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Storage

Peanut digging starts in late autumn and extends through the period March–June, when they are left to air-dry in the field for 3–5 days to reduce kernel moisture contents to 12–16%. This is followed by threshing operations to separate the pods from the bush.

Pods are then placed in aeration dryer silos either on-farm or at the shelling plant to further reduce the kernel moisture content down to 8.5%, the delivery standard enabling safe storage (Photo 1). Typically, peanuts are only held on-farm for a brief period (1–2 days) before delivery to a shelling plant, where quality is assessed and kernels are removed from the pods and undergo further processing prior to sale to customers.



Photo 1: Peanut-drying silos allow pods to dry down to safe moisture content for storage.

Photo: PCA

13.1 How to dry and store peanuts on-farm

To produce peanuts of optimum quality, most growers artificially dry their loads. Regular checks are required because over-drying can lead to kernel damage (especially higher level of splits), which results in reduced grade-out and lower prices per tonne. Peanuts that are not dried to the proper intake moisture ready for storage will have to be dried after delivery. PCA has facilities in Kingaroy, Gayndah and Tolga for contract drying. Growers should ensure that they book their loads in for drying with the depot's Intake Officer.

To maintain quality, loads must be dried slowly and carefully under controlled conditions. The following guidelines should be followed:

1. Pre-clean loads to remove dirt.
2. Start drying within 3–6 h of threshing to prevent mould and related aflatoxin development.
3. Keep an even depth of peanuts over the dryer floor, generally ≤2 m is preferred.
4. Air temperature in the plenum should not exceed 11°C above ambient temperatures (up to a maximum of 35°C).
5. The moisture removal rate should not exceed 0.5% per h, averaged over the time of drying.
6. The relative humidity of the drying air should be 50–65%.

SECTION 13 PEANUTS

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7. Use a minimum continuous airflow of 200 L/s per m³ of peanuts.
8. Regularly check the temperature and humidity in the air tunnel.
9. The peanuts must have time to equilibrate following drying and before delivery (at least 24 h).
10. Regularly check the moisture content of the peanuts.¹

Peanuts should only be stored after they have been dried down to a pod moisture content of [~]10%.

13.1.1 Aflatoxin

In order to minimise the risk of aflatoxin contamination, peanuts should be dried evenly and gently, and threshers, bins, trucks, etc., should be free of any old peanuts or organic matter.²

13.1.2 Off-flavour contamination

If peanuts are going to be stored on-farm, they need to be in secure and aerated storage bins that prevent leakage and ingress of moisture. Moisture can lead to development of microbial hotspots and off-flavour contamination.

Contamination of peanuts by microorganisms called actinomycetes can occur in the field during the growing season and during post-harvest storage and handling. Actinomycetes produce volatile compounds that contaminate the stored nuts, causing musty and earthy off-flavours. Actinomycete spores are prevalent in the environment and occur on soil adhering to peanut pods, in foreign material accompanying pods (soil, sticks and other plant debris, including immature potatoes) and in storage bins. Post-harvest off-flavour contamination of peanuts is a risk if temperature, humidity and pod moisture conditions are conducive to the germination and growth of actinomycete spores.

Temperatures >25°C and relative humidity >70% are highly conducive to actinomycete growth. Storage above these limits is discouraged.³

Generally, on-farm storage after July will result in a high risk of actinomycete growth and potential off-flavour contamination due to increasing ambient temperature and relative humidity.⁴

13.2 Pre-cleaning

Pre-cleaners are specifically designed to remove soil, sticks, stones and other extraneous matter from a load of peanuts. They usually consist of a set of rollers and screens and sometimes use blowers. Pre-cleaning a load prior to drying makes curing much more efficient and uniform and overcomes problems with wet spots in the load.

Pre-cleaning will often remove many of the loose shell kernels and immature pods that tend to harbour aflatoxin infection. Many growers have found that by pre-cleaning they can dramatically decrease the incidence of aflatoxin in their loads.

For growers who are a long distance from PCA's receival depots, pre-cleaning ensures that they are not paying freight on extraneous matter. Many growers have commented that they have paid for their pre-cleaner through savings made on freight over several years.

13.3 Storage pests

Grain Storage Information Hotline: 1800 WEEVIL (1800 933 845) will put you in contact with your nearest grain storage specialist.

¹ G Wright, L Wieck, P Harden (2015) Peanut production guide, August 2015. Peanut Company of Australia, <http://www.pca.com.au/wp-content/uploads/2016/11/PWH-Peanut-Production-Guide-2015.pdf>

² G Wright, L Wieck, P Harden (2015) Peanut production guide, August 2015. Peanut Company of Australia, <http://www.pca.com.au/wp-content/uploads/2016/11/PWH-Peanut-Production-Guide-2015.pdf>

³ GRDC (2013) Peanut off-flavour. GRDC Fact Sheet, www.grdc.com.au/GRDC-FS-PeanutOffFlavour

⁴ GRDC (2013) Peanut off-flavour. GRDC Fact Sheet, www.grdc.com.au/GRDC-FS-PeanutOffFlavour