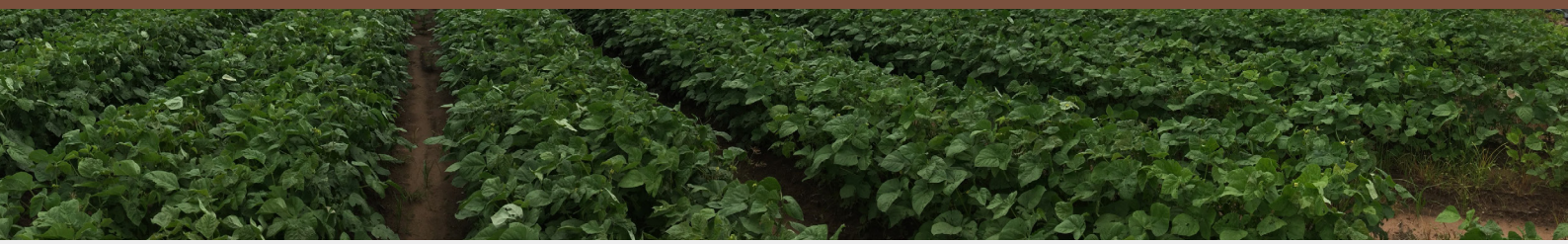
Checklist for

GROWING LEGUME COVER CROPS IN THE WET TROPICS

Sugar Research Australia

sugarcane SOIL



Many variables must be considered to ensure a successful legume cover crop. Getting the basics right with paddock selection, nutrition, variety selection, inoculation, planting rate, row spacing and weed management provides a solid foundation. This checklist is designed to help ensure successful establishment and growth of legume cover crops.

- ☐ Take a soil test. The best time to soil sample is immediately after harvesting the final sugarcane ratoon crop. This soil test will identify nutrient requirements and potential soil constraints.
- ☐ Apply and incorporate required soil ameliorants. Applying ameliorants at the commencement of the fallow period is important for successful growth of the legume crop and following sugarcane crop.
- ☐ Prepare the block to a good soil tilth unless direct drilling legume seeds into existing sugarcane rows.
- ☐ If forming beds or hills, use an appropriate row spacing to ensure good plant population, rapid canopy cover and to minimse waterlogging.
- ☐ It is ideal to plant legume seeds into moist soil or when rain is forecast soon after planting.
- ☐ Apply a knockdown herbicide prior to planting if needed to remove any unwanted weeds and volunteer sugarcane plants. Preventing the growth of volunteer sugarcane plants during the fallow period will reduce pest and disease pressure.
- ☐ Select the appropriate legume variety. Refer to SRA Information Sheet "Legumes Pros and Cons" for more information on different legume varieties.
- ☐ Source fresh seed with a current germination certificate. Do not use old seed or seed that has been stored incorrectly (exposed to heat and humidity). If unsure do a quick germination test!
- ☐ Determine the correct planting rate. This will depend on the planting method and legume variety. Planting rates can be calculated or general planting rates followed.

TO CALCULATE PLANTING RATE $= \dfrac{\text{Desired plant population/ha}}{\text{Seeds/kg x germination \% x expected establishment \%}}$

EXAMPLE CALCULATION OF PLANTING RATE:

Desired plant population	=	250,000/ha
Seeds/kg	=	13,500
Germination rate	=	95%
Establishment rate	=	85%
Planting rate	=	250,000 ÷ (13,500 x 95%) x 85%)
	=	**23 kg/ha**

LEGUME	DIRECT DRILL (KG/HA)	BROADCAST (KG/HA)
Soybean	50	Not recommended
Meringa Cowpea	20-30	30
Ebony Cowpea	20-30	30
Red Caloona Cowpea	20-30	30
Lablab (Rongai Dolichos or Highworth)	20-30	30-40
If mixing cowpea and lablab varieties use half the recommended planting rate of each		

- [ ] Calibrate the planter for legume seed (planting rate kg/ha) and fertiliser (where necessary).
- [ ] Purchase the correct inoculant. If mixing different legumes more than one inoculant group will be required.
    - [ ] Group H - Soybeans.
    - [ ] Group I - Cowpeas and Mungbeans.
    - [ ] Group J - Dolichos, Lablab and Pigeon Peas.
    - [ ] Group M - Sunhemp and Velvet Bean.
- [ ] Keep the inoculant cool **(refrigerate DO NOT FREEZE)** and out of direct sunlight.
- [ ] Correctly inoculate the legume seed with fresh inoculant:
    - [ ] Ensure all containers used for mixing and delivering inoculant are clean and free of contaminants.
    - [ ] Always use potable water when mixing inoculant. The water should be 'soft' and as close to a neutral pH as possible.
    - [ ] Keep inoculated seed as cool as possible to ensure maximum rhizobia survival, and plant into moist soil.
    - [ ] Only treat the quantity of seed that can be planted in a reasonable timeframe. High ambient temperatures at planting reduces rhizobia survival time.
- [ ] Ensure even coverage of the seed.
- [ ] Check sowing depth (25 to 50 mm is ideal).
- [ ] Monitor germination and establishment.
- [ ] Monitor weed pressure. Select appropriate registered herbicides and apply according to recommended label rates if required.
- [ ] Check nodulation 4 to 6 weeks post planting when nodules can be easily seen by eye.
    - [ ] Remove plants from the soil using a shovel or garden fork as pulling plants by hand my rip nodules off the roots and wash soil from roots.
    - [ ] Assess the location (close to the crown of the plant and/or along the length of roots), number, size and colour (an active nodule will be pinkish or red on the inside whereas a white or green nodule is not fixing nitrogen from the atmosphere) of the nodules.
- [ ] Measure legume biomass. This will allow nitrogen contributions from legume crops and potential plant cane nitrogen fertiliser rate reductions to be determined.
- [ ] Consider timing and method of legume cover crop destruction and incorporation of legume residue. This will depend on the desired cane planting time, soil type, soil moisture and weather conditions.
- [ ] If unsure, seek advice from your local trusted advisor.

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