Assessing crop maturity

Choosing the correct time to harvest peanuts is more complicated than for most other crops because the product grows underground and often matures unevenly. Correct harvest timing is essential to avoid yield and quality losses.

**When to harvest**

Determining when to dig the crop is one of the most important decisions when growing peanuts.

Unlike most other crops, peanuts are an indeterminate crop and so do not mature evenly. Being indeterminate means the plant does not have a distinct flowering period followed by fruit set. Instead, peanut plants continue to flower even when they have produced mature seed.

The best time to dig is when the crop has the highest percentage of sound, mature kernels and the highest yield. The risk of losing mature pods because of weakened pegs and pod rot must be balanced against the potential gain from pods still maturing.

Digging peanuts too early can result in significant weight and quality loss because of immaturity. When dug early, they tend to have a low edible kernel percentage and a high shell and oil percentage.

Peanuts may gain 300 to 500 kg/ha and 2 to 3 per cent in grade in the ten days before optimum harvest maturity. Losses of the same...
level occur if harvest is delayed (Table 1) as mature peanuts fall off the bush.

**Table 1.** Average yield lost over four years from digging Florunner peanuts too early or too late

<table>
<thead>
<tr>
<th>Dug</th>
<th>Yield lost (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks early</td>
<td>855</td>
</tr>
<tr>
<td>1 week early</td>
<td>245</td>
</tr>
<tr>
<td>on time</td>
<td>0</td>
</tr>
<tr>
<td>1 week late</td>
<td>610</td>
</tr>
</tbody>
</table>

*Source: adapted from Peanuts - a growers guide to quality, Planters Lifesavers Company, USA.*

In years when dry and hot seasonal conditions result in high aflatoxin levels, research trials have shown that early harvesting can significantly reduce aflatoxin contamination and increase gross margins.

Figure 1 shows the benefit of harvesting early under these conditions. Seek advice from industry advisors.

Using the DPI&F’s AQUAMAN irrigation scheduler will assist you in determining the maturity of the crop. [www.apsim.info/aquaman](http://www.apsim.info/aquaman)
**Assessing maturity**

Growers can assess crop maturity in three ways:

- ‘shell out’ method
- ‘hull scrape’ method
- ‘growing degree day’ method.

The first two methods involve removing all the pods from a representative sample of bushes to assess maturity. The third method is a calculation that helps the grower predict crop maturity and indicates when the grower should begin close monitoring of crop maturity.

Select bushes from areas within the paddock with differences in soil type, drainage or other features that can affect maturity. Sample each area separately, as some parts of a paddock may need to be dug at different times. About three bushes will give a representative sample for each area within the paddock.

Start sampling at least two or three weeks before the crop is likely to be mature. This will give an indication of how quickly the crop is maturing. Take samples twice a week from different parts of the paddock.

Once we reach the 2000 day degree mark we start sampling for crop maturity. We do blast tests on the sample, document it, take photos and watch the progression.

Patrick Jones (PCA)

After using the hull scrape, or water blast, method arrange the peanuts in their colour groups, take a digital photo(s) and send them to PCA or your consultant for their assessment and advice.
Shell out method

The shell out method involves cracking open or ‘shelling out’ all the pods from the sample plants and assessing the colour of the seed coat and inside the shell. Peanut pods of varying maturity can have similar outward appearance. As the kernels mature, the seed coat changes in colour from white to a dark pink (or red for Spanish types).

Crack each pod open and examine the inside of the shell and the kernel. Sort the pods into the following categories:

- Immature – seed coat is white and fleshy with no colouring inside the pod.
- Intermediate – seed coat is light pink with slight colouring inside the pod.
- Mature – seed coat is dark pink or tan, thin and dry with dark colouring inside pods.

The time to dig depends on the percentage of pods in each category. As a guide, consider digging the crop when the following levels of maturity are reached:

- Virginia types – 60 to 70 per cent mature
- Spanish types – 70 to 80 per cent mature
- Runner types – 65 to 75 per cent mature

The shell out method is fairly subjective and time-consuming, but it is a useful way of assessing maturity if no other method is available.
**Hull scrape method**

The hull scrape method relies on colour changes under the outer skin of the shell to indicate kernel maturity.

Remove the outer skin of the pod (exocarp) to expose the colouring around the saddle. To do this, either scrape the pod with a pocket-knife or use the abrasive power of a water and glass bead solution or high-pressure water cleaner (Figure 2).

The colours which occur are (Figure 3):
- black – mature to over-mature
- dark brown – mature
- orange/brown – close to maturity
- yellow – intermediate
- white – immature.

Assess at least 200 pods. Place pods in the maturity categories immediately, because the colours will fade rapidly as the scraped pods dry out. If necessary, keep the scraped pods moist using water in a spray bottle.

For a typical Virginia type, consider digging when 60 to 70 per cent of the pods show a black or dark brown colour. Runner types such as Holt are more determinate and higher percentages of mature pods are possible.

A severe late-season drought will stop maturation in the brown and black pods. The colours do not show up well in these shells.

*Figure 2. Hull scrape maturity assessment. A high-pressure water cleaner removes the outer layer of the shell to assess maturity.*
Break open, rather than scrape, the shells of these peanuts to see if bronze-coloured kernels have separated from the shell. Pods in this condition will not gain weight and will easily fall off during the digging operation.

**Growing degree day method**

Irrigators using the AQUAMAN irrigation scheduler can monitor crop maturity using the Growing Degree Day (GDD) number for the variety grown. The current varieties reach maturity at around 2150 GDDs. If shorter season varieties are released, the GDD number for maturity will be considerably less than 2150. Using this model, begin to check the maturity of the crop when the GDD figure reaches 1900. Seek advice from agronomists.

Information contained in this publication is provided as general advice only. For application to specific circumstances, please seek professional advice. The Department of Primary Industries and Fisheries, Queensland has taken all reasonable steps to ensure the information in this publication is accurate at the time of publication. Readers should ensure that they make appropriate enquiries to determine whether new information is available on the particular subject matter.

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