

## LENTIL GROWERS CHECKLIST

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<b>Lentil Quick Check List</b>	
Have rainfall requirements been considered?	Yes
Has available soil moisture been calculated and depth measured?	Yes
Saline, sodic or high boron soils avoided?	Yes
Water-logging areas avoided?	Yes
Broadleaf and grassy weeds controllable?	Yes
Is the weed seed-bank sufficiently low to enable the lentils to compete?	Yes
No herbicide residues?	Yes
Is Botrytis Grey Mould (BGM) risk known and factored in to be manageable?	Yes
Is the distance from last seasons lentil stubbles sufficient (> 500m)?	Yes
Is Ascochyta blight risk known and manageable?	Yes
Is the paddock at low risk for root diseases and/or are they manageable?	Yes
Are fertilizer requirements known?	Yes
Is variety choice adequate and specific variety management package known?	Yes
Seed quality and seed fungicide dressing adequate?	Yes
Inoculation considered and procedures adequate?	Yes
Is seed handling and sowing equipment "soft" on seed during seeding?	Yes
Are you sowing in up and back or in a 'wider-row' configuration?	Yes
Adequate crop establishment is achievable?	Yes
Do you have a plan to minimize aphids and potential virus incidence?	Yes
Is crop monitoring at critical stages organised?	Yes
Are you able to respond to crop management needs in timely way?	Yes
Is boom spray set up for fungicides?	Yes
Has desiccation or crop top been considered as harvest and weed control aide?	Yes
Harvest and storage infrastructure for grain at up to 14% moisture?	Yes

## **PADDOCK SELECTION.**

### **1. Have you assessed rainfall requirements and amount of stored soil moisture in your paddocks?**

In southern Australia, lentils are virtually reliant on in-season rainfall. They are deemed to require >350mm annual rainfall, but there are opportunities to grow them in lower rainfall areas if adequate soil moisture is present at sowing (e.g. >20mm of stored soil water at 0-60cm depth). The best guide to assessing soil water storage is to put down several soil cores.

Rainfall requirements differ with variety grown since late maturing varieties like Nipper<sup>®</sup> require a longer growing season. Spring sowing might be an option in areas with >550mm annual rainfall.

### **2. Are you avoiding country that is either saline, sodic or high boron toxic?**

Lentils are extremely sensitive to saline, sodic and high boron soils compared to cereals. Saline, sodic or high boron sub-soil layers in the soil will severely limit root growth, depth and moisture extraction.

### **3. Are the paddocks prone to water logging and poor drainage?**

Lentils handle wet soils poorly, so avoid areas where free water does not drain away and/or soil remains saturated. Spring sowing may be an option in higher rainfall areas.

### **4. Are broad-leaved weeds likely to be a significant problem?**

Herbicide options for broad-leaved weed control are available, but can affect the lentils. Growers will need to consider alternative control strategies if the standard treatment of a post-sow pre-emergent metribuzin application is unlikely to provide adequate control ie:

- Use of trifluralin
- Use of IBS options
- Post emergent Broadstrike<sup>®</sup> or Brodal<sup>®</sup> can be damaging depending on variety (refer to label)

### **5. Are grassy weeds likely to be a significant problem?**

Herbicide options for grassy weed may be very limited if resistant ryegrass is present. Consider alternative control strategies if the standard trifluralin pre-sowing treatment and post-sow pre-

emergent metribuzin is unlikely to provide adequate control ie:

- Use of group A herbicides post-emergent if herbicide resistance not present
- Inter-row cultivation is only an option in wide row systems
- Inter-row shielded sprayer (glyphosate) is only an option in wide row systems
- Crop topping or weed wiping are valuable options to prevent seed set of escaped weeds. Timing is critical.

Avoid paddocks with high levels of herbicide resistance unless a programmed strategy is in place.

### **6. Are you aware that crop topping is not the solution to sowing lentils into a huge seedbank of weeds?**

Crop topping or weed wiping are used in lentils to prevent seed set of weed escapes because of their maturity and low crop height. However, avoid paddocks with high numbers of herbicide resistance weeds. Any weeds will have a huge impact on early lentil growth and subsequent yields, well before crop topping time. Programmed strategies like wide rows and inter-row spraying with shielded sprayers that are used in crops like chickpeas and beans are not alternatives to use with lentils.

### **7. Are herbicide residues likely to be a problem?**

- Sulfonylurea residues (eg Glean<sup>®</sup>/Logran<sup>®</sup>, Hussar<sup>®</sup>, Atlantis<sup>®</sup>, Monza<sup>®</sup>)
- Imi's (eg Midas<sup>®</sup>, Intervix<sup>®</sup>, Flame<sup>®</sup>, On Duty<sup>®</sup>)
- Grazon<sup>®</sup> DS, Lontrel<sup>®</sup>, or Ally<sup>®</sup>, during any fallow period
- Tordon<sup>®</sup> residues.

Read the herbicide label for plant-backs to allow sufficient residue breakdown based on rate of product used, rainfall requirements and soil pH.

### **8. Is Botrytis Grey Mould risk known and management factored in?**

Botrytis Grey Mould (BGM) is always a potential danger in lentils in southern Australia, but it is manageable through a combination of variety and paddock choice, canopy management, strategic use of fungicides and crop hygiene (seed source, rotation, proximity of lentil stubbles). BGM resistant varieties like Nipper<sup>®</sup> are not immune to BGM, but do make it easier to control with reduced risk, inputs and expense. Lower rainfall areas are in lentils considered at least risk for BGM, but could be a risk on an individual paddock basis.

Know the BGM disease rating of the variety grown; assess the individual paddock risk and manage the crop appropriately. Be aware of the specific management needs for the variety chosen through its variety management package (VMP).

#### 9. Is paddock greater than 500m from last year's lentil crops?

Crops within 500m of last years lentil stubble should be considered as high risk from Botrytis Grey Mould (BGM) infection and should be managed as such. Varieties with higher BGM resistance such as Nipper<sup>®</sup> or Boomer<sup>®</sup> should be considered, otherwise growers need to seriously consider programmed BGM spraying through the season. Plan rotations and paddocks to allow as great a distance as practical between this year and last year's lentil crop and be mindful of common wind direction.

#### 10. Is Ascochyta risk known and management factored in?

Ascochyta blight in lentils can be a risk, but is manageable by a combination of variety choice, strategic use of the correct fungicides and crop hygiene (seed source, rotation, proximity of lentil stubbles). Ascochyta resistant varieties like Nipper<sup>®</sup> or Northfield are not immune to ascochyta blight, but make management of it less likely or easier to control, hence reducing risk, inputs and expense.

Lower rainfall areas can be considered a lower risk for ascochyta, but individual paddocks could present a risk. Know the ascochyta blight disease rating of the variety grown; assess the individual paddock risk and manage the crop appropriately. Be aware of the specific management needs for the variety chosen through its variety management package (VMP).

#### 11. Is the paddock at risk from root rots?

Avoid sowing lentils into paddocks that have a recent and prolonged history of predominantly legume (e.g. medic, faba bean, chickpea or field pea) or broadleaf crops (e.g. canola). Phoma, fusarium, pythium or sclerotinia may be present. Seed treatment should be considered mandatory for protection, especially with green lentil types.

#### 12. Have you assessed the need for phosphate and other fertilizers?

Lentils are considered equivalent to other pulses and cereals in their responses to applied phosphorus and trace elements

## **SOWING.**

#### 13. Is the variety chosen the most suitable?

In variety choice, consider yield and adaptation to the area, disease resistance, grain quality, marketability and proximity to receival point. Be aware of the specific management needs for the variety chosen through its variety management package (VMP).

#### 14. Have you organized good quality sowing seed?

- High germination (above 80%)
- High vigour (AA test)
- Large, graded seed
- Low risk from Botrytis Grey Mould or Ascochyta blight infection
- Evenly coated with seed dressing (P-Pickle<sup>®</sup> T, Thiraflo<sup>®</sup>, Thiragranz<sup>®</sup>)

#### 15. Have you considered inoculation and are your procedures adequate?

Lentils on acidic soils particularly require inoculation with the correct rhizobia. Other 'traditional' areas may still respond to inoculation. Maintain inoculum quality in storage. Treat seed within 24 hours of sowing and sow into moist soil. Consider new technologies that are now available e.g. freeze-dried inoculums, water liquid injection, and granular inoculums. Dry sowing of lentils is possible if using granular inoculums that enables rhizobia survival until rain arrives.

#### 16. Is it possible to sow up and back and in a 'wider-row' configuration?

There has been a move towards using different row spacing configurations with lentils other than the standard 15 to 25cm. Wider spacing (30 to 38cm) is becoming more common, provided the lentils are sown inter-row into standing cereal stubble. Stubble presence minimises soil evaporation and if standing increases crop height and enables trellising for easier harvest. Weed control issues must also be considered. There may be advantages in low yielding, lower rainfall or high disease risk situations. Fitting into the farming system is the important issue. Any disadvantages are normally more than offset by the advantages offered by ground rig access and zero or minimum tillage systems with stubble retention.

### 17. Can you ensure even crop establishment and development?

Thin and uneven crops are difficult to manage (weeds, insects, viruses, desiccation and harvest) and often result in delayed maturity and a blow out in insecticide costs. Aim to sow at a good even depth into good soil moisture. Ensure that the seed handling equipment and seeder is not too aggressive on the seed (eg use shifters instead of augers and avoid high blower speeds in air seeders).

### 18. Is your plan adequate to minimize aphid presence and potential virus incidence?

Viruses need to be controlled by an integrated approach to controlling the source, vector (spread) and ensuring crop management to minimise aphid landing sites

- a. Control summer weeds to reduce the “green bridge” as a source for aphids and viruses
- b. Ensure absence of bare soil through either an early dense crop canopy or stubble presence to minimise aphid landing sites
- c. Monitoring for aphid flights entering the crop, and ensure early aphid control in the lentils and nearby hosts.
- d. Using “soft” aphicides to protect beneficial insects that provide long-term control of aphids.
- e. Appreciating the role of integrated pest management.

## IN-CROP MANAGEMENT.

### 19. Do you have access to an experienced Agronomist to monitor at critical stages? Are you able to do it yourself?

- a. Aphid inspections and control to minimise physical damage and reduce virus incidence
- b. Botrytis Grey Mould (BGM) inspections for pre-canopy closure fungicide application and then later for disease presence and repeat applications
- c. Ascochyta blight inspections if growing a susceptible variety (starting 6-8 weeks post-sowing)

- d. Heliothis management from flowering onwards (Sept – Nov)
- e. Etiella (Lucerne Web Moth) management from flowering onwards (Oct – Nov)
- f. Timing of desiccant or crop top sprays

### 20. Will your response to crop management needs be timely?

Be prepared to protect against or control insects, diseases or weeds in a timely way as delays can be very costly. Crop topping, desiccation and harvesting needs to also be very timely.

### 21. Is your boom spray set-up adequate for fungicide application?

- a. Nozzle selection to produce BCPC Fine – Medium Droplets.
- b. Higher pressure (over 350 kPa)
- c. Higher volume (at least 80 L/ha)

## HARVEST MANAGEMENT

### 22. Have you considered desiccation or crop top as an aide to early harvest management?

Seek out information or guidance on the correct stage to desiccate the crop. Crop topping is an option to prevent weed seed set, but can be too early and affect lentil quality, or can be too late to be effective. Read the label as withholding periods must be abided by..

### 23. Do you have the on farm infrastructure to harvest and store lentils?

Maximum receival moisture content for Lentils is 14%. Yield loss, physical damage and deterioration of grain quality can result from harvesting late and at low moisture.

Storage on farm is considered very desirable with lentils. There could be marketing advantages, but often the required No 1 quality grade of lentils is not produced off-header so cleaning might be required before subsequent sale or delivery.

#### References and Acknowledgement

- “Lentil disease management strategies, Southern Region” Pulse Australia.
- “The Lentil Ute Guide”, GRDC

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