

Tastee Tagasaste

Also known as **Tree Lucerne**

As a well-informed Livestock breeder you have probably heard of Tree Lucerne which is also commonly known as Tagasaste. But also as a very busy breeder you probably have never had the time to look into the advantages of this outstanding all-purpose shrub.



Photo courtesy of Department of Agriculture NSW

Well, at last, you now have the opportunity to discover this unique plant, so get yourself a cup of tea or coffee and sit back and read all about what your animals and your farm management have been missing out on.

Chamaecytisus palmensis syn. *Cytisus proliferus* (Tagasaste) comes from the Canary's Island, Spain and was first introduced into southern Australia in 1879 where today it is widespread throughout the farming belt. You will discover that it is not a **new** whiz-bang product but rather an **old** whiz bang product.

Being aware of the potential of this leguminous crop, several pioneering agricultural scientists proceeded with extensive research, particularly in Western Australia and New Zealand. The results of their research have the Departments of Agriculture (or their equivalents) in most Australian states producing extensive material, data and information on this herbage. Here is some of the information that they have provided:

It's Fire Resistant

Use this benefit to its fullest advantage particularly if there is any threat of a fire attack from a certain direction. Don't get us wrong its not impenetrable but Tree Lucerne has been used as a permanent firebreak with great success. In fact in parts of Western Australia it is used as a firebreak to protect pine plantations.

It's an excellent Animal Fodder

Tree Lucerne averages 18-22% crude protein, peaking at 28%. The foliage has a composition similar to the best quality alfalfa. The shrub also provides a good source of calcium and phosphorous along with the usual vitamins and minerals associated with legumes. See Table 1-3 for a comparison against similar fodder crops.

*Composition of edible foliage harvested from Tagasaste trees grown in Western Australia
(expressed as a percentage of the dry matter)*

Samples obtained from tree growing on unfertilised soils

Table:1

DISTRICT	CRUDE PROTEIN	CARBO-HYDRATE	CRUDE FAT	CRUDE FIBRE	TOTAL ASH	CALCIUM Ca	PHOS. P
5 SELECTED DISTRICTS (averaged result)	19.4	51.8	3.8	20	5	0.9	.18

Samples obtained from trees growing on soils fertilised with superphosphate

Table:2

DISTRICT	CRUDE PROTEIN	CARBO-HYDRATE	CRUDE FAT	CRUDE FIBRE	TOTAL ASH	CALCIUM Ca	PHOS. P
5 SELECTED DISTRICTS (averaged result)	28	42	3.6	19.6	6.8	1.13	.33

For Comparison - composition of common stock feeds

Table:3

DISTRICT	CRUDE PROTEIN	CARBO-HYDRATE	CRUDE FAT	CRUDE FIBRE	TOTAL ASH	CALCIUM Ca	PHOS. P
RYE GRASS	16	46	4	24	10	1.0	0.26
LUCERNE(alfalfa)	21	40	3	26	10	2.2	0.33
LUCERNE(hay)	17	40	2	32	9	1.5	0.24
WHEAT GRAIN	11	82	2	3	2	0.04	0.24
OAT GRAIN	10	69	4	13	4	0.06	0.19
FIELD PEA SEED	26	63	1	7	3	0.14	0.24

Prepared from data first published in the Journal of the Department of Agriculture of WA, in 1952 and 1961, and reprinted in the Journal of the Australian Institute of Agricultural Science, 1982

Reduces the Impact of Erosion

Because of its inherent qualities as a windbreak specialist, this shrub reduces the impact of wind erosion and combined with its extensive deep-rooted system assists in binding the soil and thus reduces the impact of water runoff.

It's a Fast Grower

Tree Lucerne establishes quickly, it grows at a rate in excess of 1 metre per year for some 4/5 years and can grow to a crown diameter of 5/7metres, average being 5metres. When pruned, if not by the animals then by manual means it will regenerate at the same rate.



Two year old – grown from tubestock



At three and half year's maturity

It's Drought Hardy and Frost Resistant

Once established which averages at around 18 months, natural rainfall is all that is required provided your area receives a minimum yearly drop of around 350mm. Matured plants have survived up to 8 months without rainfall. However like native seedlings they do require appropriate attention for at least 12-18 months. Seedlings are also frost tender so do not plant until the threat of frost has disappeared. Once established they are frost hardy, as an example they grow well in Orange which can experience frost of -15C. If you are in a frost prone area; plant after the last frost of the season. By the time the first frost of the next season arrives the plant will be around 70cm to 1m and should withstand the onslaught. If particular heavy frosts are experienced utilise a plant protection device for its first frost season.

It's a Legume

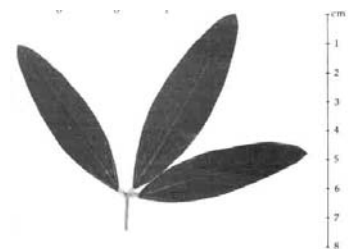
As mentioned it's a legume, this means it fixes nitrogen into the soil and thus has reduced requirements for added fertiliser. Nitrogen is required by all vegetation. It is an essential component of protein and required in high amounts for active growth particularly for young leaves and root tips. Due to the nitrogen fixation aspect of the plant all the surrounding vegetation benefits from the Tree Lucerne plantings. For your Tagasaste to develop into a true legume, bacterium namely *Rhizobium* sp. needs to be present. This causes formation of root nodules, which are necessary for the fixation of nitrogen. To ensure that your Tree Lucerne is subjected to rhizobia it is vital to inoculate the plant with the bacteria. This greatly improves the health, vigor and yields of the plant and you are assured that your Tree Lucerne and surroundings will come alive like never before. The only additional fertiliser that is beneficial is superphosphate; refer to Table 2 as against Table 1 for its impact.

Strong Windbreak/Shade and Shelter for your Animals

Planted between 1m and 2m apart Tree Lucerne provides an excellent windbreak. The New Zealanders acquainted us with this fact as they used the shrub very effectively to protect their pastures against the "roaring forties." Tree lanes are the most effective way of providing sheltered paddocks. Ensure that you prepare the tree lanes properly by ripping the lane before planting. Spasmodic plantings throughout the paddocks are also advisable as it doubles as a "tastee" snack with the added advantage of offering shelter from wind, rain or sun. Many farms also utilise the corner system placing the Tree Lucerne in the corners of paddocks. The corners can be easily partitioned off by running a permanent or temporary fence from either side. As the Tree Lucerne grows through the fence it provides a supplement to the animal's diet. Again this system also offers shelter, shade and a windbreak. If the end of each paddock is used it also reveals your livestock in full view at all times. No hiding behind the trees and getting up to no good!

Reduce Ingestion of Internal Parasites

It appears that Tree Lucerne reduces the ingestion of internal parasites. As an example nematode larva develops from eggs excreted in the dung and climb onto the leaves of pasture plants for the re-entry into the digestive tracts of grazing animals. Due to the characteristic foliage and height of Tree Lucerne; contamination with these parasites is significantly reduced. Consequently it appears likely that where Tree Lucerne is used as a fodder-grazing crop, parasitic worms should decline.



Variety of Soil Conditions

Tree Lucerne has the capacity to grow well in a wide range of soils from clay to sandy textures. It does prefer sandy surfaced soils but thrives on laterites, limestone, loams, gravels and deep coastal well fertilised sands. Preferred pH is extensive ranging from 4.8 to 6.5. It has been planted in alkaline soils to 8.5 however growth and production is retarded. Tree Lucerne does not endure prolonged water logging or constantly wet soils. Avoid planting in these conditions. Raised bedding should be utilised if there is any likelihood of water logging, they prefer good drainage.

Variety of Climate Conditions

Capable of handling conditions from the hot westerly belt to the cool tablelands, also from inland terrain to vast coastal regions.

Weed Suppressor

It has been used very successfully as a weed suppressor. Farms that have pockets of wastelands such as bracken fern, sour sob, dock and similar weeds have planted Tree Lucerne. Weeds are first destroyed by herbicides or by preferred environmental means as steam spraying. Then plant the Tagasaste and mulch heavily. The Tree Lucerne quickly dominates and overshadows the weeds. When grazed the animals also contribute to weed reduction. You have turned an unsightly useless area into an attractive productive masterpiece.

Salinity Control

With its inherent quality to transpire high volumes of water some say more than eucalyptus and pines, Tree Lucerne can be used to assist salinity control. Best used as plantings in higher ground to reduce the water runoff and seepage and thus assists in reducing the rising water table effect. Though salt sensitive, growth will be retarded in saline soils.

Plan your Use of Tagasaste

The estimated average of dry matter consumed daily by an animal (say Alpaca) on good pasture is around 2.5% of the body weight of the animal. If we use this assumption then an animal weighting 60kgs would consume around 1.5kgs. As Tree Lucerne will grow throughout most of the year (depending on climate and conditions) it can be used as a backup or supplementary food when your regular pastures need a rest or are depleted. Alternatively, Tree Lucerne as fodder production can be utilised in your management program. Uses are more intensive plantings of tree lanes and corner areas of paddocks or acreage set aside for the sole purpose of Tagasaste production. Land set aside can be harvested when required or invoke the popular cut and carry method. Many just let the animals browse around.




When you are planning your management program it must be remembered that all areas are different and enjoy or suffer various environmental conditions, so bear your local conditions in mind.

As a guide to your expected yields and assist your necessary calculations Dr. Snook reports that if Tagasaste is planted in rows 18 metres apart, with 3 metres between each shrub about 186 plants will be required per hectare. Each shrub will produce about 11 kilograms of edible dry material annually. Fresh green material averages around 40 kilograms per shrub although higher yields are commonly been reported of 45 to 70 kilograms of green material with resultant increases in dry matter. Denser plantings are more common; refer to Table 4 which highlights the planting criteria.

Some interesting facts to help you do your calculations

Table:4 Guide to help calculate cost



Distance between rows(m)	Metres of rows	Initial kg/ha super at 10g/m row	Plants/ha at 1.5m spacing
6	1667	17	1111
7	1429	14	953
8	1250	13	833
9	1111	11	741
10	1000	10	667

Source: Tagasaste – a fodder shrub- Primary Industries and Resources SA – Fact Sheet

Table:5 Examples of change in feed value of Tagasaste (fresh 10cm long leafy tips) according to season (average of Two sites at Coombe and Marcollat SA)

Feed Value	Nov-96	Feb-97	May-97	Aug-97	Average
Crude Protein (% of dry matter)	20.3	16.9	20.4	26.5	21.0
Digestibility (% of digestible dry matter)	73.1	68.1	73.4	74.3	72.2
Metabolisable Energy (MJ/kg dry matter)	10.4	9.6	10.5	10.6	10.2

Source: Tagasaste – a fodder shrub Primary Industries and Resources SA
Fact Sheet: Yields – What you can expect

As revealed in the above Table 5, Tagasaste has a high digestibility rate and contains good levels of metabolisable energy; that has the effect that the fodder is very palatable. Actually most livestock want to eat it!

So with all these attributes it is no wonder that Tree Lucerne has been used as an effective farm management tool for animal fodder, fire resistance windbreaks, hedges and even display trees. With the added advantages of improving the soils, reducing soil erosion and providing animals with an alternate high protein animal fodder. Isn't it time you tried it on your farm and reaped the benefits?

If you desire additional information regarding this outstanding shrub contact your Local Department of Agriculture or any of the sources mentioned below.

Barry O'Donoghue
Horticulturist

References:

- Fact Sheet, Tagasaste- a fodder shrub, Primary Industries and Resources SA
- NSW Agriculture's Agfact P2.1/7 Tagasaste (tree lucerne)
- Farmnote 50/2000, The feed value of the perennial fodder shrub Tagasaste, Agriculture-WA
- Tagasaste/Tree Lucerne-High Production Fodder Crop, Lawrence C. Snook, Night Owl Publishers, Shepparton, Victoria
- Snook, L.C.1952. Tree Lucerne: a fodder crop which has been overlooked. *Journal of the Department of Agriculture Western Australia* (3):587-93
- Snook, L.C. 1982. Tagasaste(tree lucerne): a shrub with high potential as a productive fodder crop. *Journal of the Department of Agriculture Western Australia* (3):48:209-14.

DISCLAIMER: The author accepts no responsibility whatsoever for the accuracy or information enclosed within this article. Whilst every effort is made to ascertain accuracy liability is neither expressed nor implied; readers should make their own inquiries when making decisions affecting their own interests.