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Silver Lucerne Guide

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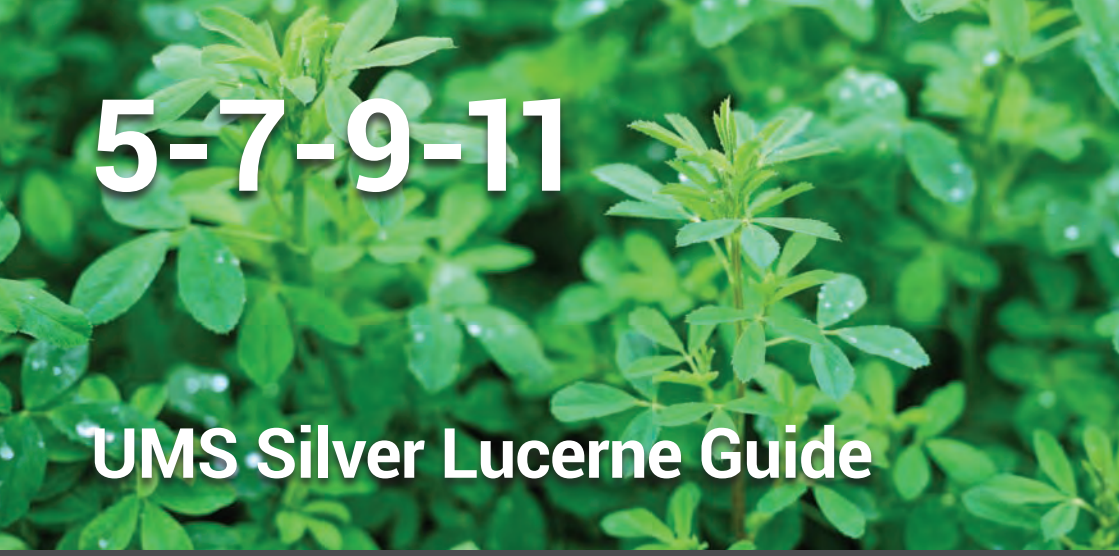

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UMS Silver Lucerne Guide

Introduction

Our established market-leaders, Silverosa GT 7 and Silverado 9, have been joined by SilverLand GT 5 and SilverSky 11.

The UMS Silver Lucerne range now covers four winter-activity levels. These highly productive, palatable and persistent lucernes have been purpose-bred to resist common diseases and pests. With careful management they should grow anywhere in Australia that's suitable for lucerne.

The long-held belief of having to compromise productivity and winter activity to achieve high grazing tolerance is much less of an issue with UMS Silver Lucernes.

Whether your farming enterprise includes grazing or hay, or you farm dryland or irrigation country, there is a suitable Silver Lucerne for you. You can select the winter-activity level that fits your enterprise or environment and, with good management, you can expect premium quality feed at a time that works for you.

Plant Breeders Rights

Plant Breeders Rights is a national system of control which is similar to a patent or a trademark, and granted exclusively to the breeder of a new variety. When Upper Murray Seeds develops a new plant variety, we protect our intellectual property (IP) with Plant Breeders Rights (PBR).

The PBR logo is the hallmark of authenticity and displaying it demonstrates to the public that the plant breeder has exclusive control over the propagating material and harvested material of that variety for many years to come.

This means the grower can be assured of reasonable product consistency, which is especially important when strategically planning pasture renovation.

Cover: SilverSky 11 at sunset, South East Queensland

7th Edition, December 2021

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Read our QR codes with your smartphone to open a link to more detailed product information.

Acronyms used in this Guide

ME: Metabolisable Energy
CP: Crude Protein
DM: Dry Matter
LE: Low Endophyte
GT: Grazing Tolerant
WSC: Water Soluble Carbohydrate

Meet Dr Lucerne

Australian agriculture is the richer thanks to **Dr Ian Kaehne**, the country's leading lucerne breeder. The premium quality lucerne varieties developed by Dr Kaehne are only available from UMS.

Formerly a principal research scientist at the South Australian Research and Development Institute (SARDI), Dr Kaehne has been endlessly fascinated by the quest for improving plant genetics since establishing SARDI's lucerne breeding program in 1969.

His early research projects focussed on grazing-tolerant lucerne and he went on to study waterlogging tolerance and disease resistance in lucerne. Hence he is known as 'Dr Lucerne' due to his prodigious knowledge of the species and his success in breeding improved varieties.

Dr Kaehne's objective in breeding the Silver Lucerne range was to create truly multi-purpose plants across a wide range of winter-activity groups. Consequently the Silver Lucernes provide multiple benefits to growers:

- *Inbuilt, broad spectrum disease and pest resistance*
- *Superior heat and cold tolerance*
- *Grazing and salt tolerance*
- *Ability to thrive in a wide range of environments.*

Of the two newer varieties, Dr Kaehne explains: "SilverLand GT 5 meets the demand for a group 5 variety with very high spring, summer and autumn production and a high expression of broad, grazing-tolerant crowns with persistence and exceptionally high herbage quality.

"SilverSky 11 was bred to meet the gap in the market for an extremely winter-active variety which combined advantageous characteristics when compared with traditional group 11s – such as high leaf:stem ratio, excellent herbage quality, long-term persistence, broad grazing-tolerant crowns and significant foliar, root and crown disease resistance."

Ian Kaehne, MAgSci, PhD
Australia's pre-eminent lucerne breeder.

Why does lucerne have two names?

Lucerne was the name given to the plant by the French in the mid 17th century. This name was probably derived from the Latin word 'lucerna' because of the bright colour of the seeds. It's been known as lucerne in European countries, particularly Italy, France and Germany ever since.

'Lucerne' was adopted in Australia when the plant arrived here about 1803. It's presumed that British colonists acquired the first lucerne from South Africa en route to Sydney. It was principally cultivated in the Hunter Valley hence acquired the name Hunter River lucerne, which is a very similar type to South African common lucerne. Hunter River was the dominant lucerne in Australia until the destructive spotted alfalfa aphid arrived in 1977, leading to its demise.

Alfalfa is the Spanish name for what we call lucerne. When the Spaniards colonised Mexico in the 16th century they took alfalfa (which they called alfalfez) with them. It is believed to have spread to California from Chile in the mid-1800s, and from there to New Mexico and Louisiana. Alfalfa remains the term used in the USA and Spain.

The best lucerne you can get

The breeding history of UMS Silver Lucernes.

UMS Silver Lucernes are derived from a notable pedigree of lucernes suited to Australian conditions.

The first Silver Lucerne variety, **Silverado 9**, was bred from a germplasm pool constructed from four very successful Australian lucernes: Sceptre, Eureka, Hunterfield and Trifecta.

Sceptre contributed high winter activity coupled with disease and nematode resistance. Eureka also contributed disease and nematode resistance but most importantly provided high levels of grazing tolerance, broad crowns and also the ability to adapt and grow in any Australian lucerne growing area.

Hunterfield and Trifecta were both bred from Hunter River, the dominant lucerne in Australia for 170 years, but which met its demise as a result of alfalfa aphids arriving in Australia in 1977. Hunterfield and Trifecta contributed high herbage quality and resistance to stagonospora crown rot which causes rapid stand decline and is endemic in Australia. Resistant varieties, such as the UMS Silver Lucernes, produce more persistent stands.

SilverSky 11 was selected for exceptional winter-activity, persistence and high herbage quality. It was bred from the same germplasm pool as Silverado 9. Therefore SilverSky 11's performance characteristics are the same as Silverado 9 however with increased winter activity.

Silverosa GT 7 and **SilverLand GT 5** were bred from another germplasm pool of crosses between a patented salinity-tolerant lucerne and the parent clones of Silverado 9. The salinity-tolerant parent material is also extremely tolerant to continuous grazing, meaning SilverLand GT 5 and Silverosa GT 7 are both grazing and salt tolerant.

The spreading crown of one-year-old SilverLand GT 5 (pen shown for scale).

Silver Lucernes have an excellent leaf:stem ratio as well as the capacity to hold their leaf if cutting is delayed.

Winter activity

What is winter activity?

Winter activity groups lucerne cultivars according to their rate of growth through the winter months.

There are 11 internationally recognised activity groups ranging from the extremely winter-dormant group 1, which has virtually no winter growth, through to the extremely winter-active group 11 which has very rapid winter regrowth.

Because Australia has relatively mild winters compared with the very cold winters experienced in Canada, Midwestern USA and Eastern Europe for example, we do not need the extended dormancy and winter-hardiness of the group 1-4 varieties.

All four UMS Silver Lucernes are highly productive in the spring to autumn months however the 9 and 11 are much more active in winter. The differences between the four activity levels are easily observed in the depths of winter, but their spring growth rates appear more uniform.

SilverSky 11 just 15 days after cutting for hay in late spring at Toogoolawah, Queensland.

Why does winter activity matter?

Winter activity matters because as a farmer or grower you need to select the level of winter activity which best aligns with the objectives of your farming enterprise and environment.

While all lucerne varieties produce herbage from spring through to autumn, the rate of growth and level of productivity can vary considerably. Major variances are highlighted below:

Semi winter-active 5 lucerne is well suited to challenging climatic conditions eg wet, cold environments and low rainfall areas. **SilverLand GT 5** is an extremely persistent, highly productive, grazing-tolerant lucerne that performs well in both irrigated and dryland environments and is ideal for hay production. It displays strong regrowth after heavy grazing so is recommended for grazing enterprises.

Winter active 7 lucerne is the most versatile. **Silverosa GT 7** provides good growth into late autumn and holds its quality slightly longer than the highly winter-active Silver varieties. Silverosa GT 7 suits mixed farming operations which require both grazing tolerance and the ability to make quality hay.

Highly winter-active 9 lucerne is ideal for mixed grazing and hay production enterprises.
Silverado 9 suits late autumn/early winter sowing and it tolerates frost and cold winters. It is suited to year-round hay production systems, pasture mixes and cropping rotations.

Extremely winter-active 11 lucerne suits a wide range of forage systems but is particularly well suited to hay production in irrigation areas. **SilverSky 11** is both highly persistent and productive - not usually a feature of extreme winter activity. It also tolerates frosts and cold winters and suits late autumn/early winter sowing.

Grazing tolerance

What is grazing tolerance?

Grazing tolerance (abbreviated to GT) refers to a plant's ability to tolerate intensive continuous grazing.

This tolerance is a naturally occurring feature of wild-growing lucerne plants primarily found in the mountainous areas of Spain, Algeria, Iraq, Iran and Afghanistan. However these plants have low herbage yields and are extremely winter-dormant, usually in winter activity groups 1 and 2.

These wild-growing, grazing-tolerant lucerne plants have broad, deep-set crowns as a result of their rhizomatous, spreading growth, and high stem density arising from prolific and continuous sub-surface development of new stem buds.

While many modern lucernes tend to have this type of crown growth, they cannot tolerate prolonged continuous grazing because the key feature of grazing tolerance is in fact not crown structure but a physiological capacity to maintain growth, as well as crown and root viability, while being continuously defoliated (ie grazed).

The challenge for lucerne breeding in the past has been to incorporate high levels of grazing tolerance into productive, persistent varieties. As a result of skilful and purposeful plant breeding, UMS Silver Lucernes can now provide both grazing tolerance and high levels of productivity - as well as pest and disease resistance when well managed.

One-year-old SilverLand GT 5 displaying its erect, leafy growth habit.

Why is grazing tolerance important?

Grazing tolerance in lucerne is a very beneficial trait that provides management options for farmers. It means that if your primary aim is to have lucerne for grazing, it may not be necessary to follow the usual rotational grazing protocols.

With careful management, grazing tolerant lucerne can withstand long periods of set-stocking provided sufficient moisture is available and the crowns are not damaged.

It is an extremely persistent plant which, when well managed, is likely to persist for 10-plus years.

The long-held belief of having to compromise productivity and winter activity to achieve high grazing tolerance is much less of an issue with UMS Silver Lucernes.

SilverLand GT 5
LUCERNE

SilverLand GT 5 is an extremely persistent lucerne that can withstand significant grazing pressure. Due to its high levels of disease and pest resistance it's a long-term crop option for any lucerne producer.

Key Features
- Extremely persistent because of its broad disease resistance
- Ideal for areas with good winter rainfall
- Predominately used for summer forage
- Suitable for set-stocking
- Tolerates high levels of salinity, up to 10,000ppm

Plant Characteristics
- A well managed stand is likely to persist 10+ years
- Erect, leafy growth habit with a low, broad crown
- Highly resistant to spotted alfalfa and blue-green aphids
- Rapid regrowth after grazing or cutting
- Highly persistent in both dryland and irrigation conditions

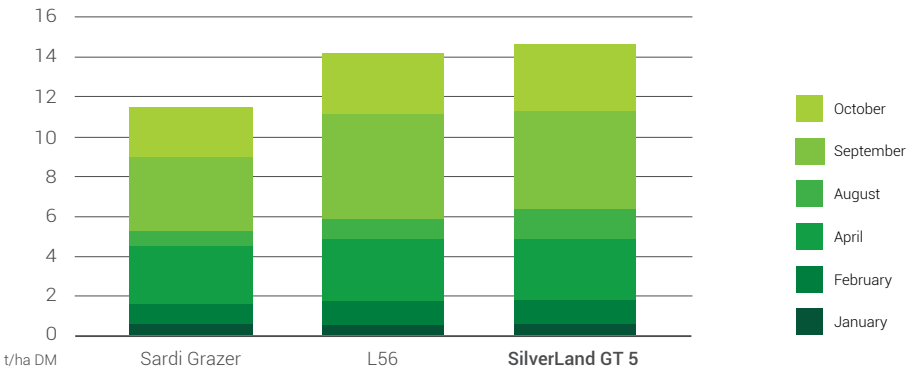
Where can I grow it?
- Bred to suit all Australian lucerne growing areas
- Tolerates frost and cold winters
- Persists in saline soils and retains its high quality and palatability

Sowing Rate: 6-15kg/ha (dryland)
15-30kg/ha (irrigation) alone or
1-4kg/ha when a component of a blend

PBR

WINTER ACTIVITY 5
SEMI WINTER-ACTIVE

SilverLand GT 5 is protected by patent



Lucerne Dry Matter Trial

Kingaroy QLD, 2019-2020

Silverosa GT 7
LUCERNE

Silverosa GT 7 is the benchmark for multi-purpose, grazing tolerant lucerne. It has inbuilt disease and pest resistance, produces premium quality forage and is salt tolerant.

Key Features
- High-yielding and extremely persistent lucerne suited to both intensive grazing and fodder production
- Superior leaf:stem ratio
- Rapid regrowth after grazing and cutting
- Significantly improved leaf retention when hay making
- Tolerates high levels of salinity; up to 10,000ppm

Plant Characteristics
- Erect, leafy growth habit
- Very high leaf:stem ratio in mature stands
- Fine leafy stems are very palatable in hay and forage
- Has broad crowns with dense stem regrowth
- High levels of ME and CP
- Highly resistant to aphids

Where can I grow it?
- Bred to suit all Australian lucerne growing areas
- Tolerates frost and cold winters
- Persists in saline soils and retains its high quality and palatability

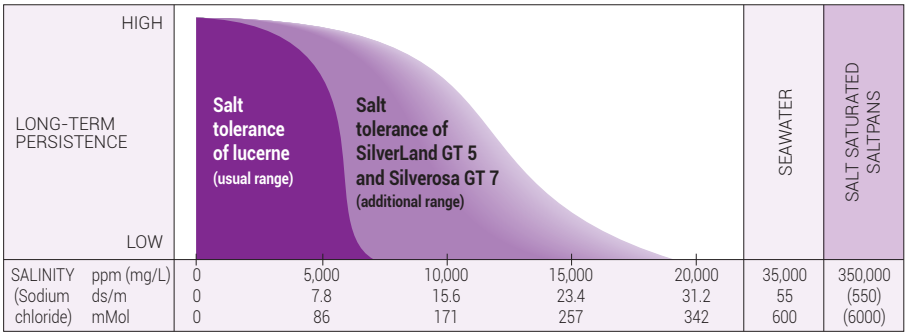
Sowing Rate: 6-15kg/ha (dryland)
15-30kg/ha (irrigation) alone or
1-4kg/ha when a component of a blend

PBR

WINTER ACTIVITY 7
WINTER ACTIVE

SALTLAND TECHNOLOGY Silverosa GT 7 is protected by patent

Salt tolerance of SilverLand GT 5 and Silverosa GT 7



SALINITY	ppm (mg/L)	0	5,000	10,000	15,000	20,000	35,000	350,000
(Sodium	ds/m	0	7.8	15.6	23.4	31.2	55	(550)
chloride)	mMol	0	86	171	257	342	600	(6000)

Source Dr ID Kaehne, Patent application.

Silverado 9
LUCERNE

Silverado 9 is a premium quality lucerne, with built-in, broad-spectrum disease and pest resistance that enhance its forage quality and performance.

Key Features
- Ideal for mixed grazing and hay production enterprises
- Highly persistent in dryland and irrigation
- Superior cold and heat tolerance
- Rapid regrowth after grazing and cutting
- Well suited to hay production systems
- Significantly improved leaf retention when hay making

Plant Characteristics
- Erect growth habit
- Excellent mature leaf:stem ratio
- Highly resistant to aphids

Where can I grow it?
- Bred to suit all Australian lucerne-growing areas from the subtropics to dryland
- Ideally suited to irrigation
- Tolerates frost and cold winters

Sowing Rate: 6-15kg/ha (dryland)
15-30kg/ha (irrigation) alone or
1-4kg/ha when a component of a blend

PBR

WINTER ACTIVITY 9
HIGHLY WINTER-ACTIVE

Disease resistance (common to all four varieties)

SilverLand GT 5 LUCERNE
Silverosa GT 7 LUCERNE
Silverado 9 LUCERNE
SilverSky 11 LUCERNE

Leaf and Stem Diseases		
Stemphylium Leaf Spot	●●	Resistant
Pepperspot (Leptosphaerulina)	●●	Resistant
Rust	●●●	Highly Resistant
Downy Mildew	●●●	Highly Resistant
Phoma (Spring Blackstem)	●●	Resistant
Common Leafspot	●●	Resistant
Lucerne Yellows Disease	●●●	Highly Resistant
Root and Crown Diseases		
Phytophthora Root Rot	●●●	Highly Resistant
Anthracnose	●●●	Highly Resistant
Stagonospora Crown Rot	●●●	Highly Resistant
Fusarium Crown Rot	●●●	Highly Resistant
Rhizoctonia Crown Rot	●	Moderately Resistant

Source Dr ID Kaehne

SilverSky 11 LUCERNE

SilverSky 11 is a new lucerne variety that sets the bar very high in terms of dry matter production. It's a vigorous plant that performs extremely well in both winter and summer and is highly resistant to disease and pests. SilverSky 11 suits a wide range of forage systems.

Key Features
- High yielding, premium quality lucerne suited to fodder production
- Very persistent and extremely winter active
- Rapid regrowth in all seasons, including winter
- Australian-bred to suit most lucerne-growing areas

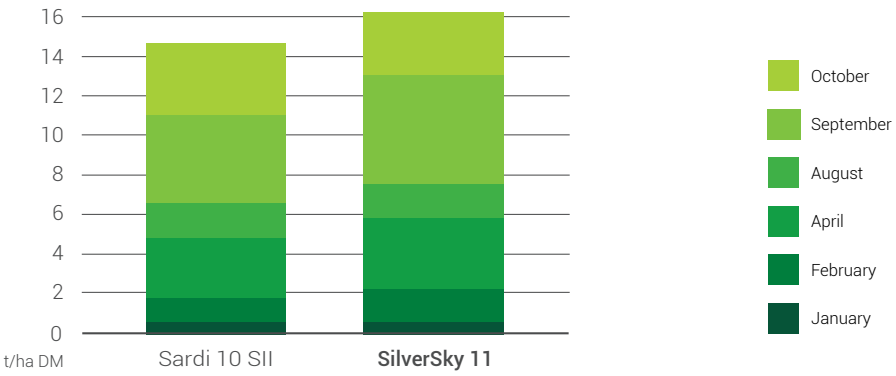
Plant Characteristics
- Erect, dense and leafy growth habit
- Excellent leaf:stem ratio
- Persists as well as less winter-active varieties, in a well managed stand expect 5+ years
- Highly resistant to spotted alfalfa and blue-green aphids

Where can I grow it?
- Bred to suit all Australian lucerne-growing areas from the subtropics to dryland
- Ideally suited to irrigation
- Tolerates frost and cold winters

Sowing Rate: 6-15kg/ha (dryland)
15-30kg/ha (irrigation) alone or
1-4kg/ha when a component of a blend

PBR

WINTER ACTIVITY 11
EXTREMELY WINTER-ACTIVE



Lucerne Dry Matter Trial

Kingaroy QLD, 2019-2020

Agronomic features

Feature	Silverland GT	Silverosa GT	Silverado	SilverSky
Winter activity group	5	7	9	11
Winter production				
Spring, summer, autumn production				
Forage quality				
Grazing tolerance				
Suitability for intense hay/silage production				
Salinity tolerance				
Frost tolerance				

Source Dr ID Kaehne

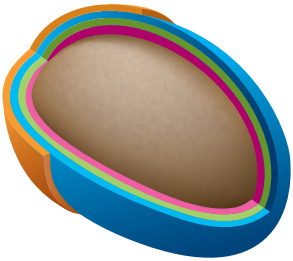
All Silver Lucernes are equally well adapted to:
- *Temperate or cool climate regions*
- *Sub-tropical climate regions*

and can persist in both irrigation and dryland conditions. The UMS Silver Lucerne range allows you to select the winter activity level that best suits your enterprise and environment.

Seed coating

Lucerne seed should be inoculated with the AL strain of rhizobium to ensure effective nodulation and prompt establishment. We recommend sowing Silver Lucernes with UMS **SupaCote®** applied to enhance seed vigour.

SupaCote® helps protect seed from pests, improves germination and enhances plant growth. SupaCote® is made up of **Apron** (a fungicide) and **Gaucho** (an insecticide) which are encapsulated with a protective layer. Ask your agronomist or UMS Area Manager for more information.



SilverSky 11 just prior to being harvested as a seed crop.

Getting the best from Silver Lucerne

Agronomy notes to help preparation, establishment and management.

Soil type

UMS Silver Lucernes grow well on a wide range of well-drained soils including deep loams, sands and loam over gravel or clay. However like all lucernes, they do not persist as well on soil prone to prolonged waterlogging. UMS Silver Lucernes have improved acid tolerance, although it is highly recommended to lime prior to sowing. All lucernes are sensitive to high aluminium levels which reduce root development in low pH soils.

Saltlander® technology in SilverLand GT 5 and Silverosa GT 7 extends the potential for growing lucerne in more saline soils, when the key factor is long-term persistence. Most established lucerne stands will withstand short-term saline shock but SilverLand GT 5 and Silverosa GT 7 will perform at salinity levels of up to 10,000ppm (mg/L) and persist, with lower production, at even higher salinity levels.

Survival levels will vary from site-to-site due to the chemical composition of salts and interactions with other soil factors such as pH and soil moisture/water profiles. SilverLand GT 5 and Silverosa GT 7 should not be expected to survive in extremely saline areas. See explanatory chart on page 9.

Fertility

Grazing, hay and silage production deplete the levels of nutrients from the producing paddock. Check with your agronomist that adequate nutrient levels are available, especially potassium and phosphorus.

Sowing

- *6-15kg/ha (dryland)*
- *15-30kg/ha (irrigation) alone or*
- *1-4kg/ha when a component of a blend*
- *Sow at approximately 1cm depth.*

UMS Silver Lucernes are suitable for autumn and spring sowing however the time of sowing is determined by your region's rainfall and climate. Winter active or highly winter-active varieties are better suited to autumn establishment as they grow actively in the cooler months and have good frost tolerance. Delaying sowing gives the opportunity to improve weed control and seedbed preparation.

SilverLand GT 5 showing vigorous regrowth five days after being cut for hay.

For spring-established lucerne, aim to sow mid-August onwards as the soil temperature and daylight hours begin to increase - a combination that supports establishment. It is recommended not to sow into an 'old' lucerne stand but to grow a crop between lucerne stands to create an effective disease break.

Disease and pest management

Silver Lucernes have impressive levels of resistance to leaf and stem and root and crown diseases. See chart on page 10 for more details.

However it is recommended to monitor regularly during emergence for insect damage from pests such as RLEM, aphids and lucerne flea and spray if required. UMS Silver Lucernes are

highly resistant to spotted, bluegreen and pea aphid species. They also have excellent levels of resistance to nematodes. Phytopthora root rot, anthracnose and fusarium crown rot can severely damage lucerne however UMS Silver Lucernes are highly resistant to these root and crown diseases.

Weed control

Spray out any old pasture/crops prior to sowing but speak to your agronomist about the correct chemical and rate to use depending on the nature of weeds present. Also consider using a pre-emergent herbicide.

Weed control in young lucerne can be challenging due to its slow seedling growth. Most broad-leaf herbicides cannot be applied until the lucerne is at the third trifoliate leaf stage but weeds need to be treated when small. Once a stand is established (>1 year) there are more weed eradication options and herbicide efficacy is improved.

Grazing

Allow an establishing stand to reach approx 20cm high and ensure that the plants cannot be pulled out prior to grazing. Monitor the first grazing carefully and remove stock before they begin to graze intensely near the crown of the plant. Allow lucerne to flower in its first year so the plant can strengthen its crown and taproot.

Silver varieties perform very well under traditional rotational or strip-grazing management regimes. If the rotation is delayed by climatic events, the Silver varieties provide extended and excellent leaf-retention.

All Silver varieties, especially SilverLand GT 5 and Silverosa GT 7, can withstand set-stocking during spring provided sufficient moisture is available. Adjust the grazing pressure to maintain an adequate level of available feed and to avoid damaging the crown of the lucerne plant.

Feed quality

UMS Silver Lucernes are highly regarded due to their ability to produce top quality feed with a high leaf:stem ratio, excellent palatability and digestibility levels, especially in out-of-season situations. UMS Silver Lucernes have good levels of ME and provide an excellent source of CP.

A demonstration of Silverado 9's denser crown and higher leaf:stem ratio in a three-year-old stand of irrigated lucerne.

Animal health

To optimise livestock weight gain and health, ensure livestock are vaccinated and drenched.

To prevent nutritional problems, make gradual changes to diet when introducing stock to lush pastures.

Bloat is the most common animal health issue, especially in cattle. Ensure dry roughage (straw or lower quality hay) is available to hungry stock prior to and during the time they are grazing higher quality lucerne. Contact your agronomist or vet for more information on bloat control.

Testimonials

Veteran lucerne grower Brad Forsyth shown here in a six year-old crop of Silverado 9 which is highly productive despite being flooded twice.

Silage and hay producers for over 30 years, the Forsyth family used to grow L55 and L56 lucerne. After being impressed by the performance of Silver Lucernes in trials, they've grown Silverosa GT 7 and Silverado 9 for about 10 years and, more recently, SilverLand GT 5. SilverSky 11 has also been outstanding in recent trials.

According to Brad Forsyth: "We have over 100ha of Silverosa GT 7 and Silverado 9 under centre pivots. Both varieties have excellent leaf:stem ratio and hold their leaf if cutting is delayed, where other varieties lose their leaf. I've found them both to be very persistent and generally we get 9-10 cuts per year.

"Over three years, the UMS lucernes have averaged annual yields of 23.4 t/ha DM (Silverado 9), and 20.7 t/ha DM (Silverosa GT 7), with excellent hay quality because of no real effects from pests or diseases and a high leaf:stem ratio. My Silver Lucernes have year-round growth and are the best performers ever!"

Brad Forsyth
Monto, Queensland

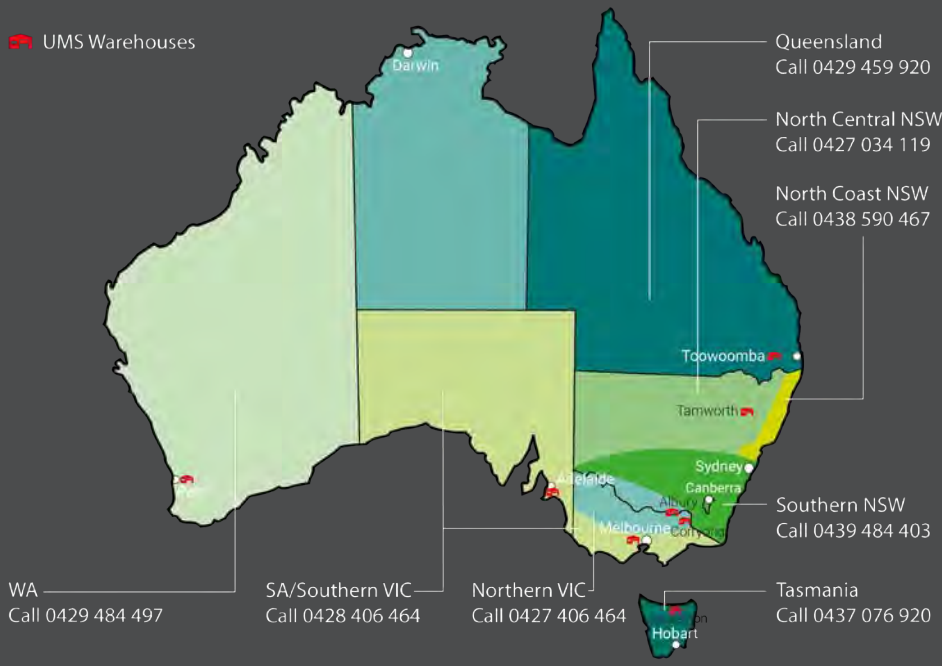
Rod Henderson is very impressed with UMS Silver Lucernes and is shown here in a three month-old crop of SilverSky 11.

Rod and Sharon Henderson had always grown Hunter River lucerne. Once they learnt from UMS how Silverosa GT 7, with Hunter River parentage, would be even better for their hay supply business, the Hendersons started trialling the grazing-tolerant variety on their well-watered alluvial flats.

"We like Silverosa GT 7 because it produces good leafy hay for our clients. It holds leaf if we let it go a few days and not drop it all, like others we have tried" says Rod. They also like its persistence. "Now the oldest paddock is up to three years, I can see it lasting a good while before replanting is necessary, maybe six to eight years."

Rod harvested round bales of Silverosa GT 7 (averaging 275kg) for a remarkably high-yielding first cut compared to the industry average. He said: "Silverosa GT 7 is very quick to establish and yields right from the start! We have now sown some SilverSky 11 and first-cut figures are equally as impressive with a very good leaf:stem ratio which makes beautiful hay."

Rod Henderson
Toogoolawah, Queensland



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