

Lablab, cowpeas and soybeans

Technical Note F16

| | |
|----------------------|--------|
| Management level | ★★★★★ |
| Yield | ★★★ |
| Quality | ★★★★★★ |
| Water use efficiency | ★★ |
| Reliability | ★★★ |
| Versatility | ★★★★★★ |

Where ★★★★★ is the highest rating.

Species

Lablab and cowpea are a valuable forage source in autumn on dairy farms as they hold their nutritional value while building up yield over summer. Soybeans are useful for autumn grazing or silage.

Varieties

Lablab; Highworth and Rongai.

Cowpeas; Red Caloona, Banjo, Caloona, Poona and N/Meringa.

Soybeans; Later flowering types of preferred for forage (Warrigal, Jabiru, Oakey).

Establishment

Full seed bed preparation is recommended to achieve highest germination rate. Plant lablab at 15 - 40 kg/ha, cowpea at 20 - 40 kg/ha, and soybeans at 40 - 60 kg/ha. Minimum soil temperature of 18°C at planting, generally plant between October and end of December. Late planting in January results in smaller plants and in the case of soybeans, early pod development.

Generally plant at 70 to 100 cm row spacing for raingrown and 20 - 30 cm row spacing under irrigation at 30 - 50 mm depth into moist soil and press soil. Seed needs to be inoculated with rhizobia at planting, inoculate soybean with group H.



Lab Lab

All species are suited to a wide range of soils and can be direct drilled into crop stubble. Lablab can be sown into dry soil if rain is expected, but not cowpea or soybeans. Soybeans seedlings tend to be more susceptible to damage from waterlogging and soil crusting during germination and seedling establishment. Although once seedlings are established, the plants are tolerant of dry or wet conditions.

Water use

Usually dryland crop in regions >600 mm rainfall targeted for autumn grazing, especially lablab. Relatively low water efficiency due to long growing season. Soybeans can be irrigated for silage crop, producing up to 10 t DM/ha.

Soil fertility and nutrient requirements

| Nutrient requirement | N | P | K |
|----------------------|-----|-----|------|
| Nutrient (% DM) | 4 | 0.4 | 1.7 |
| kg applied (/ha) | 200 | 20 | 82.5 |

Typical mineral content of warm-season legumes and requirements to produce 5 t DM/ha.

These legume crops can fix up to 100 kg N/ha/crop, related to dry matter yield, which is available to following crops or pastures. Soil fungi (mycorrhizae, VAM {vesicular-arbuscular mycorrhizas}) are important to P and Zn uptake by roots, and after long fallows these fungi may be depleted and crops require additional P.

Crops may require P, K and S depending on soil test, particularly on coastal soils. Deficiencies of Zn more likely to occur on inland heavy clay soils. General recommendation is 125 kg/ha of each of superphosphate and muriate of potash. P <20 mg/kg, K < 0.3 mequiv%. Zn as foliar spray at 1 - 2 kg ZnSO₄/ha. Molybdenum may be required on light, acidic soils, as along the coast.

Diseases and pests

Only a few cases of bloat have been reported. Lablab and cowpea are susceptible to root rot in wet soil, soybeans are more tolerant. Cowpea; susceptible to phytophthora.

Growth and grazing

Dry matter intake of legumes is generally higher supporting an additional 2 - 4 L milk/cow/day more than tropical grasses and summer forage crops. Lablab and cowpea will regrow after one or two grazings, if cows only remove leaf and do not damage stems severely.

Grazing rule - when leaf cover forms a complete canopy, remove this with a short grazing period. Cowpeas are fastest to grazing, in 10 weeks, with lablab 3 - 4 weeks later. Yields typically 3 - 5 t DM/ha over 1 to 3 grazings. Soybeans graze once approximately 14 weeks after sowing or cut for silage at mid pod fill stage.

Nutrient quality

| Quality (% DM) | Lablab | Soybean (Grassy Silage) |
|----------------|---------|-------------------------|
| Crude protein | 17 - 26 | 16.5 |
| Starch | 7.3 | 1.7 |
| Sugar | 11 | 9.7 |
| NDF | 30 - 43 | 56.1 |
| Fat | 4.5 | 2.0 |
| ME (MJ/kg DM) | 11.2 | 7.5 |
| DM (%) | 18 - 30 | 74.6 |

Weeds

Weeds, especially grasses, can be a problem at establishment. This can be prevented by applying a pre emergent herbicide before planting. Whilst soybeans haven't been registered as pre emergent herbicide tolerant, on-farm demonstrations have shown that germination was not impeded when sprayed at label rates. Legumes are very sensitive to damage from 2, 4 D type herbicides.

Silage and hay

Need to be wilted to concentrate water soluble carbohydrate and to achieve desired DM percentage without decreasing quality. Recommended to use a silage inoculant to ensure fermentation. Chopping preferred to baling, to ensure compaction. No regrowth after cutting. Harvesting lablab has reportedly been difficult due to vine entanglement, although not always the case. Soybeans preferred for silage because they have an erect growth habit. Mowing at early pod fill may require wilting depending on DM content which can lead to contamination by soil and increased spoilage in the pit.

Lablab and cowpea have successfully been grown as a mixture with forage sorghum or maize. The legumes twine around the sorghum and maize plants and when harvested, increase the N content of the silage crop.

Further information

Contact the DAFF Customer Service Centre by Phone 13 25 23, or Email callweb@daff.qld.gov.au

More technical notes can be found at: www.dairyinfo.biz

Callow et al. (2013) Successful Dairy Production in the Sub-Tropics

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