



# The right pulse in the right paddock at the right time



Agnote DPI 446, March 2003

Revised May 2004

Col Mullen, Former District Agronomist, Dubbo

[www.agric.nsw.gov.au](http://www.agric.nsw.gov.au)

Pulse production can be made much more reliable and profitable by getting the basics right.

Unfortunately it has often been the opposite with ‘the WRONG PULSE in the WRONG Paddock at the WRONG TIME’ – leading to

disappointing results. The challenge is to get it RIGHT.

Lupins, faba beans, field peas and chickpeas, all have very specific requirements of soil type, place in rotation and sowing time for them to be successfully grown.

## Guidelines for Pulse Crop Soil Requirements on central NSW soils

Crop	Soil Type	Soil pH (CaCl <sub>2</sub> )	Exchangeable Al% range	Drainage Tolerance (1-5)**	Sodicity in Root Zone. (90 cm) (ESP) +
Lupin – narrow-leaf	Sandy – loams	4.2 – 6.0	20% Tolerant	Sensitive (2)	< 1 surface < 3 subsoil
Lupin – albus	Sandy – loams – clay loams	4.6 – 7.0	Up to 8%	Very Sensitive (1)	< 1 surface < 3 subsoil
Fieldpea	Sandy – loams – clays	4.6 – 8.0	Up to 5–10%	Tolerant (3)	< 5 surface < 8 subsoil
Chickpea	Loams – self mulching clay loams	5.2 – 8.0	Nil	Very Sensitive (1)	< 1 surface < 5 subsoil
Faba bean	Loams – clay loams	5.4 – 8.0	Nil	Very Tolerant (4)	< 5 surface < 10 subsoil
Canola*	Loams – clay loams	4.8 – 8.0	0–5 %	Tolerant (3)	< 3 surface < 6 subsoil
Lucerne*	Loams – clay loams	5.0 – 8.0	Nil	Sensitive – Tolerant (1-3) dependent on variety	< 3 surface < 5 subsoil

\*Non pulse comparison

\*\*No hard pans and good drainage (no puddles after 24 hours from a 50 mm rain event). Hardpans – can aggravate waterlogging and cause artificial waterlogging

+ Exchangeable Sodium %

## THE RIGHT PULSE

It is critical to match pulse crops to soil type in a particular paddock. All pulses have varying requirements of soil pH, drainage, sodicity and exchangeable aluminium as show in the table.

### Narrow leaf lupins

- Adapted to sandy, sandy clay loam and loam soils
- Very tolerant of soil acidity and high levels of soil aluminium
- Require reasonably well drained soils
- Susceptible to phytophthora root rot (sudden death disease) which can be brought on by periods of waterlogging during winter

### Albus lupins

- Adapted to better soils with good drainage – sandy loam and loam soils
- Very sensitive to poor drainage and waterlogging
- Not adapted to sodic soils
- Only tolerant of moderate acidity, up to 8% exchangeable aluminium
- Susceptible to phytophthora root rot (sudden death disease) and pleiochaeta root rot especially after short periods of waterlogging. Aggravated by hard pan.

### Field peas

- Widely adapted to most soil types – acid sandy soils through to loams and clays
- Can tolerate subsoil sodicity up to around 8 ESP
- More tolerant of waterlogging than lupins

### Faba beans

- Adapted to heavy self mulching clay soils
- Heavy friable clays are suitable provided subsoil sodicity is less than 10 ESP
- Most tolerant pulse crop to waterlogging
- Unsuccessful on acid sandy loam soils or soils with acid subsoil

### Chickpeas

- Adapted to most soils with pH >5.2 (CaCl<sub>2</sub>) and good drainage – red loam, sandy clay loam and heavier self-mulching clay loam soils.
- Most reliable on the red sandy clay loam and well drained clay loam soils
- Soils must have good drainage to counteract the potential for phytophthora root rot. DO NOT sow on tight hard setting or sodic soils (very sensitive).

## THE RIGHT PADDOCK

- Paddock should be of a suitable soil type for the pulse crop (see table)
- The pulse should be sown in the right cropping sequence
- The previous crop should preferably have been a cereal resulting in low soil nitrogen and disease levels for pulses. The paddock should retain standing stubble and be as far away as possible from stubble of the same pulse
- Ideally the pulse crop can be no-tilled into standing cereal stubble which will maximise nitrogen fixation by the pulse and help minimise disease (minimum spore splash and aphid activity)
- Broadleaf weed pressure should be low – the weed seed bank should have been reduced in previous crops. Avoid problem weed paddocks
- Harmful herbicide residues should not be present e.g. sulfonylurea herbicides such as chlorsulfuron from the previous cereal crop, particularly on alkaline soils
- The soil should be free of a significant hard pan – cause of induced waterlogging problems and disease e.g. phytophthora root rot in lupins and chickpeas
- Select best variety (disease etc.) available
- Do not crop pulse on pulse crop even after a drought
- Use yield mapping, observation and soil testing to identify paddock variability and problem areas

## THE RIGHT SOWING TIME

Optimum sowing times are critical for maximum grain yields and high nitrogen fixation in pulse crops. Sowing too early can expose crops to frost and disease whilst sowing late can result in low yield potential and disappointing results. The ideal sowing time is usually a compromise. Experience in the central west indicates that the **best bet** sowing times for the winter pulse crops are:

### Narrow leaf lupins :

Last week April – Mid May

These sowing times have minimised diseases such as CMV virus (aphids). Yields decline very quickly after mid May.

### Albus lupins:

Very late April – 20 May

These sowing times have minimised disease problems as well as pod and stem frosting in late winter.

**Faba bean:**

Late April – May (Fiesta)

These dates give the best chance of developing a yield potential and reducing exposure to late autumn aphid flights (virus) and pod frosting.

**Field peas:**

20 May – 1<sup>st</sup> week June  
(Most varieties)

10 May – 25 May (Mukta)

These sowing dates minimise pod frosting in August as well as exposure to diseases such as luteovirus (aphids) and powdery mildew.

**Chickpeas:**

Early May – early June (Red loams)  
15 May – June (Black soils)

Generally sowings in the first half of May have given the best yields on red soils. On the good heavier textured soils sowings from mid May to early June are preferred but sowings as late as July have been successful. These planting times minimise problems with *Ascochyta* and *Botrytis* as well as virus diseases.

In the drier western areas slightly earlier sowings can be made whilst in the better rainfall eastern parts of the region slightly later plantings are possible.

**FURTHER INFORMATION**

- Winter Crop Variety Sowing Guide 2004
- Chickpea 2003 – Management Strategies for Central and Southern NSW
- Chickpea 2004 – Queensland and NSW

The information contained in this publication is based on knowledge and understanding at the time of writing (May 2004). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser.

**Always read the label**

Users of agricultural (or veterinary) chemical products *must* always read the label and any Permit, before using the product, and strictly comply with the directions on the label and the conditions of any Permit. Users are not absolved from compliance with the directions on the label or the conditions of the permit by reason of any statement made or omitted to be made in this publication.

© The State of New South Wales  
NSW Agriculture 2004

Edited by Bill Noad  
Information Delivery Program  
Dubbo, May 2004  
Agdex 160/10  
Job No. 4145