Pulse Point 5

2ND EDITION

Desiccation & harvest of field peas

Field peas must be harvested on time to produce high quality seed for human food markets, to maximise yield and lift profits. Field peas are more susceptible to weather damage than cereals hence delays in harvesting lead to serious deterioration of quality, shattering and loss of yield.

Pea growers are strongly advised to monitor pea crops as they mature and to commence harvest when seed moisture drops to around 14–15%. Desiccating can advance harvest by 7 to 10 days. It can help farmers plan their harvest operations, salvage weedy crops, even out crops which are ripening irregularly, and produce seed of the highest possible quality.

Desiccation

Desiccation is the chemical termination of plant growth at the stage when all growth functions have been completed—at this stage, seed size and yield have been set. In field peas, recent research has shown this occurs when seed moisture content drops to around 30%. Although windrowing will achieve the same results as desiccating, it is not used because the windrows are too easily moved by wind.

Desiccation advances pea maturity by up to 10 days and gives producers the opportunity to:

- plan their pea harvest and avoid clashes with cereals;
- prevent damage from late heliothis attack by forcing early maturity;
- overcome harvest problems caused by late weed growth, particularly in wet finishes;
- overcome harvest problems caused by uneven ripening crops;
- reduce crop lodging and increase harvest speed;
- restrict late disease development and disease blemishes on seed;
- enhance seed quality and brightness. Desiccation and early harvest enriches the colour of the green splits (cotyledons) in blues peas.
- prevent seed set in herbicide resistant weeds provided the weed seed is at the correct stage for spraytopping.

In seasons with hot dry finishes, the crop naturally matures quickly and evenly, and the benefits of desiccants are greatly reduced. Producers need to assess their own circumstances to determine if desiccation will provide financial and managerial advantages.

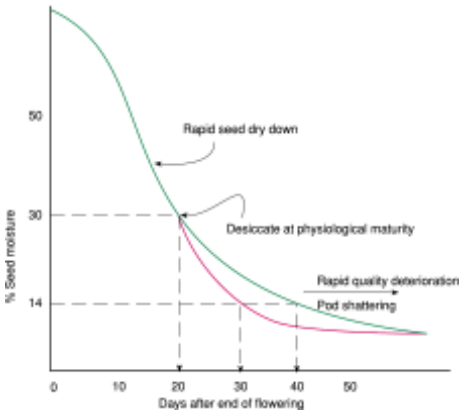

Figure 1. Dry down pattern of field pea seeds with and without desiccation

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Timing of desiccation

A good starting point to estimating the correct timing of desiccation is to record the end of flowering. Wait a further 20 days, then start close crop monitoring as maturity approaches.

A. Visibly assess pod color and developmental changes. Desiccate when the lower three quarters of pods along the stem are brown; the seeds are firm, rubbery, and split rather than squash when squeezed; and the shells thin and leathery. Pea pods mature from the lowest flowering node upwards. Many plants at this stage may still have green tips.

B. Monitor seed moisture changes. Desiccate when seed moisture drops to around 30%. To collect seed for this, randomly pick 10-20 stems or more across the paddock.

Desiccating white and dun peas

Cotyledons (splits) of these types gradually change in color from green to yellow during ripening. Desiccating these types too early can result in an unacceptable proportion of small green seeds in the harvest sample. Therefore, wait until at least 50% or more seeds have turned yellow before desiccating.

Desiccating blue peas

Cotyledons of this type remain green during the ripening process, but if left too long after ripening, tend to bleach into a mottled yellow/green color. This is termed blonding in the trade and can lead to rejection. Therefore, it is safer and more desirable to desiccate these types even earlier than white types to preserve this rich green cotyledon color. Cooling during prolonged storage will also help maintain the intensity of this green colour.

Desiccants should be applied using ground equipment. If conducted at the correct crop stage and when the crop is damp with dew, little or no damage results.

End of Flowering	Desiccate	Harvest after desiccation	Harvest after natural drydown
5 Oct	25 - 30 Oct	4 Nov	14 Nov
10 Oct	31 Oct - 4 Nov	9 Nov	19 Nov
15 Oct	4 - 9 Nov	14 Nov	24 Nov
20 Oct	9 - 14 Nov	19 Nov	29 Nov
25Oct	14 - 19 Nov	24 Nov	4 Dec
30 Oct	19 - 24 Nov	29 Nov	9 Dec

Table 1 Using the end of flowering to predict dates of harvest after desiccation or after natural dry down.

When to Start Harvesting

Closely monitor the ripening crop for changes in plant colour and seed moisture content, aiming to commence harvest when seed moisture drops to 14-15%. Do not wait for all green tips to ripen or for isolated late pockets to finish because by then the majority of the crop will be too dry. Seed moisture during this drying cycle can drop very quickly, particularly when finishing conditions are hot and dry.

When collecting seed for determining moisture content, pick 10-20 stems at random and sub-sample sufficient seed to fill the moisture metre chamber. Repeat this at several representative sites to estimate the average of the crop.

Harvesting

Pea crops should be rolled after sowing or early in the crop's growth to prevent rocks and clods being picked up at harvest. Crops direct-seeded into cereal stubble pick up less dirt producing a cleaner sample.

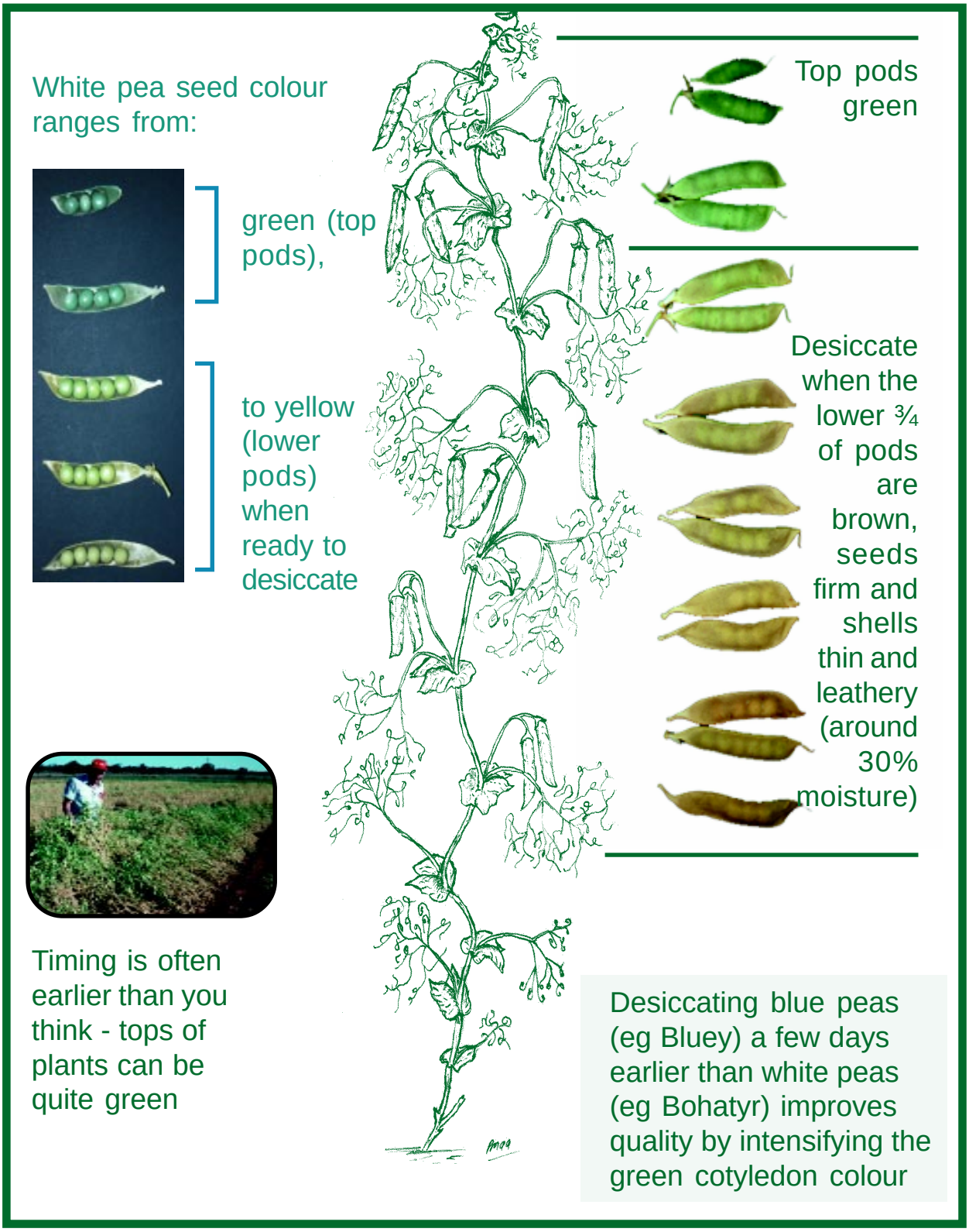
It is essential to use open front headers with crop lifters attached for 'on time' harvest because pea pluckers or pick-up fronts only work effectively when the crop is dry and brittle, by which time seed quality has deteriorated. The only possible exception to this is harvesting the tall scrambling dun types targeted for stockfeed. Their dense flat canopy plucks very effectively when fully ripe.

If you harvest 'on time' the crop is more erect, and less dirt enters the header to cause mechanical damage and contaminate the seed. Dirt can be further reduced by fitting slotted screens to elevators and auger covers. Peas are large seeded and easy to thrash, so always harvest with a low drum speed to prevent seed cracking, and high wind speed to clear trash and dirt.

Pea straw provides an excellent soil mulch and source of soil organic matter and nutrients. This benefit is greatly enhanced if straw choppers and spreaders are fitted to the back of the header to evenly distribute straw in smaller pieces across the paddock. As a result, the likelihood of pea stubble becoming tangled, rolled and moved by wind is greatly reduced. Crops sown directly into wheat stubble provide further paddock stability.

Storage

Premium quality pea seed from an early harvest will store better than weathered, late-harvested seed when held under similar conditions. For safe long term storage, seed is best kept at 12.5-13%



moisture or lower, since moulds can rapidly develop when moisture exceeds 14% at favourable temperatures. Seed with higher levels of moisture will require cooling to prevent deterioration and this can be done using an aeration system attached to on-site silos. Seed may also require drying to meet market requirements. Use a higher fan air-flow rate to achieve substantial 'in-store' drying.

Monitor seed regularly during prolonged storage, especially to check for moisture aggregation and possible moulding at the bulk surface. Current industry standards specify a 12% moisture content for delivery of field peas.

Sealed silos are needed for effective fumigation of pea weevil and other insects if seed is held on farm.

Problems of late harvest

- Greater **harvesting difficulties** due to:
  - increased lodging
  - slower harvesting
  - growth of late weeds
  - more dirt picked up by the header.
- Increased **wear and tear on headers** due to increased soil contamination.
- **Harvest clashes** with other crops is more likely.
- **Yield is reduced** due to pod shattering, seed drop and seed shrinkage.
- **Seed quality is reduced** due to:
  - weather damage leading to seed blemishes and increased seed cracking and splitting, especially when handling is excessive
  - seed coat discolouration due to prolonged light exposure
  - bleaching in blue seed types
  - increased field mould infection
  - reduced seed viability
  - more soil contamination of seed.
- Greater **dust and health problems** associated with post-harvest handling.
- **Pea weevil escape** into the paddock before silo fumigation.
- Greater **risk of hail** damage.
- More **disease carryover** on seed kept for sowing.

Further information

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Other publications

NSW Agriculture. *Weed control in winter crops*
(Harvest aid or salvage spraying of winter crops)

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DISCLAIMER
The information contained in this publication is based on knowledge and understanding at the time of writing in August 1999. 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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