

fact sheet 5. Planting

Land Preparation

The key to reliable and successful Leucaena establishment is adequate planning and paddock preparation. Ensuring high levels of soil moisture before planting from fallowing is one of the most critical success factors. Ensure a fine seed-bed and competition from grass and weeds is removed through repeated cultivation (or herbicide application), allowing the soil to store moisture prior to planting. Deep ripping (50cm+) along the rows at the start of the fallow period may be beneficial in non-cracking or tight soils.

Producers may consider total removal of existing grass with subsequent re-planting of companion grasses; or retaining grass strips to allow some grazing during the fallowing period and reduce preparation costs, reduce the potential of soil erosion, and enable grass re-establishment without planting grass seed. However, if the existing grass pasture is either rundown or contains undesirable species, it is highly recommended to totally remove the existing pasture across the whole paddock.

Young leucaena seedlings concentrate developing a strong root system, rather than above ground shoot growth. This slow shoot growth increases susceptibility to weed and grass competition, therefore post planting weed control (either mechanical or herbicide) is essential to ensure vigorous early growth.

Timing

The right planting time and adequate soil moisture are critical for reliable leucaena establishment. Plant as early as possible between September and March (depending on winter temperatures and frost potential), but only when there is at least 60-90cm (preferably 1 metre minimum) of sub-soil moisture and soil temperature is rising above 18°C.

Young seedlings can struggle if they emerge in extremely hot conditions in January and February in lighter textured soils, but can survive if roots are growing into a good soil moisture profile.

Inoculate the planting seed

The productivity of the leucaena stand and the companion grass depends upon efficient nitrogen fixation. Nitrogen fixation is caused by a symbiotic relationship between the plant and an introduced rhizobium bacteria (as of 2018 the new strain is CB3060). Native rhizobium present in the soil do not form effective nodules, so the seed must be treated with the commercial rhizobium inoculum. Seed should be inoculated immediately before planting. Store the rhizobium in a refrigerator before use and observe the expiry date. Rhizobium is sensitive to drying out, heat, sunlight, fertilisers and chemicals. Consider the further step of water injecting the inoculum in the seed trench to maximise plant nodulation.

Seed quality and planting rate

Planting quality seed with high germination percentage (scarified seed) and high viability (low percentage of dead seed) is another critical success factor. Ensure seed germination percentage is known prior to planting by either obtaining a commercial test certificate or testing the germination yourself.

Aim to place each seed 5cm apart in the row (20 seeds / metre row), which equates to a planting rate of approximately 1 – 2kg/ha depending on row spacing and seed size.

Row Spacing

Suggested row spacings are between 10 to 20m depending on soil type, rainfall (or irrigation), and the grass:leucaena forage balance required. These spacings allow maintenance of a strong grass sward between rows, machinery access for leucaena maintenance and optimal grazing pressure. Planting twin rows (as opposed to single) can ensure a continuous hedge if one row doesn't come up.

If sowing Leucaena into fallowed strips, ensure the strips are at least 5m wide (if planting twin rows on 1m centres) to allow about 2m of weed free conditions either side of the rows until Leucaena is at least 1.5m high to minimise moisture competition from grass.

Seed planting depth

Ensure a uniform planting depth of 3 – 5 cm to ensure the seed is in wet soil for 5-7 days for reliable germination. Shallower seed placement will provide quicker emergence as long as soil moisture isn't quickly depleted which might be risky in marginal moisture conditions or on lighter soil types.

Germination and early emergence

Germination and emergence should occur within 7 days but this time is influenced by a range of factors including soil moisture, temperature, seed quality and scarification level, uniformity of planting depth, and seed-soil contact. Using presswheels to ensure seed-soil contact is very important for reliable establishment, however too much pressure can be detrimental. Presswheels ideally need to run beside the planted row, not over the top.

In the early stages of establishment the seedling is very susceptible to predation from soil insects, native animals and weed competition. Ensure weeds are controlled after planting (as previously mentioned), assess the need for soil insect control, and plant a large enough area (at least 40ha) to allow for native animal predation.

Weed Control after planting

Effective weed control for the first 3-6 months is important to minimise the time to establishment and first grazing. Weeds can be chemically or mechanically controlled. Mechanical options include over-the row (scufflers) or inter-row (tined or off-set disc) implements which need precision placement to minimise damage to Leucaena and effective weed control.

Chemical options include herbicides (for example Spinnaker and Fusilade Forte) applied either over the entire area or in a band along the planting rows prior to planting, at planting or after planting depending on the situation and weed control needed.