Pulse Point 9

Windrowing faba beans

Windrowing is becoming more popular in crops such as lupins, barley and faba beans, as growers try to reduce problems with direct heading. The benefits of windrowing faba bean crops are:

- Uniform maturity of the crop in paddocks ripening unevenly.
- Harvesting is not delayed by late maturing weeds, such as wild radish or thistles. This reduces the risk of seed staining and quality downgrading, and storage problems from green weed contamination.
- A lower cutting height is often possible using windrowers, enabling lower pods to be put in a windrow and harvested.
- In tall crops harvester reels can push plants forward, leading to grain loss as the cutter bar causes vibration and pod shattering in front of the harvester.
- Tall and bulky crops can be windrowed before the crop lodges avoiding a slow and difficult harvest.

However, windrowing too early can cause yield loss because seeds are not filled—the small or shrivelled seeds are classed as defective and can reduce the quality, causing down grading from human consumption markets to stock feed grade. Windrowing faba beans too late results in shattering losses.

Figure 1. A crop of faba beans being windrowed in the Henty district in 1997

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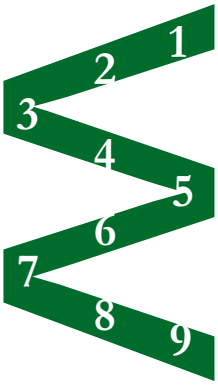
When to windrow

Paddock sampling

To properly judge the crop maturity sample from a number of sites within the paddock. While this is time consuming, paddocks vary in soil type and more importantly in disease severity which both affect maturity. Due to the nature of the spread of chocolate spot it may only affect sections of the paddock. Use the 'W' method outlined in Figure 2.



Walk a 'W' path through the crop, checking 10-20 plants half way along each length and at each point, giving 9 sampling points.

Figure 2 Paddock sampling a faba bean paddock using a 'W' path

Determining seed maturity

It is important to check the lower and upper pods. Lower pods may be far more advanced than the top pods and may become brittle and shatter when windrowed. Disease, a spell of hot windy weather or moisture stress can cause the lower pods to ripen prematurely.

Seed physiological maturity occurs when the seed weight cannot increase. This is indicated by a black line on the hilum— a scar-like area on the seed where it attaches to the pod (see Figure 3). Remove the pod attachment from the seed to see the hilum.

As the seed continues to dry down the black line will become more evident to a point where the whole hilum will become black. This occurs while the pod is still green. Once the seeds in the top pods on the plant have black lines on their hilum's it is safe to windrow the plant without the risk of loosing seed weight or getting shrivelled seeds. Generally, at this stage the plants are still green (see Figure 1).

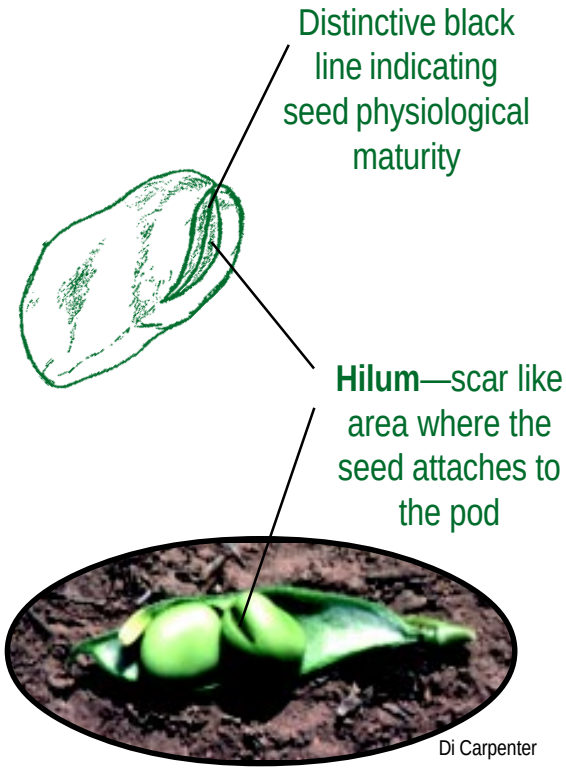


Figure 3 Faba bean seed development showing hilum and black line at physiological maturity.

Pod sampling

- Select a representative stem or branch of each of the faba bean plants to be checked (see Figure 4).
- Remove the seeds from each pod and check for the stage of seed development (see *Determining seed maturity* on opposite page).
- Check one pod from each node (see Figure 5). Start from the bottom pods first and go up the stems.

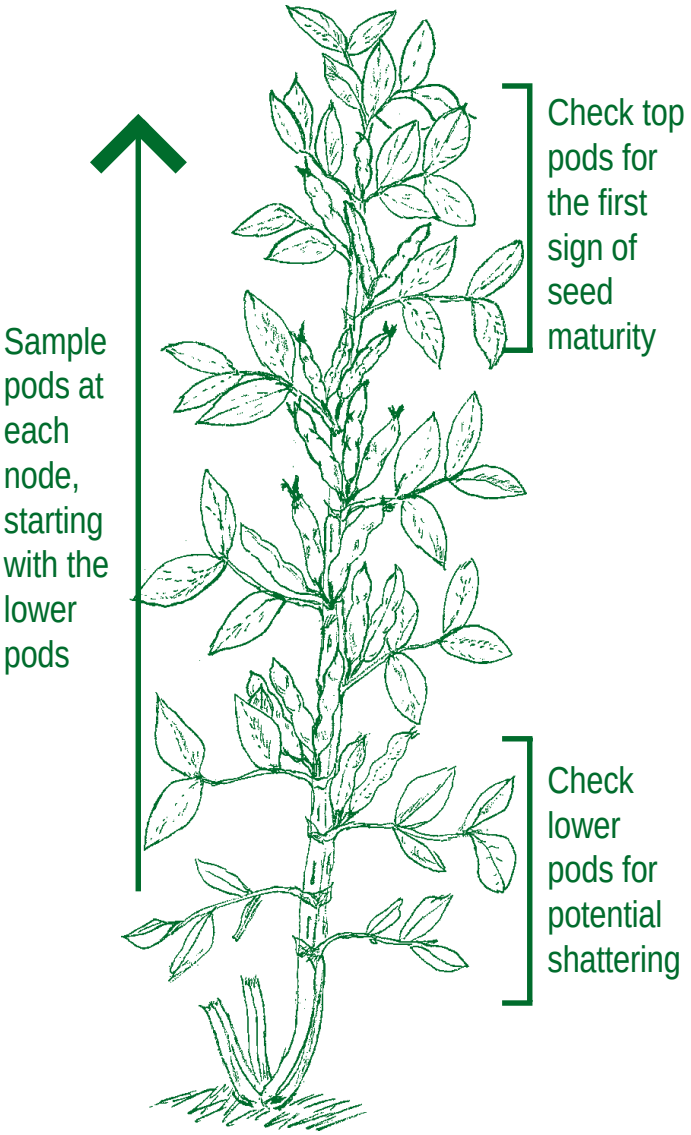
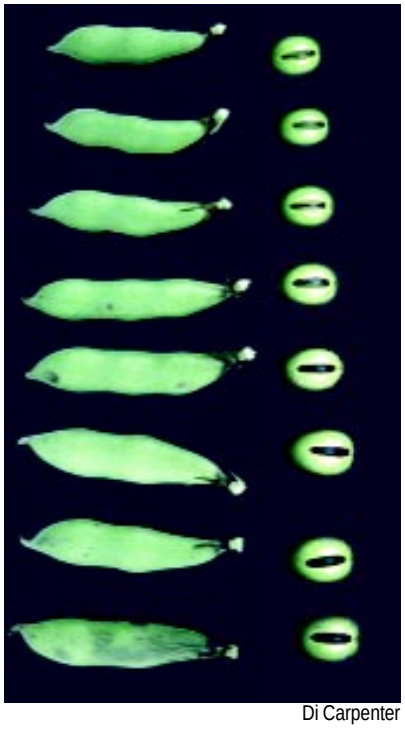


Figure 4 Pod sampling from a faba bean stem



Di Carpenter

Figure 5 Pod and seed development of a plant at a suitable development stage to windrow. Lower pods are starting to turn black while top pods are still bright green. The hilum of the seed from the lowest pod has turned completely black. This figure should be used as a guide only, as individual crops will vary.

Di Carpenter

Figure 6 Pod sampling and maturity determination allow Paul Lieschke, Henty to confidently windrow his faba beans on time

South Australian experience

Commence windrowing when the bottom pods are turning black. Grower comments from the York Peninsula suggest that windrowing can start when the bottom pods are black and leathery. Maximum windrower width should be about 11 m to avoid windrowing problems and excessively large windrows. Growers also prefer to remove or disengage the mixer belt from the windrower.

Western Australian experience

Trials in 1997 and 1998 by Agriculture WA have demonstrated that faba bean crops can be windrowed with seed moisture content at about 45% or when most of the lower leaves have senesced with no reduction in quality or yield.

The use of measurements such as leaf senescence or colour of the lower pods can be misleading. The leaves of crops affected by disease are prematurely lost and pods can become blemished. As with canola, pod colour does not always give a good indication of windrowing timing— always check seed development.

Not all the crop will be at the same stage so it is important to make a decision which balances potential lower pod shattering on parts of the paddock, and potential yield losses from the top pods being immature at other sites within the paddock.

Windrowed faba beans should be harvested to meet delivery standards of 12 % moisture content. Adverse weather conditions between windrowing and harvest may result in losses as with any other windrowed crop.

If you are unsure of the specific timing, or whether windrowing suites your harvest system seek further advice from your local adviser.

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Figure 7 Faba bean windrows ready for harvest

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