

# Tropical perennial grasses



## Sowing time and depth

*This brochure is one in a series of guides released by the Future Farm Industries CRC (FFI CRC) to promote the use and management of tropical-grass based pasture mixes in the summer-rain dominant region of New South Wales (see map).*



## Key Points:

- Sow between November and December after seven to ten days where day temperatures have been consistently above 20°C and night temperatures above 10°C
- Sow at a shallow depth of about 10 mm (half an inch)
- Although the soil surface may be dry, use a push-probe to ensure there is at least 1 m of subsoil moisture at sowing
- Sowing after the end of January is generally not recommended as plants will be too small to withstand frosting in the subsequent autumn, winter and spring.

## Sowing depth

Research has clearly shown the best plant establishment results occur from sowings made between November and January when seeds are sown shallow at a depth of 10-25 mm. Aim to have sowing depths around 10 mm to allow for paddock variations and differences in surface roughness and furrows. These differences can markedly affect the accurate placement of seed at the right sowing depth or the amount of soil coverage over seeds. Since many tropical perennial grass seeds are small, deep sowing markedly reduces the establishment of most cultivars. If sowing in rows, use press wheels on soils that are not-hard setting to improve the soil-seed contact, as this helps increase plant establishment.

The best 'sowing window' is late November to early December when day temperatures have consistently been above 20°C and night temperatures above 10°C for a period of seven to ten days. Sowing in early spring or autumn, when temperatures are below these levels, greatly reduces seed germination and establishment may be poor. Sowing when temperatures are high can also reduce establishment, since water losses from soil by evaporation are high and rainfall is less effective.



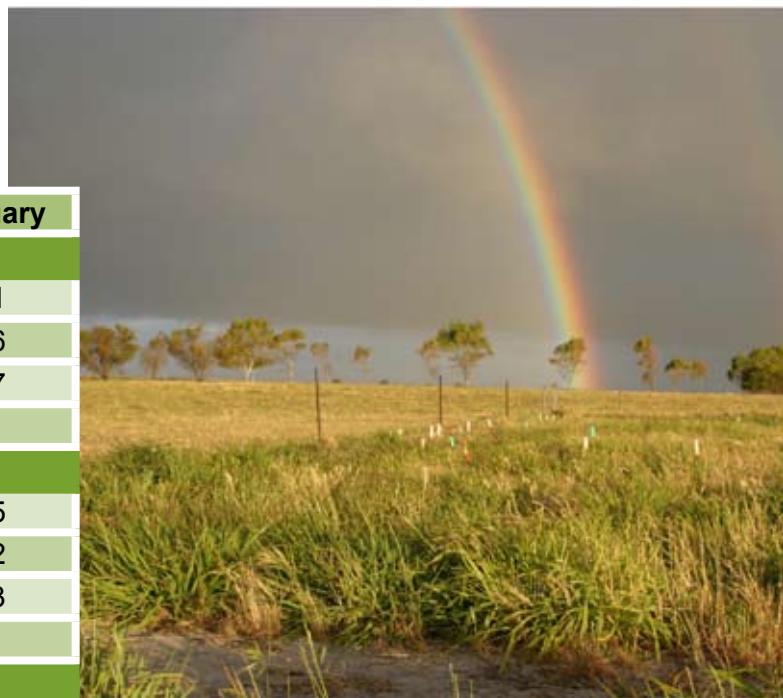
*Good tropical perennial grass establishment occurs when high quality seed is sown into a weed-free seedbed at the right depth and right time of the year.*

## When to sow

Sowing in late November or early December maximises the chances of receiving sufficient summer rainfall for germination and establishment (see table below). As a general rule, one to two rainfall events of 20-25 mm are required.

Some farmers believe that the best time to sow tropical grasses is just before two inches of rain. This may not be as impractical as it sounds since a high proportion of summer rainfall can occur as a result of tropical low pressure systems. In summer, these systems can build up off the north-west coast of Western Australia or coastal Queensland, taking three to four days to arrive in northern NSW and often deliver substantial rainfall events. Keeping a close watch on weather maps and four to ten day forecasts may allow you to time sowings to coincide with the likelihood of these events occurring.

Rainfall (mm)	November	December	January
<b>Moree</b>			
Mean	56	58	71
Median	47	47	56
30th percentile	29	30	37
No. rain days	6	6	7
<b>Warialda</b>			
Mean	69	71	85
Median	58	57	72
30th percentile	33	44	43
No. rain days	7	7	8
<b>Gunnedah</b>			
Mean	60	66	72
Median	53	60	54
30th percentile	29	41	32
No. rain days	6	7	7
<b>Tamworth</b>			
Mean	68	75	86
Median	64	73	74
30th percentile	41	53	47
No. rain days	7	8	7



*Rainfall statistics for four locations on the North-West Slopes of NSW. The median (50th) and 30th percentile values indicate there is a 50 and 70% chance, respectively of monthly rainfall exceeding these amounts. (Values are from Rainman Streamflow 4.3).*



It is important to note that because of high summer rainfall intensity, temperatures and evaporation rates, most summer rainfall events are only likely to wet the uppermost part of the soil profile. Even if establishment is good, sowing on a low subsoil moisture profile is risky and young plants may fail due to a lack of water. Use winter-fallowing techniques in conjunction with pre-sowing weed control to build up subsoil moisture, and a push-probe to monitor stored water levels to assist establishment. Do not sow unless there is 1 m of stored subsoil moisture on most soil types.

Although temperature and/or rainfall conditions can be favourable for germination and establishment, do not sow after the end of January. Seedlings that emerge from later sowings remain small and do not flower as temperatures drop in autumn. Up to 70 per cent can be lost due to frosty conditions in autumn, winter and spring. Frosts can occur from April to October (145-150 days of frost occurrence) and typically up to 60 frosts may occur each year.

Anecdotally, some producers believe that seed sown in one year will remain viable in the soil and come up in the next year when temperature and rainfall conditions are favourable. Tropical perennial grass seeds do not have mechanisms such as hard seeds that allow them to survive in the soil without taking up water. In moist soil, seeds contained in either florets or seed-coats will soften and be prone to insects and soil fungi and bacterial attack, resulting in high seed losses. In wet years, losses can be as high as 100%, in drier years, some seeds may survive and subsequently germinate, but this is an unreliable and risky method of establishment. Seeds in seedheads of flowering plants, that are held in the plant and litter material above the soil, can successfully survive over winter. These seeds may produce new plants the following year. Therefore, allowing plants to flower and set seed and new seedlings to be recruited over time is one way of naturally increasing the plant density of thin stands.

For further information contact: Greg Lodge, Principal Research Scientist, Industry & Investment NSW Tamworth email: [greg.lodge@industry.nsw.gov.au](mailto:greg.lodge@industry.nsw.gov.au).



*Further reading:*

Lodge GM, Harden S (2009) Effects of depth and time of sowing and over-wintering on tropical perennial grass seedling emergence in northern New South Wales. *Crop & Pasture Science* 60, 954-962.

Lodge GM, Brennan MA, Harden S (2010) Field studies of the effects of pre-sowing weed control and time of sowing on tropical perennial grass establishment, North-West Slopes, New South Wales. *Crop & Pasture Science* 61, 182-191.