

MIXED SPECIES CROPPING FOR GRAZIERS

Improving soil health and system resilience in North Queensland

What is mixed species cropping?

Mixed species cropping is sowing a mix of plant species (grasses, legumes, brassicas, herbs) in the same paddock.

This diversity can increase the soil's biological activity, build organic matter, improve the soil's water-holding capacity, and provide high-quality forage for livestock.

Why do it?

Improved Pasture Productivity

- Different species grow at different times of year, increasing total forage availability.
- Species with complementary growth habits can fill in gaps and reduce bare ground.
- Increasing resilience to climate variability, pests and diseases.

Soil Health and Structure:

- Creates a variety of root structures (deep versus shallow), improving water infiltration and reducing compaction.
- Legumes fix atmospheric nitrogen, naturally fertilising soils and reducing synthetic inputs.
- More biomass helps with soil organic matter and microbial diversity.

Grazing and Livestock Health

- Diverse diets improve animal nutrition and palatability for animals.

- Higher feed quality during critical dry periods.
- Certain species can help with parasite control and mineral uptake.
- An extended green season provides more consistent feed throughout the year.

Weed and Erosion Control

- Mixed species cropping creates a dense, well-covered canopy, suppressing weed emergence, reducing weed density and preventing weeds from establishing.
- Ground cover helps to prevent soil erosion in the high rainfall that's common in the Wet Tropics region.

Reduce Inputs and Improve Resilience

- Fixes nitrogen (legumes) and scavenge nutrients (deep-rooted species).
- Outcompetes weeds and breaks pest/disease cycles.
- Reduces the need for synthetic fertilisers.

Climate Resilience: Drought-Proofing

- Species diversity spreads the risk. If one species fails in a drought or flood, others can persist.
- Increases drought tolerance and water use efficiency.
- Deeper roots access subsoil moisture.
- Improved water-holding capacity over time.
- Greater grazing flexibility during climate extremes.

Tips for establishing mixed species crops

Timing

- Plant at the start of the wet season (Nov–Jan) or after good rainfall events.

Seedbed

- Make sure there is good seed-soil contact. Consider light cultivation or zero-till with press wheels.
- Inoculation: Inoculate legumes with correct rhizobia.
- Grazing management: Allow plants to establish before grazing. Rotational grazing avoids overgrazing of tender species.
- Termination: Options include grazing, slashing or planting a cash crop into the residue.

Grazing benefits and considerations

✓ **Nutritional Diversity:** Improves animal performance and reduces need for supplements.

✓ **Bloat Prevention:** Include fibrous species (e.g. sorghum) with legumes to reduce risk.

✓ **Palatability:** Animals will select their preferred species first. Monitor for overgrazing.

✓ **Persistence:** Many mixes are seasonal. Aim to improve soil health and provide short-term grazing, not permanent pasture.

Monitoring: What to watch for

- Grazing pressure and regrowth.
- Weed competition.
- Plant species balance (some may dominate).
- Livestock health – especially when you are grazing high-protein or immature legumes.



Contact us

See local examples of multi-species pastures: Find out about our Climate Smart Farming **site visits and workshops** by subscribing to Terrain NRM's enewsletters (at www.terrain.org.au) and following the 'Wet Tropics Sustainable Agriculture Facilitator' and Terrain NRM Facebook pages.

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