Lucerne: High yielding, drought tolerant, perennial forage legume.

Yield Potential: 12-16 T DM/Ha

Persistence: Up to 5 Years

Forage Quality:
- Energy: 10-11.0 ME depending on growth stage
- Protein: +/- 20% CP

For:
- Very high forage yields.
- High degree of drought tolerance.
- Excellent source of Protein.
- Provides structure and ‘scratch factor’ in ruminant rations.
- No requirement for nitrogen fertilizer.
- Can boost forage intakes.

Against:
- Slow establishment
- Demands strict cutting schedule to manage quality.
- Will not tolerate poor drainage or high winter water table.
- Does not thrive in high rainfall areas.
- Low sugar content demands careful ensiling.
- High demand for P & K.
- Limited options for weed control
- Needs a minimum 4 year break between crops.

Requirements

Soil Type
Lucerne performs well on a range of soil types so long as they are free draining and non acidic at depth. It is particularly well adapted to chalk & limestone soils.

Climate
In the UK, Lucerne is most suited to the in drier areas in the South and East. Leaf disease can limit yield and quality in high rainfall areas especially at 1st cut.

For more information contact Field Options on 01544 262 500 or info@field-options.co.uk
ESTABLISHMENT - Sowing

Lucerne needs to be well established before the onset of winter. To achieve this in the UK, this means spring or summer sowing. The latest safe sowing date would normally be mid-August.

SEEDBED

Sowing Options

Whether under sowing or direct seeding, there can be problems controlling weeds due to the limited number of products cleared for use on Lucerne. We recommend 'Stale Seedbed' techniques to limit weed problems.

2.2 Undersowing

Very successful establishment and maximum forage yields in the year of sowing can be achieved by undersowing Lucerne into a spring cereal crop. Because of the later sowing requirement of Lucerne, Spring Barley is most appropriate but Spring wheat may also be used.

Following late March/early April sowing this will be harvested as mixed cereal/Lucerne forage in early July.

2.3 Summer Sowing

Though reliant on adequate soil moisture, Lucerne can be successfully sown after 1st or 2nd cut silage. Sowing following wholecrop cereals is ideal. Sowing after Winter Barley is common practice, but there can be problems with volunteer barley smothering the Lucerne before the crop is at the right stage for a herbicide to be applied.

2.4 Basic Establishment Requirements

<table>
<thead>
<tr>
<th>Sowing date</th>
<th>Mid April - Mid August (Early April for undersowing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Temp. at Sowing</td>
<td>Min 8ºC</td>
</tr>
<tr>
<td>Soil pH</td>
<td>Ideally 7.0. If lime requirement is above 2 tonnes, apply before and after ploughing to correct pH.</td>
</tr>
<tr>
<td>Sowing Depth</td>
<td>1.0 - 2.5cm (0.4&quot; - 1.0&quot;)</td>
</tr>
<tr>
<td>Sowing Rate</td>
<td>20 Kg/Ha (8 Kg/Acre) for 400-450 plants/m².</td>
</tr>
<tr>
<td></td>
<td>(Spring Barley cover crop at Max. 100kg/ha (40kg/acre))</td>
</tr>
<tr>
<td>Seedbed Fertiliser</td>
<td>Lucerne can use high levels of P &amp; K</td>
</tr>
<tr>
<td></td>
<td>Slurry must be ploughed in.</td>
</tr>
<tr>
<td></td>
<td>50 Kgs P, 50 Kgs K/ha in the seed bed (40 units P/Ac 40 Units K/Ac)</td>
</tr>
</tbody>
</table>

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2.5 Rhizobium Inoculant

The strain of Rhizobium bacteria, which develops on the roots of Lucerne, is not found naturally in British soils. The seed needs to be inoculated before sowing to insure maximum nitrogen fixation and crop performance. Normally inoculant is mixed with before drilling. Some seed comes pre-inoculated.

2.6 Drilling

Seed must only be drilled when soil conditions allow, a fine un-compacted seed bed to be produced. Roll and consolidate after drilling to retain soil moisture. Best plant distribution is achieved are achieved by cross drilling at 10-20°.

2.7 Companion Crops

Traditionally Lucerne has been drilled with companion grasses to enhance the overall field performance. Brome Grass, Timothy, Meadow Fescue are all considered compatible because of the relatively low vigour of establishment and un-aggressive nature. Companion crops further limit the options for weed control and are now rarely used. Late flowering Tall Fescues are used as a companion grass in parts of France where Lucerne is Both cut & Grazed. this is currently being evaluated in the UK.

3.0 WEED CONTROL

24,DB can be used to control broad leafed weeds in early establishment, but should be used in warm conditions, Later Carbetamide (Carbetamex and others) may be used to help control cereals, grass & chickweed . In a well established crop Propyzamide (Kerb & others) may be considered for the 1st winter to control cereal & grass weeds, Diquat (Reglone) can be used in early winter for subsequent weed control. Check all recommendations with your agrochemical supplier.

Consult your BASIS Registered agrochemical supplier for current recommendations.

READ THE LABEL BEFORE YOU BUY- USE PESTICIDES SAFELY!

4.0 FERTILISER

Lucerne is demanding in phosphate and potash. 10 Kg P and  30 Kg K are removed for each 3 tonnes of silage (1 tonne DM). If P & K reserves are satisfactory, replace 75% as organic or mineral fertiliser allowing the remainder to be replaced my soil mineral reserves. 30-40 Kg/ha Potash should be applied after each cut, the balance being applied in the autumn with phosphates.

### Annual Fertiliser Requirements of Lucerne

<table>
<thead>
<tr>
<th>Soil Index</th>
<th>Establishment</th>
<th>First Cut</th>
<th>Subsequent cuts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td>K</td>
<td>P</td>
</tr>
<tr>
<td>0</td>
<td>100</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>1</td>
<td>65</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>-</td>
<td>25</td>
</tr>
</tbody>
</table>

Source: DEFRA
5.0 SLURRY
Do not use slurry in the first year but limited amounts of slurry may be used in following seasons. Up to 25,000 litres of slurry/Ha in the autumn after 1st frost and after any autumn growth has been removed.

AVOID COMPACTION!

6.0 LIME
Good field performance is dependent upon maintaining a pH of a minimum 6.5 on the surface and at least 6.0 at 30cms, Lime levels need to be monitored and corrected.

7.0 PEST CONTROL
There is a significant risk of damage from Sitona Weevil in the establishment phase, Consult your BASIS Registered agrochemical supplier for current recommendations.

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8.0 UTILISATION - Seeding Year

8.1 Spring Sown
The Lucerne should be ready for a silage or hay cut by the end of July or early August, normally cut at early flowering stage. (See below for silage making guidelines).

If undersown, this should coincide with the cheesy ripe stage of ripeness of the Barley. The resulting Lucerne/Barley silage should be wilted for just 24hrs, maximum to prevent the crop from getting too dry. Leave at least 15cm (6”) stubble.

In good growing seasons, there will be grazing or a further light cut of silage in early September, The Lucerne must then be allowed to grow for 6 weeks to fully replace root reserves. After this period cut or graze off surplus growth.

8.2 Summer Autumn Sown
After the first killing frost, graze off surplus growth with sheep. In exceptional circumstances silage may be taken.

9.0 UTILISATION - 1st harvest Year
The first cut should be allowed to flower and cuts are then taken at 4 - 6 week intervals taking successive cuts at the early bud stage. Leave at least 6 weeks rest from mid-September before anticipated frosts to allow full replenishment of root reserves. Always leave 15cm (6”) stubble.

9.1 UTILISATION - Second Harvest Year onwards
Earlier first cut can be practised to improve quality.

LEAVE 6 WEEKS RECOVERY FROM MID-SEPTEMBER EACH YEAR.
10.0 SILAGE MAKING
Ideally mow with a crimper conditioner (Not a flail) and leave in as wide a row as is practical for the forage harvester or baler. Use the following basic guidelines:

- Wilt to 35%DM (Min 30%). Normally 24-36 Hours, Low DM Lucerne ensiles badly
- Short chop for best clamp consolidation & rapid fermentation.
- If baling the silage, do not allow the crop to get too stemmy. The stems may puncture the wrap, so select varieties for fineness of stem.
- Lucerne is low in sugar so use additives that are designed for use with Lucerne and at the full recommended rate. This is often higher than for other forages
- Consolidate and seal clamp efficiently.

11.0 HAY
Mow with roller-crimper to accelerate drying. Turning should be kept to a minimum.

Do not move the swath when the leaf is brittle (i.e. when the crop is dry & sun is out in the middle of the day). Barn drying is almost essential for final conditioning and to retain leaf in the UK climate

12.0 GRAZING
Lucerne needs to be grazed with great care to:

- Avoid damaging the Lucerne.
- Ensure livestock health.
- Do not turn hungry stock onto fresh growth Lucerne. Limit access to prevent bloat.
- Back fence grazed areas to allow recovery & prevent the selective grazing of young shoots.
- Give grazing livestock access to other feed & forages.
- More persistent ‘grazing type’ Lucerne varieties are available for farmers who want to graze the crop regularly.

Zero grazing is a good way of utilising Lucerne, but short chop is important to limit the stock separating the leaf from the stem. Bloat preventatives should be used when feeding, though wilting the crop for 24 Hrs can reduce the risk of bloat.

LUCERNE VARIETY CHOICE - Characters To Look For.

Yield

- Little difference in first year.
- Up to 2.0 Tonnes/Acre of silage variation in year 2.
- Long term performance limited by pests, disease and management.
• Resistance to pest and disease are indicated on the final page of this document and should be considered when choosing varieties.

Verticillium Wilt
• Builds up over a number of years.
• Symptoms - Individual plants completely wilt, cut through tap root and a clear brown ring is noted.
• Resistant varieties perform more consistently in years 3 & 4.

Eelworm
• Occurs where Lucerne is regularly grown.
• Symptoms - Notable swelling and stunting of roots and shoots of plants.
• Infection reduced by using fumigated seed & resistant varieties.

Thickness of Stem
• Particularly important in baling silage to prevent damage to wrap or bags.
• Finer stemmed varieties are easier to consolidate in the bale or clamp.

Protein Content
• There is a range within available varieties available, if all other factors are = choose the variety with the highest protein levels.

ORDERING SEED
Order seed by the Kilogram. 8-10Kg/Acre (20-25Kg/Ha).
Order inoculant of Rhyzobium bacteria for each seeding.
Keep inoculant cool and dry. Avoid exposure to air.

Data Extracted From the French Lucerne Recommended List

<table>
<thead>
<tr>
<th>Variety</th>
<th>Average DM Yield 1st &amp; 2nd Year</th>
<th>Protein Yield</th>
<th>Resistance to Verticillium Wilt (High = Good)</th>
<th>Resistance to Eelworm (High = Good)</th>
<th>Thickness of Stems (High = Thick)</th>
<th>Resistance to Lodging (High = Good)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfa</td>
<td>101</td>
<td>102</td>
<td>6.2</td>
<td>71</td>
<td>6.5</td>
<td>6.0</td>
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<tr>
<td>Concerto</td>
<td>98</td>
<td>106</td>
<td>6.5</td>
<td>76</td>
<td>7.1</td>
<td>7.3</td>
</tr>
<tr>
<td>Daisy</td>
<td>98</td>
<td>104</td>
<td>8.8</td>
<td>53</td>
<td>6.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Marshal</td>
<td>99</td>
<td>103</td>
<td>6.4</td>
<td>63</td>
<td>4.5</td>
<td>4.1</td>
</tr>
<tr>
<td>Timbale</td>
<td>99</td>
<td>104</td>
<td>6.5</td>
<td>59</td>
<td>6.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Luzelle (For Grazing)</td>
<td>94</td>
<td>107</td>
<td>4.1</td>
<td>61</td>
<td>5.2</td>
<td>2.1</td>
</tr>
</tbody>
</table>