



Seeding equipment problems with faba beans

Faba bean seed is larger than the more familiar narrow-leafed lupin seed and varies greatly in size (see Figures 1 and 2). The size and the shape can cause a number of ‘blockage’ problems with seeding equipment. The result is poor establishment and yield. Grower experience and surveys by agronomists have highlighted the main problems.

1. Seed metering mechanisms

Some seeding equipment cannot sow faba bean seed because it has not been designed for large seeds or high seeding rates. In some cases the metering device safely delivered the seed, however it could not put out the high rate.

- The design of the metering mechanism does not allow it to actively engage the large seed, causing bridging in the box. Use of agitator arms may overcome this.
- Seed may be damaged by the metering mechanism. Many metering mechanisms have been designed to sow cereal seed and are made out of hard material. Some do not have the clearance to safely pass large seeds through the metering mechanism. Faba bean seeds are relatively fragile and can be easily cracked or damaged as they pass through the meters. As most growers sow at the lower end

Seed type	Average weight (g/100 seeds)	Average seed rate (kg/ha)
Faba bean		
Fiord	45	100-150
Fiesta VF	65	140-200
Icarus	80	140-200
Wheat		
	3	40-80
Lupin - Wonga		
	13	65-80
Field pea - Dundale		
	22	80-110

Figure 1. Average seed size and seeding rate for selected winter crops



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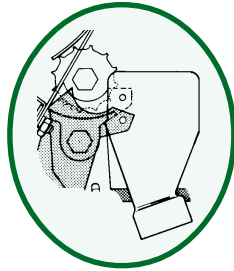
Figure 2 Icarus (I), Fiesta VF (F) and Barkool (B) faba bean seed compared to field pea (P), lentil (L), narrow-leaf lupin (NL), albus lupin (AL) and wheat (W).

Checkpoints for combines

Metering device

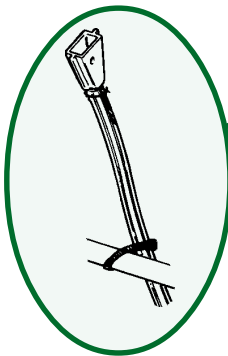
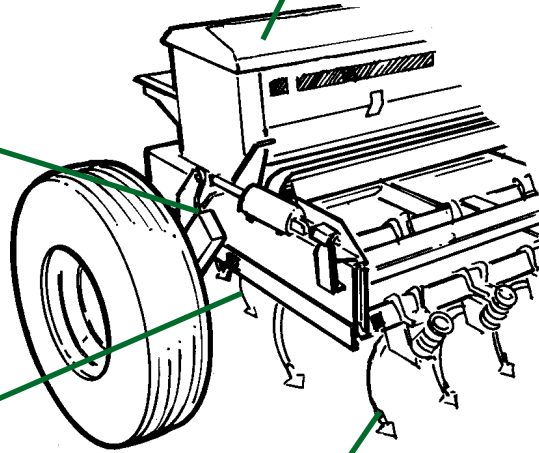
Check roller type for seed clearance and possible seed damage

Check it can meter correct seeding rate



Seed box

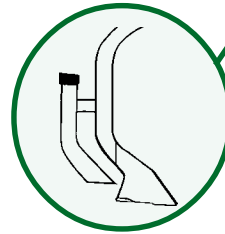
Check for bridging, especially following transport



Tubes

Hose blockages occur on bends

Check angle of hose



Seeding boot

Blockages occur, especially if boot narrows or changes in shape from circular to oblong.

of recommended seeding rates, damaged seed can further reduce plant establishment and potential yield.

Several combines and air seeders have an option to exchange hard peg rollers in the metering mechanism for rubber fluted rollers (see Figure 3). This can increase seeding rates and reduce physical seed damage.

Growers should consult their local machinery agent about options for their seeding equipment.

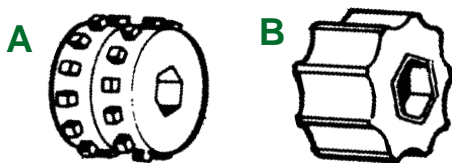
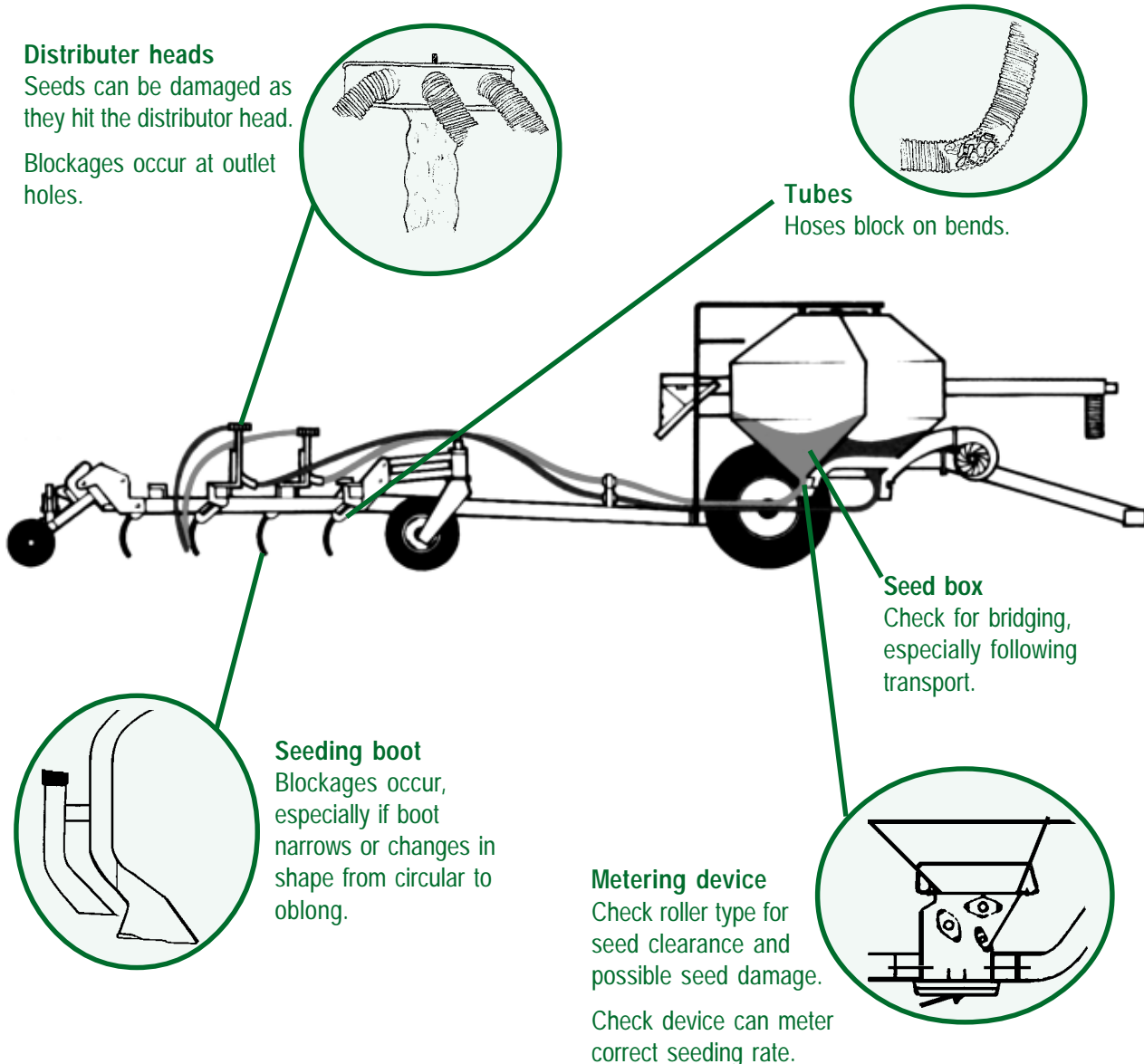


Figure 3 Peg roller (A) commonly used in metering devices, and rubber fluted pea or bean roller (B).



Figure 4 Check tubes & seeding boots of seeders with an undercarriage modified to handle trash.

Checkpoints for airseeders



2. Airseeder distributors

Many air seeders can meter out the required rate of faba bean seed at the box, but the distributor heads can block. The opening, especially on secondary heads, may not be large enough to pass large seeds at high flow rates.

Seed can be damaged after it is forced along the primary hoses at speed and hits the distributor heads.

Distributor blockages will increase if fertilizer and seed are distributed using the same lines, as this doubles the amount of material that needs to be put through the system.

3. Sowing tubes on combines

Sowing tubes and boots can easily become blocked when seed bridges and this gets worse when the same tube is used for both seed and fertilizer.

If the angle of the hose going from the box to the tyne is too flat, seeds slow down and can block the tube. It is likely growers who have modified standard equipment to increase trash flow and spread seeding tynes over four or six rows, have reduced hose angles.

4. Seeding boots

Something that is often overlooked is the seeding boot or tube. Many have been compressed for more accurate seed placement. Seed may travel adequately down the tubes for calibration. When they are placed back in the sowing boot, blockages can occur due to the reduced aperture or changes in their shape, from circular to flattened.

5. Inoculated seed

Faba bean seed is relatively flat and does not flow as easily as cereal seed or narrow-leaved lupins. Inoculated seed flows considerably slower and bridges much more easily than shiny un-inoculated seed. Seeders should be calibrated with inoculated seed otherwise a false rate is obtained.

Make sure that the inoculum has properly dried on the seed before attempting to sow, or flow problems will be encountered.

6. Seed handling equipment

Problems can also occur with seed handling equipment such as groupers and augers.

Some points to note are:

- When using new augers keep the seed moving so it floats up the auger without jamming between flighting and casing.
- Run augers with moderate revs and low seed flow. Starting a full auger is difficult!
- Cross augers in groupers can stall and/or block.
- In some cases the plastic or rubber casing in grouper out-load augers has worn badly.
- Small diameter or pencil augers have trouble moving faba beans.

Belt or cup type grain movers do least damage to seed and machinery and are most suitable for moving faba beans.

Conclusion

This Pulse Point does not cover every possible problem, but provides a background on the more common issues reported by growers.

Growers should test all of their equipment before sowing, including all seed handling equipment, using inoculated seed. Time spent checking equipment before sowing can save a lot of precious time during sowing.



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DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of writing in April 2001. 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.

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