able to be grazed once or twice before the cold winter weather.

The variety germinated in as little as three to four days and continued to provide production throughout the year. During the colder weather, stocking numbers were reduced to base levels. The sheep began to lamb as the ground temperature warmed up leading into spring.

This coincided with the time L91 was starting to grow and become available as a feed option. Mr Burrill said there was normally a burst of feed available when it warmed up and then any further grazing options were dependent on rainfall or irrigation. He said if there was leftover irrigation water following the cropping season it could be used on the lucerne to assist in bringing on the fat lambs through the summer period.

“Lucerne seems like a good fit,” he said. “We get three to four years out of it and run it hard. It’s done its job and fixed some nitrogen.”

The long tap root of lucerne also provides an option to bust through the clay pan and assist the following poppy crop.

After the lucerne has been grazed across multiple years, it is sprayed out at the start of April and the soil prepared for a planting of poppies in August.

Mr Burrill said they would generally look at two years of poppies before rotating to lucerne, although disease issues in recent seasons mean the poppies may only be sown for a single season.

He said lucerne provided an ideal option for a weed and disease break in their cropping rotation.

The L91 has been sown at a rate of 15 kilograms per hectare and looked after early to ensure good crop establishment.

Its high winter activity allowed early grazing options after establishment and quick options in the spring.

L91 is available through Pasture Genetics and is part of the company’s Establishment Guarantee program.

Under the program replacement seed is supplied at half price if the crop fails to establish satisfactorily.

IMAGE: Sam Burrill, of Tunbridge, TAS, uses L91 lucerne in rotation with poppies
ML99 Multileaf® has demonstrated an ability to be a great all-round lucerne on the property of Michael Lyons, at Thornton, in the Lockyer Valley of southern Queensland.

Mr Lyons said he originally planted ML99 Multileaf® in 2013 but had to replant after floods that year made a mess of the paddock.

The area was one of the first to be sown again and the lucerne established quickly and was ready for its first cut in the spring later that year.

Three seasons on, the ML99 Multileaf® is still performing strongly and providing hay options throughout spring and summer and even into the cooler months of winter.

Mr Lyons said the high winter activity of ML99 Multileaf® meant it continued to grow throughout the cooler months and provided opportunities for hay at that time of year.

“I’ve found it to be a very good all-round lucerne. It is very leafy, with thin stalks and makes a good baler.”

He said ML99 Multileaf® was particularly quick to recover after each hay cut and demonstrated excellent regrowth at all times of the year.

This was particularly noticeable in the cooler months where the variety is able to still produce growth.

Hay on the property is normally harvested into small square bales and either used to feed cattle on-farm or stored in the shed and sold to a range of end-users in the winter time.

“If I feed it out to the weaners as they come through, it’s a great silage,” Mr Lyons said.

Feedback from a range of end users has been very positive with high quality, premium hay produced every 28 days across the summer and early autumn months and lengthened out during the cooler months.

Mr Lyons said there were some occasions when wet weather intervened and forced the lucerne to sit there for a week or two past its optimum cutting period.

He said ML99 Multileaf® hung on particularly well and kept its leaf attached to the stalks right down to the ground.

Every 28 days across the summer and early autumn months and lengthened out during the cooler months.

“ML99 Multileaf® is normally irrigated every 14 days and has persisted particularly well after each grazing and was still producing strongly after four years of production.

“They milk really well on the lucerne. There isn’t any drop-off in production at all.”

In the spring time a further four bays will be sown to lucerne and initially used for hay and silage as the crop establishes before being switched across to a grazing option in the second and subsequent years.

At this stage, the plan is to mow the lucerne in the evening and allow the cows to access it after milking in the mornings.

Mr Kerrins said ML99 Multileaf® lucerne has been tested under intensively irrigated and dryland conditions to meet Australian lucerne growers’ expectations. ML99 Multileaf® is the best and safest lucerne variety bred by using only classic traditional plant breeding methods.

When it gets a bit old we don’t have too much trouble with it,” he said. As ML99 Multileaf® completed its third summer of production it continued to perform strongly and is likely to remain a viable option for a number of seasons to come.

IMAGE: Michael Lyons, of Thornton, QLD, has found ML99 Multileaf® lucerne to be a great all-round variety.

DAIRY GRAZING SUCCESS WITH ML99 MULTILEAF® LUCERNE

A strip of ML99 Multileaf® lucerne has proven to be the ideal grazing option for dairy cows on the Kerrins’ property at Dhurringile, in the Goulburn Valley in Victoria.

Mick Kerrins said they originally planted a block of ML99 Multileaf® lucerne four years ago and initially used it successfully for hay and silage.

The paddock is situated just 100 metres from the dairy and, over the last two seasons, the utilisation of the area has changed from fodder production to grazing.

Mr Kerrins said they put a mower into a specific area two to three hours before milking and then allowed the cows to strip graze the ML99 Multileaf® directly from the dairy.

“In the evening they would bolt to the paddock,” he said. “They’d head to it and have a good feed. It’s been amazing.”

ML99 Multileaf® provides three nights of grazing for between 180 and 200 cows and forms a valuable part of their overall ration across the summer period.

Grazing of the lucerne is scheduled for every 21 to 22 days which is a bit sooner than what their hay cuts had been.

Mr Kerrins said the hay cuts were always just at flowering but they found the grazing value was better just before the flower sets.

He said production from the lucerne paddock was constant from late September through until it started to slow down in late April.

There was the occasional grazing opportunity across the winter and then the paddock was cleaned for weeds and put into full production for spring.

Super and potash are applied after every grazing and the lucerne is normally irrigated every 14 days across the summer period.

“We don’t treat it like a normal pasture,” Mr Kerrins said. “It is the only way to handle it with the cost of water. We are trying to head towards more water efficient plants.”

He said the ML99 Multileaf® responded particularly well after each grazing and was still producing strongly after four years of production.

“They milk really well on the lucerne. There isn’t any drop-off in production at all.”

In the spring time a further four bays will be sown to lucerne and initially used for hay and silage as the crop establishes before being switched across to a grazing option in the second and subsequent years.

At this stage, the plan is to mow the lucerne in the evening and allow the cows to access it after milking in the mornings.

Mr Kerrins said ML99 Multileaf® lucerne has persisted particularly well with the hay and grazing across the years.

IMAGE: Mick and George Kerrins, of Dhurringile, VIC in a crop of ML99 Multileaf® lucerne which is utilised for grazing on the property.
1. Paddock Selection and Preparation

Lucerne can be grown on a range of soils from deep sands to heavy clays. For best yield and persistence select paddocks with:

- Optimal range soil pH (CaCl₂) 5.0 - 7.5.
- Good natural slopes (for good drainage within the paddock).
- Adequate fertility (nutrient levels).

A surface and subsoil soil test is recommended to determine the suitability for lucerne. Soil acidity affects every stage of lucerne production from seedling establishment to stand survival.

Incorporate lime 3 to 6 months before sowing where topsoil pH (CaCl₂) is below 5.0. Avoid soils with acid sub-soils or high levels of sub-soil exchangeable aluminium (above 5%). Apply gypsum to sodic soils (exchangeable sodium levels above 6%) to overcome surface crustng problems.

Gypsum needs to be applied several months before sowing: Use deep ripping to break hard layers in the sub-soil and to increase gypsum penetration to depth. Plan for weed control prior to and during the cropping phase to reduce the density and seed-set of major weeds.

Lucerne is sensitive to herbicide residue problems. The main carryover problems are associated with the triazines (e.g. simazine and atrazine), imidazolines (e.g. Midas®, OnDuty®, Spinnaker® following dry seasons) and sulfonylurea herbicides (e.g. Glean®, Ally®, Logran® on high pH soils). Test the soil using pots over summer or delay planting lucerne for at least one year after application of these residual herbicide groups.

2. Before Sowing

If weeds are present before sowing use knockdown herbicides.

At sowing pre-emergent herbicides such as Trifluralin should be applied in Autumn between 4 weeks and 7 days and Spring 4 weeks and 3 days before sowing takes place.

Broadstrike™ herbicide will control Capeweed, Wild radish, Wireweed and Doublegee/Spiny emex when used in conjunction with a mixing partner. **Before using any herbicide consult your agronomist and the product label regarding safe and effective use**

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>PRE-SOWING</th>
<th>POST EMERGENT, SEEDLING AND ESTABLISHED LUCERNE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>TRIFLURALIN</td>
<td>FUSILADE®, VERDICT®</td>
</tr>
<tr>
<td>Ryegrass</td>
<td>D</td>
<td>A (FOP’S)</td>
</tr>
<tr>
<td>Barley Grass</td>
<td>-</td>
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<tr>
<td>Brome Grass</td>
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<tr>
<td>Wild Oats</td>
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<tr>
<td>Silver Grass</td>
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<tr>
<td><strong>GRASS WEEDS</strong></td>
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<tr>
<td>Wild Radish</td>
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<tr>
<td>Wireweed</td>
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<tr>
<td>Wild Mustard</td>
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<tr>
<td>Wild Turnip</td>
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</tr>
<tr>
<td>Doublegee</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Crop Stage</td>
<td>PS</td>
<td>1+ Leaf</td>
</tr>
<tr>
<td>Weed Stage</td>
<td>PE</td>
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</tr>
</tbody>
</table>

**ESTABLISHED LUCERNE ONLY**

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>BROADSTRIKE®</th>
<th>DIURON - DIUREX®</th>
<th>SIMAZINE - GESATOP®</th>
<th>SPRAY.SEED®</th>
<th>PARAQUAT - GRAMOXONE®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>L</td>
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<tr>
<td>Ryegrass</td>
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<tr>
<td>Wild Radish</td>
<td>Suppression</td>
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<tr>
<td>Doublegee</td>
<td>Suppression</td>
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<tr>
<td>Crop Stage</td>
<td>At least one year old</td>
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</tbody>
</table>

| **BROADLEAF WEEDS** | | | | | |

**Table adapted from The Back Pocket Guide WA**
3. FERTILISER

Phosphorus is vital for early seedling growth and strong root development for better plant survival. Sow lucerne with a minimum of 15 - 20 units P/Ha (dryland) and 20 - 40 units P/ Ha (irrigation). Banding fertiliser 2 - 3 cm below the seed is best. Molybdenum added to the fertiliser ensures good nodulation for greater nitrogen fixation by the lucerne. Lookout for adequate levels of sulphur, potassium, boron and zinc.

4. WEED CONTROL

Management practices that maximise lucerne growth will normally suppress weeds. The aim of post-emergent weed control in established lucerne is to suppress the weeds from excessive competition or setting seed and not necessarily eradicate all the weeds.

Removing grasses and other weeds in mid winter with a selective herbicide (winter cleaning) improves spring production and quality, extends the useful life of the stand and increases the benefit for the following grain crop.

5. SOWING TECHNIQUE

Lucerne should be sown into a level, firm and slightly cloddy seedbed. A separate small seeds box is recommended. The plants should be established evenly and evenly spaced to ensure adequate fertility levels.

Fertiliser application rates needed for lucerne.

After the seeding year, annual applications of Phosphorus (P) and Potassium (K) help maintain stands and boost yields. Lucerne is a heavy user of soil nutrients, especially K. The incidence of nutrient deficiencies of P and K is increasing, particularly in paddocks with a long-term history of cropping (without adequate fertiliser) or hay production. P - deficient lucerne has fine, spindly stems, and the leaves become narrow and often turn purple. A deficiency of K can not only reduce yield but it is essential for efficient nodulation, plant health (especially leaf disease and leaf retention under stress), stand persistence and winter hardness. White spotting of the leaf margins is a common characteristic of K deficiency in lucerne. A good fertiliser rule of thumb is to top-dress annually with 10 - 20 kg P/ Ha or after the first cutting (but before regrowth starts) with 6 kg of P and 25 kg of K per tonne of forage harvested during the season. Always remove weeds before top-dressing.

Use soil test results and strip-tests to determine actual application rates needed for adequate fertility levels.

6. EARLY MANAGEMENT

Seed treatment or bare earth emergence spray for red legged earth mite will pay dividends in the long run. Monitor seedlings carefully for aphids and use aphid resistant varieties. Graze leniently the first time when the young stand is at least 20 cm high and well anchored. Lucerne established under cover crops should be allowed to flower before first cut or grazing.

7. GRAZING MANAGEMENT

Rotational grazing is the preferred management system for lucerne. Grazing periods should be no longer than 2 weeks, followed by a 3 to 6 week rest period. This practice allows the plants to regrow and replenish root reserves. Larger mobs that fit the grazing unit (paddock size) allow quicker grazing. Alternatively, the use of high stocking rates is greatly assisted with strip grazing and electric fencing. Changing to August lambing gives better utilisation of lucerne in pastures.

Maintain flexibility with stocking rates and grazing management. Conserve excess feed as hay or silage to fill feed gaps or provide additional income. Rotational grazing with all varieties during summer and autumn will maintain production and persistence at a high level.

Avoid grazing waterlogged paddocks because soil compaction and trampling will reduce yield and lead to poor persistence. Set stocking during spring in good years will not harm the stand and may reduce the risk of bloat in cattle. To optimise at-spare flexibility, allow lucerne to reach mid-flowering once during the year.

Too frequent cutting or set stocking for extended periods reduces overall yields, reduces vigour, which allows weed invasion and ultimately results in death of plants.

BUD DEVELOPMENT

The appearance of 2 cm long shoots from the crown on just over half the plants is the most reliable indicator of when to cut or graze for maximum productivity and persistence of lucerne (rather than the 10% flowering yardstick).
8. IRRIGATION

For high production of lucerne, irrigation management should aim to avoid any moisture stress. When water is in short supply, it is possible to extend the irrigation interval more than shallow rooted pasture to maintain lower levels of production. Irrigation layout and practice should ensure water penetrates at least 80 to 100 cm and permit drainage within 8 hours to minimise waterlogging. Do not irrigate immediately after hay is harvested to reduce the risk of scalding, particularly during summer. Time the final irrigation to allow adequate dry-down of the soil surface to prevent soil compaction by harvesting machinery.

SUB-SURFACE DRIP IRRIGATION

Low volume emitters, moulded onto the internal wall of a polyethylene tube and buried 200mm to 300mm below the soil surface, is recognised as the most efficient means of irrigating the root-zone (where it is needed) and fertiliser is delivered right to crop requirements. As the water increases, the water increases. Sub-surface drip irrigation also requires very little labour to operate and maintain.

9. LIVESTOCK HEALTH

Cattle grazing lucerne pastures during the bloat season (winter and spring) are susceptible to bloat. Frequent observation of stock on lucerne is essential. To manage bloat use high stocking rates and avoid placing hungry stock on immature lucerne.

Allowing stock access to grass, stubble or hay while they are grazing lucerne and the use of bovine oil and/or rumen capsules will effectivly reduce the incidence of bloat. Vaccinate stock with 5 in 1 to prevent pulpy kidney, which is sometimes confused with bloat. Red gut can affect sheep and lambs that are grazing pure stands of lucerne during similar weather conditions, which can result in bloat. At the first sign of red gut (sudden death) affected flocks should be removed immediately. Manage red gut the way you would bloat for cattle.

BLOAT REDUCTION OPTION

Pasture Genetics has designed a Sowsmart® pasture blend called Bloat Fighter. This has been designed as a pasture blend option to help to reduce the incidence of bloat on straight lucerne based pastures. This mix has incorporated two companion species Zulumax Arrowleaf Clover and Balance Chicory that have proven anti-bloating properties.

10. HAYMAKING

Before adopting a haymaking enterprise, organise a market in advance and consistently meet market requirements. Generally, aim for high quality as well as high yields to optimise animal performance and long-term profitability. Mechanical field losses during haymaking can be large (20 - 40%). Aim to mow early in the day and minimise handling during the curing process.

11. CHAFF VARIETAL SELECTION

The traditional chaff market has been based around the horse feed industry. Lucerne has been a sought after product to meet the market requirements. When selecting a lucerne variety to target chaff quality we look for material that has a high leaf to stem ratio. It is important to maximize the softness of the leaf but still maintain the functional fibre. There are four lucerne varieties that can be utilised - ML99 Multileaf®, Q75 - winter actives, L56 and Q31 - semi-winter/dormant lines. The management of each line is very important to achieve the desirable quality. With highly winter active lines it is important to cut in the earlier stage of maturity to maintain maximum leaf compared to stem. The window of opportunity with varieties such as L56 and Q31 is quite wide due to the higher leaf trait of these lines. This in turn allows for high quality across a high percentage of cuts.

12. NUTRIENT REMOVAL

To maintain the health of lucerne stands replace soil nutrients removed in hay. Soil and leaf tissue tests annually in early spring help ensure other nutrients are adequate.

13. RE-SOWING AND CROP ROTATION

High producing lucerne will generally require re-sowing after 4 to 7 years. Winter active stands will often decline sooner than winter dormant ones. Thickening up an old and thinning lucerne stand fails more than it succeeds. It is best practice to completely remove old lucerne plants and allow at least three weeks between herbicide application and re-sowing. There are significant benefits in rotating lucerne paddocks with winter cereal or canola crops to control weeds, use soil nitrogen, break disease and insect cycles, manage in-crop herbicide resistance as well as increase whole farm profits.

MEASURING FORAGE QUALITY

<table>
<thead>
<tr>
<th>WEIGHT_GAIN_EFFECT_BASED_ON_FEED_QUALITY</th>
<th>(180 TO 275 KG_STEER_CALVES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-bud</td>
</tr>
<tr>
<td>CP</td>
<td>1</td>
</tr>
<tr>
<td>ADF</td>
<td>3</td>
</tr>
<tr>
<td>DDM</td>
<td>75</td>
</tr>
<tr>
<td>Intake</td>
<td>3.5</td>
</tr>
<tr>
<td>Daily Gain (kg)</td>
<td>2.66</td>
</tr>
<tr>
<td>kg of feed (gain)</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Source: University of Nevada-Reno. All values on a dry-matter basis. Intake = % of body weight, CP = % Crude Protein, ADF = % acid detergent fibre, DDM = % digestible dry matter.

LUCASTER AS A ROTATIONAL CROP

LUCERNE AS A ROTATIONAL CROP

NUTRIENT REMOVAL

<table>
<thead>
<tr>
<th>NUTRIENTS</th>
<th>AMOUNT REMOVED IN 1 DM T OF HAY</th>
<th>SEASONALLY IN 15 DM T/HA OF HAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (N)</td>
<td>20 - 30 kg</td>
<td>575 kg</td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>2 - 3 kg</td>
<td>37 kg</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>15 - 20 kg</td>
<td>262 kg</td>
</tr>
<tr>
<td>Sulphur (S)</td>
<td>2 - 4 kg</td>
<td>45 kg</td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>13 - 17 kg</td>
<td>225 kg</td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>3 - 4 kg</td>
<td>52 kg</td>
</tr>
<tr>
<td>PESTS &amp; DISEASES BEST MANAGEMENT PRACTICES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Phytophthora Root Rot - Phytophthora Medicaginis**

**DESCRIPTION.** Plants turn yellow, wilt and die. Areas of light brown discoloration up to 5 cm long occur on the taproot up to 30 cm below the crown. The taproot below the discoloured area will not rot away completely.

**INCIDENCE.** Occurs throughout Australia, particularly in heavy and/or poorly drained soils, and in wet conditions. The disease can be severe, killing large numbers of seedlings or scattered plants or large patches in mature stands. In irrigated stands, plants can survive. The taproots immediately below the crown is kept alive by the availability of water but forage yields are reduced.

**SPREAD.** The fungus spreads rapidly in water over considerable distances.

**MANAGEMENT.** Use resistant varieties and spelt the paddock from lucerne. Do not rotate with chickeas. Avoid waterlogging irrigated stands on heavy soils.

**Pea Aphid (PA) - Acyrthosiphon Pisom**

**DESCRIPTION.** Green in colour, though some may be yellow or pink. They are 4 - 5 mm long with dark bands around the antennae and spine-like projections on both sides of the rear of their bodies. Adults may have wings. Nymphs are smaller and wingless.

**DAMAGE.** PA suck sap from the leaves causing wilting, stunting and curling, and odd-shaped plants. The top leaves often turn light green while the lower turn yellow and die. Honeydew excreted by PA makes foliage sticky, affecting hay and pasture quality. PA is a significant carrier of aphids mosaic virus.

**INCIDENCE.** Common in southern Australia, Western Australia and New South Wales during dry conditions in spring and autumn, although economic levels of damage are rare.

**MANAGEMENT.** Monitor beneficial insects. Irrigate or graze the stand to reduce PA numbers. In irrigated hay stands, use insecticides if the infestation is heavy.

**Colletotrichum Crown Rot or Stem Anthracnose - Colletotrichum Trifolii**

**DESCRIPTION.** Brown-black spots on the stems develop into well defined boat-shaped lesions that are up to 25 mm long, dark around the edges with pale centres, and covered in raised dark spots. The fungus can also enter the crown causing a blue-black discoloration, 5 - 8 cm into the taproot. In mature stands, the dead stems are white or straw coloured with a sheppard’s crook appearance. Plant death occurs gradually.

**INCIDENCE.** Occurs throughout Australia in warm environments with high humidity. It is more severe during late summer to autumn. It is less likely in drier and cooler climates.

**SPREAD.** Spores spread in warm, wet weather from plant debris and from the crown of infected plants by raindrop splash and harvesting equipment.

**MANAGEMENT.** Use disease resistant varieties and, if crown rot and anthracnose have been severe, rotate the crop every three years with non-host plants.

**Bacterial Wilt - Clavibacter Michiganense**

**DESCRIPTION.** Yellow and stunted plants with small leaves are scattered through the stand. The inner bark of the taproot is yellowish. The fungus survives for long periods in decaying plants. It invades small roots or wounds in the taproot during warm, wet weather.

**MANAGEMENT.** Controlled by crop rotation and resistant varieties.

**Fusarium Wilt - Fusarium Oxysporum F.SP.Medicaginis**

**DESCRIPTION.** Initially, plants are stunted with wilted shoots and yellow leaves. The infection then bleaches the leaves and stems, eventually causing plant death. Dark red-brown streaks develop in a layer under the bark at the base of the stem forming a reddish-brown ring in the centre of the root.

**INCIDENCE.** Fusarium wilt is not common. The Fusarium fungus is widespread, but rarely causes wilt. Fusarium wilt has not been identified in New South Wales.

**SPREAD.** The fungus survives for long periods in decaying plants. It invades small roots or wounds in the taproot during warm, wet weather.

**MANAGEMENT.** Controlled by crop rotation and resistant varieties.
**PESTS & DISEASES**

### MULTIPLE PEST & DISEASE CHART

Pasture Genetics lucerne varieties stand out in the Australian marketplace with superior pest and disease ratings. L56 has the highest resistance to Phytophthora Root Rot available and is the only variety to have high resistance to each of the nine significant pests and diseases listed in the multiple pest and disease chart below.

#### MEASURING THE RESISTANCE OF MAJOR PESTS

<table>
<thead>
<tr>
<th>RESISTANCE LEVEL</th>
<th>HIGH RESISTANCE HR</th>
<th>RESISTANCE R</th>
<th>MODERATE RESISTANCE MR</th>
<th>LOW RESISTANCE LR</th>
<th>SUSCEPTIBLE S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Resistance</td>
<td>≥ &gt;50%</td>
<td>≥ 31-50%</td>
<td>≥ 15-30%</td>
<td>≥ 7-14%</td>
<td>≤ 0-6%</td>
</tr>
</tbody>
</table>

For example, a lucerne variety having a ‘LR’ or ‘Susceptible’ rating to a particular disease or pest will have less than 15% resistant individuals within the plant population in a stand.

#### HIGHLY WINTER ACTIVE

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>WINTER ACTIVITY</th>
<th>SPOTTED ALFALFA APHID</th>
<th>BLUE GREEN APHID</th>
<th>PHYTOPHTHORA ROOT ROT</th>
<th>ANTHRACNOSE</th>
<th>BACTERIAL WILT</th>
<th>FUSARIUM WILT</th>
<th>STEM NEMATODE</th>
<th>ROOT KNOT NEMATODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML99 Multileaf*</td>
<td>10</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
<td>HR</td>
<td>ND</td>
<td>ND</td>
<td>MR</td>
<td>HR</td>
</tr>
<tr>
<td>Sardi 10</td>
<td>10</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
<td>R</td>
<td>ND</td>
<td>ND</td>
<td>R</td>
<td>ND</td>
</tr>
<tr>
<td>L92</td>
<td>9</td>
<td>R</td>
<td>MR</td>
<td>ND</td>
<td>R</td>
<td>R/HR</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>L91</td>
<td>9</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>R</td>
<td>HR</td>
<td>R</td>
<td>ND</td>
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<tr>
<td>Sequel</td>
<td>9</td>
<td>R</td>
<td>R</td>
<td>ND</td>
<td>MR</td>
<td>R</td>
<td>ND</td>
<td>ND</td>
<td>MR</td>
</tr>
<tr>
<td>Cropper 9.5</td>
<td>9</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>MR</td>
<td>ND</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
</tr>
<tr>
<td>Pegasis</td>
<td>9</td>
<td>HR</td>
<td>LR</td>
<td>ND</td>
<td>R</td>
<td>MR</td>
<td>ND</td>
<td>ND</td>
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#### WINTER ACTIVE

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>WINTER ACTIVITY</th>
<th>HR</th>
<th>R</th>
<th>HR</th>
<th>HR</th>
<th>MR</th>
<th>HR</th>
<th>R</th>
<th>R</th>
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<tbody>
<tr>
<td>SARDI 7</td>
<td>7</td>
<td>HR</td>
<td>R</td>
<td>HR</td>
<td>HR</td>
<td>MR</td>
<td>ND</td>
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<td>ND</td>
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<tr>
<td>Genesis</td>
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<td>R</td>
<td>ND</td>
<td>R</td>
<td>R</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>L71</td>
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<td>MR</td>
<td>ND</td>
<td>R</td>
<td>R</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
<td>ND</td>
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<td>Aurora</td>
<td>6</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
<td>R</td>
<td>MR</td>
<td>ND</td>
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<td>ND</td>
<td>R</td>
<td>ND</td>
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<td>HR</td>
<td>R</td>
<td>HR</td>
<td>R</td>
<td>HR</td>
<td>ND</td>
<td>ND</td>
<td>HR</td>
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<td>Hunterfield</td>
<td>6</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
<td>S</td>
<td>S</td>
<td>ND</td>
<td>S</td>
<td>ND</td>
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#### SEMI-WINTER DORMANT

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<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
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</thead>
<tbody>
<tr>
<td>L56</td>
<td>5</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
</tr>
<tr>
<td>SARDI S</td>
<td>5</td>
<td>HR</td>
<td>HR</td>
<td>ND</td>
<td>HR</td>
<td>HR</td>
<td>R</td>
<td>ND</td>
<td>MR</td>
</tr>
<tr>
<td>Venus</td>
<td>5</td>
<td>HR</td>
<td>MR</td>
<td>ND</td>
<td>MR</td>
<td>LR</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>Kaituna</td>
<td>5</td>
<td>R</td>
<td>HR</td>
<td>MR</td>
<td>MR</td>
<td>R</td>
<td>R</td>
<td>ND</td>
<td>HR</td>
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#### WINTER DORMANT

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>WINTER ACTIVITY</th>
<th>R</th>
<th>MR</th>
<th>MR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>R</th>
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<tbody>
<tr>
<td>Q31</td>
<td>3</td>
<td>R</td>
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<td>MR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>R</td>
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</tbody>
</table>

HR = High Resistance, R = Resistant, MR = Moderate Resistance, LR = Low Resistance, S = Susceptible, ND = No Data. Note – L56 has the highest resistance of PRR available
**SOWsmart: LUCERNE & CHICORY BLEND**

Rainfall 350mm+  
Persistant, low bloat, high weight gain  
L71 Lucerne  
X 80%  
Balance Chicory  
X 20%  
SOWING RATE  
4 - 6 kg/ha

Persistent high producing lucerne, combined with mineral rich, highly palatable long term chicory. This blend delivers good protein to energy rating driving high animal production.

**CHICORY BLEND**

<table>
<thead>
<tr>
<th>CHICORY</th>
<th>L71 Lucerne</th>
<th>EX</th>
<th>High</th>
<th>3 – 5</th>
<th>kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought Tolerance</td>
<td>High</td>
<td>Growth</td>
<td>All year round</td>
<td>Min Rainfall (mm)</td>
<td>500</td>
</tr>
</tbody>
</table>

**SOWsmart: BLOAT FIGHTER BLEND**

Rainfall 350mm+  
Persistant, low bloat  
ML99 Multileaf®  
X 30%  
Balance Chicory  
X 50%  
Lucerne  
X 20%  
Zululum Arrowleaf Clover  
G 20%  
SOWING RATE  
4 - 6 kg/ha

A blend including pasture varieties with proven “anti bloating” proteins designed to minimise the risk of bloat when grazing lucerne rich pastures. SOWsmart® Bloat Fighter provides an alternative to pure lucerne stands yet provides similar weight gains and improved palatability for livestock.

**PLANTAIN**

<table>
<thead>
<tr>
<th>PLANTAIN</th>
<th>(Plantago lanceolata)</th>
<th>EX</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought Tolerance</td>
<td>High</td>
<td>Growth</td>
<td>All year round</td>
</tr>
</tbody>
</table>

• Performs well in all ranges of fertility  
• Strikingly faster than grasses  
• Good water use efficiency  
• Highly palatable and provides excellent stock nutrition and performance  
• Good all year growth and cooler season growth  
• Well balanced levels of crude protein, energy and minerals  
• Higher levels of S, Ca, Na, Cu and B than grasses and some clovers  
• Excellent increases in weight gains and decreased daginess when used in a mix  
• Goldstrike® treated with added Molybdenum (Mo). This helps to reduce the incidence of Whiptail  
• Comes Standard with Goldstrike® XLR8 treatment – (Poncho® Plus Insecticide)

**FOUR COMPANION OPTIONS**

- REPLACEMENT SEED FOR CROP ESTABLISHMENT FAILURES
- PASTURE GENETICS IS VERY CONFIDENT ABOUT SEED QUALITY AND PROVIDES OUR INNOVATIVE ESTABLISHMENT GUARANTEE PROGRAM ON ALL OF OUR PROPRIETARY PRODUCTS
- UNFORTUNATELY ESTABLISHMENT FAILURES CAN OCCUR AND IF THE CROP NEEDS TO BE REPLANTED, PASTURE GENETICS WILL PROVIDE REPLACEMENT SEED AT HALF THE ORIGINAL PURCHASE PRICE
- THE ESTABLISHMENT GUARANTEE PROGRAM IS AVAILABLE FOR THE VITAL 30 DAY PERIOD AFTER PLANTING AND PROVIDES GROWERS WITH SUBSTANTIAL SAVINGS IF THEY NEED TO REPLANT THEIR PADDOCKS
- PASTURE GENETICS IS THE ONLY FORAGE COMPANY IN AUSTRALIA TO OFFER ESTABLISHMENT GUARANTEE

**CONDITIONS APPLY**

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