Department of Primary Industries

primefact

Lucerne varieties

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Lucerne has undergone great development in Australia since spotted alfalfa aphids appeared in 1977, wiping out much of the country's lucerne stands.

At that time there was basically only one variety grown, Hunter River. This variety was a selection from lucerne stands in the Hunter River Valley in NSW and probably arose from seed originally introduced during the early years of the colony. Over the following 200 years it became well adapted to our environment and grazing systems but it had no resistance to the aphids.

After over 30 years of breeding and variety introductions Australian growers now have the choice of more than 50 lucerne varieties currently on the market, but with this number available selecting the right one may seem daunting.

Choosing the appropriate lucerne variety is a key step towards achieving a productive, persistent stand. Varieties must suit the environment, the management system and markets.

Lucerne growers must consider:

- the purpose of the stand (hay types are leafy with fine stems, grazing types have low crowns)
- how long the stand is required (2–4 years for hay, 3–7 years for grazing)
- pests and diseases that might be present
- whether plant growth is required in winter
- time of sowing
- whether grazing tolerance is needed
- special characteristics such as resistance to soil aluminium, manganese or salt levels
- special customer requirements
- market seed prices.

This factsheet provides guidelines for selecting suitable lucerne varieties. Other publications contain information on how to establish and manage the stand to maximise productivity, quality and persistence (see below).

Winter growth of lucerne

Although lucerne is a perennial plant, its winter growth habit (or dormancy) varies between varieties, as shown in figure1. Dormancy classes range from 3 to 10: dormant (3, 4); semi-dormant (5); winter-active (6, 7); and highly winter-active (8, 9, 10).

Winter-active varieties generally grow right through the winter period while dormant and semi-dormant varieties grow very little during this time. The more dormant the variety, the earlier the plant growth will cease in autumn and the later it will start in spring, so this determines when the forage is available.

Note that all lucerne varieties grow well during spring and summer and that the growth pattern of a variety can change if moisture is limiting.

Most of the current varieties are winter-active or highly winter-active. These varieties tend to have vigorous seedlings which can be an advantage in early winter sowings. They also have a longer harvesting season, fast regrowth and high overall production during the early years, so may suit shorter rotations.

In general, dormant and semi-dormant varieties persist longer than highly winter-active ones under stressful conditions.

Figure 1. Relative growth of winter dormant (left) and winter active (right) lucerne varieties in winter.

Pests and diseases of lucerne in NSW

Several insect pests and diseases can limit lucerne production and stand life. Their impact depends on the density of a pest/disease in the crop, the susceptibility of the variety, the age and health of the plant, and the seasonal conditions such as temperature, moisture and humidity. Not all pests are relevant in every region and/or every year.

Pest/disease resistant varieties are an important part of a pest/disease management strategy. Good management of the pests and diseases is also required to obtain a productive stand.

The following pests and diseases are recognised as being the main ones reducing lucerne production in Australia and for which some genetic resistance is available. Spotted alfalfa aphid (SAA) resistance is essential in all regions of Australia, while the need for resistance to other pest and diseases varies, depending on the location and available management options.

- SAA (spotted alfalfa aphid) can kill both seedlings and mature plants. All varieties except Hunter River have some resistance.
- BGA (blue-green aphid) can kill lucerne seedlings and dramatically suppress plant growth of established plants. BGA resistance is highly desirable.
- PRR (phytophthora root rot) is a fungal disease which destroys the root system of lucerne. PRR resistance is essential on heavy soils or under flood irrigation.
- Anthracnose (Colletotrichum crown rot) is a fungal disease affecting the crown or growing point of lucerne. Resistance is important for hay-cutting stands in warm humid areas or under spray irrigation.
- SN (stem nematode) reduces production and kills lucerne along the major river systems of NSW where at least moderate resistance may be required.
- BW (bacterial wilt) is a minor disease in NSW but may be important on the coast and inland rivers in southern NSW, and in Victoria. At least moderate resistance to BW is required in those areas.
- Leaf diseases can cause severe leaf loss in irrigated stands and in warm humid or coastal climates. Resistance is an advantage but only limited data is available on the current range of varieties.

Other problems

Other factors can reduce production and persistence of lucerne including acidic soils (low soil pH and/or toxic levels of soil aluminium and manganese) and salinity. Although this is being addressed in breeding programs, only a few varieties have some tolerance of these conditions.

Growers should ensure that the soil type is suitable for lucerne and that a soil test is conducted and appropriate amendments made prior to sowing.

Heavy or constant grazing of lucerne usually causes plant death and reduces plant populations. There are now some grazing tolerant varieties available that have shoots which arise from the crown below the soil surface (low crowns) or stems that seal up quickly following grazing. However, rotational grazing is still recommended and it is important to ensure that the crown of the variety is not damaged by leaving 5–7cm of the crown shoots in tact after grazing or cutting.

At this stage there is no resistance available to frost and waterlogging which both reduce production and persistence of lucerne.

Breeding lucerne varieties

A lucerne variety is a population of many genetically different plants, bred from parents with certain desired traits. However, each variety is unique and is widely tested in a range of locations over many years before it is released for sale.

Resistance to, or tolerance of pests and diseases varies from plant to plant within any variety. Each variety must have a certain proportion of the plants with resistance, as approved by international protocols.

Several seedling tests are conducted before a variety is given a resistance or tolerance rating. For internationally accepted protocols refer to the North American Alfalfa Improvement Committee website.

Companies which breed lucerne varieties or sell lucerne varieties in Australia may test for pests and diseases using different protocols. (Refer to individual company websites or contact a company representative.)

Several new varieties have Plant Breeder's Rights (PBR®) which protect a variety and hence the owners/breeders under the international and Australian intellectual property regulations. Under PBR each variety is signified as being distinct, uniform and stable for certain traits. The data/trial is verified by IP Australia prior to granting PBR.

PBR protection of a variety is not an indicator of agronomic performance or adaptation of a variety. Therefore, when choosing varieties it is important to check comparative performance data and to discuss these with a local agronomist.

Note that even if a variety is genetically superior, the performance of that variety depends on how it is managed. All varieties should be managed well in terms of pests and diseases, fertiliser, irrigation, grazing and cutting to ensure that their genetic potential is attained. See "Lucerne for pasture and fodder" for more information.

Seed companies

A number of seed companies sell lucerne seed in Australia. Some varieties have been bred by these companies their partners in Australia while others have originated from public breeding programs, such as those of the NSW, SA and Qld governments or the CSIRO. Some varieties have been bred overseas (mostly USA) and may be tested under Australian conditions before their commercial release in Australia.

Commercial varieties

Table 1 provides information about the characteristics of the current commercial lucerne varieties available from seed retailers in NSW. The ratings are collated from information provided by breeders and seed companies. This list should be used in conjunction with local information to select appropriate varieties.

Table 2 contains a list of other lucerne varieties that may not be available in NSW, or else are superseded and still available commercially. Superseded varieties are generally inferior in insect and/or disease tolerance, yield or standlife.

This list is intended as a guide only. It does not represent results of comparative tests between these varieties, and does not represent recommendations by NSW Department of Primary Industries.

Note that different breeding programs use different protocols to test variety performance. These include visual estimations of forage and/or physical dry matter measurement at each regrowth. It is wise to check the variety performance data for your area.

Note also that a high level of 'resistance' does not mean the variety is immune to the pest or disease; a proportion of plants may still be susceptible, especially as seedlings or in certain environmental conditions. Resistant varieties may still require control measures to avoid yield loss, especially in seedling stands or heavy disease/pest infestations.

Further reading

McDonald W, Nickandrow A, Bishop A, Lattimore M, Gardner P, Williams R, and Hyson L (2003). Lucerne for pasture and fodder. Agfact P2.2.25. NSW Agriculture. http://www.dpi.nsw.gov.au/agriculture/pastures/pastures-and-rangelands/species-varieties/factsheets/lucerne

Lattimore M (2005). Producing quality lucerne hay. RIRDC & NSW DPI.

Acknowledgments

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Table 1. Current lucerne varieties 2013

Variety	Winter growth[#]	SAA	BGA	PRR	Anthracnose+	SN	BW	Leaf disease[¤]	Principal Seed Source in NSW
Winter-dormant									
Q31	3	R	MR	HR	HR	HR	HR	~	Seed Distributors
Semi winter-dormant									
Hunter River*	5	S	S	S	S	S	S	LR	Public variety
L56ϕ	5	HR	HR	HR	HR	HR	HR	HR	Seed Distributors
SARDI Fiveϕ	5	HR	HR	HR	HR	R	~	~	Heritage Seeds
SF Force 5	5	MR	~	HR	HR	HR	MR	~	Seed Force
Stamina 5	5	HR	R	R	HR	HR	~	~	PGG Wrightson Seeds
Venusϕ	5	HR	R	MR	LR	~	~	~	Heritage Seeds
Winter-active									
Aurora*	6	HR	HR	R	MR	R	LR	LR	Public variety
Hunterfield*	6	HR	LR	S	S	S	S	~	Public variety
Iconϕ (SuperAurora)	6	HR	HR	HR	S	~	~	HR	Seed Genetics Australia (Auswest)
SARDI Grazer	6	HR	HR	R	R	~	~	~	Heritage Seeds
Stamina® GT6	6	HR	R	R	HR	HR	~	HR	PGG Wrightson Seeds
Flairdaleϕ	7	R	HR	R	LR	R	~	~	Alfagreen
Genesisϕ	7	HR	R	R	R	~	~	~	Heritage Seeds
Haymaster7	7	HR	HR	HR	MR	R	R	~	PGG Wrightson Seeds
L70	7	HR	HR	R	R	R	R	~	Seed Distributors
Q75	7	HR	R	HR	HR	R	MR	~	Seed Distributors
SARDI Sevenϕ	7	HR	HR	HR	HR	R	~	~	Heritage Seeds
SARDI 7 Series 2#	7.5	HR	HR	HR	HR	R	~	~	Heritage Seeds
SF Force 7	7	R	~	HR	MR	HR	R	~	Seed Force
SF 714QL	7	HR	HR	HR	MR	R	R	~	Seed Force
Silverosa GT▲	7	HR	HR	HR	HR	MR	~	HR	Upper Murray Seeds
Titan7	7	HR	R	R	HR	~	~	~	Auswest Seeds
Trifecta*	7	R	HR	MR	R	LR	R	LR	Public variety
UQL-1ϕ	7	HR	HR	HR	HR	~	~	~	Auswest Seeds

Variety	Winter growth[#]	SAA	BGA	PRR	Anthracnose+	SN	BW	Leaf disease[¤]	Principal Seed Source in NSW
Highly winter-active									
Aquarius℗	8	R	HR	HR	LR	R	MR	MR	Heritage Seeds
Australis (SuperSiriver)℗	8	R	HR	R	MR	~	~	~	Seed Genetics Australia (Auswest)
Hallmark℗	8	HR	R	HR	HR	HR	~	~	Auswest Seeds
Magna 801FQ	8	HR	R	HR	MR	R	R	~	Valley Seeds
Multi Foli®-8	8	HR	HR	HR	R	R	R	R	PGG Wrightson Seeds
ALA Pegasis℗	9	HR	LR	R	MR	~	~	~	Heritage Seeds
Alfamaster 9™	9	R	MR	MR	R	HR	R	~	Heritage Seeds
Blue Ace (SuperSequel)℗	9	HR	HR	R	LR	~	~	~	Seed Genetics Australia (Auswest)
CUF101*	9	R	HR	MR	S	S	S	~	Public variety
L91℗	9	HR	HR	HR	HR	R	R	~	Seed Distributors
Sequel*	9	R	R	MR	R	S	S	S	Public variety
Sequel HR℗	9	R	R	R	HR	R	~	~	Auswest Seeds
Silverado℗	9	HR	HR	HR	HR	MR	~	HR	Upper Murray Seeds
Siriver*	9	HR	MR	S	S	S	S	~	Public variety
Siriver MkII℗	9	HR	R	LR	S	~	~	~	Seed Distributors
SuperSonic℗	9	R	HR	HR	MR	~	~	~	Seed Genetics Australia (Auswest)
Titan9	9	HR	R	HR	R-HR	~	~	~	Auswest Seeds
WL 925HQ	9	HR	HR	HR	MR	R	MR	R	PGG Wrightson Seeds
Cropper 9.5®	9.5	HR	HR	HR	MR	R	MR	~	PGG Wrightson Seeds
Alfamaster 10™	10	R	R	R	MR-R	R	MR	~	Heritage Seeds
ML99 Multileaf®℗	10	HR	HR	HR	HR	MR	~	~	Seed Distributors
SARDI Ten℗	10	HR	HR	R	R	R	~	~	Heritage Seeds
SF Force 10	10	HR	HR	HR	MR	R	LR	~	Seed Force

KEY TO TABLE

Pest & disease resistance: HR – highly resistant; R – resistant; MR – moderately resistant; LR – low resistance; S – susceptible.

Winter growth[#]: Varieties are listed alphabetically within groups of increasing late autumn–winter growth (i.e. 3 – very slow, 6 – moderate, 10 – very active). Dormancy groupings are not absolutely distinct; the range of dormancy is continuous.

Leaf disease[¤]: Combined ratings for Stemphylium and Leptosphaerulina leaf spots. (QDPI&F)

℗ Protected by Plant Breeders Rights; ® Registered trademark; TM Trademark; ▲ New variety; # Limited supply 2012; ~ No data available

* Public variety, not covered by Plant Breeders Rights and available from a number of seed companies.

\+ These ratings do not reflect all races of anthracnose (*Colletotrichum trifolii*). The distribution and importance of all identified races in NSW is not known

Table 2. Other lucerne varieties (not available in NSW or superseded by new varieties).

Variety	Winter growth	Comment
WL 325HQ	3	No longer available
Prime	3	Superseded by SARDI 5
L34HQ	3	No longer available
54Q53ϕ	4	No longer available
WL 342HQ-MF	4	No longer available
Hunter River	5	Outclassed by all other varieties. Susceptible to aphids and disease
L55	5	Superseded by L56
Kaituna	5	Superseded by Stamina® 5
WL 414	6	No longer available
WL 614	6	Renamed Haymaster® 7
Quadrella	7	No longer available
57Q75	7	Renamed Q75
WL 525HQ	8	No longer available
L69	8	Superseded by L90
Eureka	8	Superseded by Sceptre and SARDI 10
L90ϕ	9	No longer available
WL 612	9	No longer available
Sceptre	9	Superseded by SARDI 10
Cropper 9	9	Superseded by Cropper 9.5
Saladoϕ	9	No longer available
Saturn™	9	Superseded by Alfamaster9
Sirosal	9	Export only
Rippa	10	No longer available
Queenslander 11	10	Available in Queensland

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For updates go to www.dpi.nsw.gov.au/factsheets

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