

Overview

Soybeans as a home grown protein silage is a cost effective option for dairy farmers. Soybeans have the highest yield and forage quality potential of summer legume crops currently grown for silage production in Qld. A legume silage can offset purchased protein concentrates fed in cow's diets and provide a good balance of protein and fibre to supplement the diet.



Variety Selection

Variety selection is important for silage production, with the NSW Hayman variety bred as a multipurpose grain/hay/silage variety. It is a popular option for farmers as its high yielding, resistant to powdery mildew and has a wider harvesting window than other varieties. Planting time will influence selection, as the slower maturing varieties (Leichardt, Hayman) will produce a taller crop, and the quicker varieties (A6795, P791) will produce a smaller stature plant.

Hayman is the preferred variety as a silage crop for South East Queensland, Downs and Central Queensland, where Leichardt is better suited to the northern tablelands.

Growing

In Qld, soybeans are best planted from October to achieve maximum yields, and before December, as soybeans flower in response to shortening day length. Planting earlier or using late maturity varieties will increase the vegetative phase which has a strong correlation with yield. A larger and leafier plant will be achieved when planted in spring compared to planting in mid to late summer. Seed must be inoculated with Grp H inoculant and planted to a depth of 5 cm. Plant density should be 35-45 plants/m² or roughly 60-80 kg/ha depending on variety.

Fertiliser and Water Requirements

As soybeans are a legume and fix their own nitrogen, minimal nitrogen fertiliser is required. It is recommended however to do a soil test ensure there are no other limiting nutrients. A small amount of starter nitrogen may be beneficial, approximately 20 kg N/ha. Zinc, Molybdenum and Potassium are also very important elements. A general planting application of 100 kg/ha of DAP and additional potassium is suggested to optimise yield. Soybeans grow well under irrigation, however don't like prolonged wet periods. Soybeans can also be grown successfully in dryland conditions when planted at a heavier rate.

Weed and Pest control

Standard paddock preparation including glyphosphate applications as well as pre-emergent grass and broadleaf herbicides (e.g. Dual Gold) are highly recommended. Post-emergent broadleaf and grass herbicides are also advised (e.g. Spinnaker and Raptor). It is important to check the plant back periods on the chemicals applied. Green vegetable bug, Silverleaf white butterfly, Heliothis caterpillars and Black and Brown cut worm are all pests that can be found in soybean crops and will need to be controlled for.



Soybean forage pre-pod fill

Harvesting

The challenge of producing high quality soybean silage, is getting the harvest timing and technique correct. Harvest should take place at as close to 65% forage moisture, aiming for 35-40% DM at chopping, or when the pods are at the early to mid-pod fill growth stage. Harvesting later than this, will reduce yield due to foliage senescence and leaf and pod shatter during harvest. Harvesting earlier than 35%DM between flowering and pod development will require a longer drying period prior to chopping.

It is highly recommended to use a swather to mow the soybeans 24 to 48 hours prior to chopping (at around 35% DM). Leave in a row until the DM% increases across the mowed row. Raking soybeans to speed up the drying period, although tempting, is not recommended, as soil can be collected in the foliage material and compromise silage quality in the pit. Shorter chop length of stalkier crops is essential for

good compaction in the pit and an optimal ensiling process.



Wilting Soybean silage following swathing

Nutritional Value

Soybean silage is included in a dairy cows diets to offset the amount of protein concentrate required. When soybean silage is grown at the highest quality (>22% CP, <37% NDF), some farmers have reported completely replacing all protein meal fed in dairy cows diets. Commonly, soybean silage is fed at 2 to 5 kg DM/cow/day, however consult with your nutritionist on establishing a nutritionally balanced diet.

Economic Value

Soybeans are generally grown and fed back as silage to offset purchased protein meal concentrates. As protein meal prices fluctuate, having greater control over your protein supply and cost contributes to improved profitability.

Assuming yields of 7000 kg DM/ha @ 40% DM (7000 kg wet/acre):

- **Cost in the pit = \$60.00/t (wet)**
- **At 35%DM = \$171/t DM or 17 c/kg DM**



Scan this QR code for links to
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Contacts

For more information please contact:

Dr David Barber

david.barber@daf.qld.gov.au

Ross Warren

ross.warren@daf.qld.gov.au

[Dr Marcelo Benvenuti](#)

marcelo.benvenuti@daf.qld.gov.au

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