CHESTNUT AUSTRALIA INC

CHESTNUT NUT ROT MANAGEMENT

CHESTNUT NUT ROT

The organism causing NUT ROT is *Gnomoniopsis smithogilvyi sp.*

Below is the link to a CAI Information Bulletin

Biology and Management of Nut Rot

LOOK UP

Walk your orchard NOW and look into the trees.

If you find burrs like this then there is a real chance they are infected with NUT ROT.

These Burrs should be collected and destroyed.

LOOK DOWN

Walk your orchard and when nuts have dropped collect regularly.

Chestnuts need to be harvested every day or two, depending on temperature.

COOL DOWN

To maintain quality and maximize shelf life, chestnuts should be cooled as soon as possible after harvest to remove the 'field heat'. This will also retain moisture within the fruit; while products are warm, they are losing water. Pulling cold air through the cartons or bins can greatly increase the rate at which products cool.

Trials during 2014 found large differences in cooling rates when different methods were used. Room cooling in bins was extremely slow, although the process could be improved by adding ventilation pipes to increase air circulation through the stack. In contrast, forced air cooling chilled harvested chestnuts within 2---3 hours.

REFER TO THE R&D PROJECT REPORTS OF JENNY EKMAN FOR MORE INFORMATION

Improved post-harvest management of chestnuts - Final Report CH13005 - Jenny Ekman AHR

Chestnut supply chains - Final Report CH14005 - Jenny Ekman AHR

CUT – LOOK - MEASURE

For each batch of nuts that you have just harvested, take out an agreed quantity, cut the nuts and assess for symptoms of nut rot.
Record the information

INDUSTRY STANDARD

- **Cut open a large sample (~100 fruit) and check for signs of internal decay.**
- **If <5% of fruit actually have internal decay, then place the fruit in the cold room.**

IF YOU ARE GOING STRAIGHT TO MARKET - CUT AGAIN

Store a quantity in an open bag in the packing shed or the kitchen and 10 days after harvest cut and agreed quantity and assess for symptoms of NUT ROT. Record the information and asses any changes from the first cut.

INDUSTRY STANDARD

- **Select a further large sample (~100 fruit), keep for a week at room temperature, then cut open and check again for signs of decay.**
- **If rates of internal decay are low (<5%), and fruit show no external signs of rots, then pack as normal.**

ROAST AND CUT AGAIN

Roast some nuts and again cut and check for NUT ROT. Assess and record.

If nuts are displaying high levels of rots after 1 week at ambient temperature, then they clearly should *not* be sent to the market.

STORE COOL

After harvest and before processing and packaging, store the chestnuts at as close to 0°C as possible.

AFTER THEY COME OUT OF THE COOL ROOM AND BEFORE THE NUTS ARE DISTRIBUTED THROUGH THE SUPPLY CHAIN

CUT AGAIN

Store a quantity in an open bag in the packing shed or the kitchen and 10 days after harvest cut and agreed quantity and assess for symptoms of NUT ROT. Record the information and asses any changes from the first cut.

INDUSTRY STANDARD

- **Select a further large sample (~100 fruit), keep for a week at room temperature, then cut open and check again for signs of decay.**
- **If rates of internal decay are low (<5%), and fruit show no external signs of rots, then pack as normal.**

RE-COOL

During the processing and packing process the nuts will 'warm-up' SO after processing and packing RE-COOL.

PACKAGING

Chestnuts sent to market should be mature, sound, clean, well formed and free of physical damage or rots and moulds. Chestnuts that have bird pecks or splits or are poorly formed, dried out or immature should be discarded.

Chestnuts packed inside sacks which are then stacked at the centre of pallets are extremely slow to cool during subsequent storage and transport. Under these conditions, self heating has the potential to become a major issue: respiration by the chestnuts increases temperature, which increases respiration, creating a positive feedback loop and escalating the problem.

REFER TO THE CAI POSTER ON NUT QUALITY

Quality Standards Pictorial Reference Guide

Chestnut Quality Assurance Requirements

Nuts in bags if not maintained at as close to 0°C as possible will heat up as the nut transpires. Putting in them containers that do not breathe will result in the nuts sweating and heating up.

CONSIDER WHAT YOU PACKAGE YOUR NUTS IN.

REFER TO THE CAI INFORMATION ON PACKAGING
Quality Standards Guide - Packaging

Packing your nuts on pallets to the market need to be revised

INDUSTRY STANDARD

- **Pack only half pallets – maximum of 480 kg OR 48 x 10 kg bags**
- **Pack so there is an air gap in the centre**
- **Ensure your transport company stores and transports the packaged nuts at as close to 0°C as possible.**
- **Ensure the Market Agent or Retailer knows the product is coming**

SUPPLY CHAIN

TRANSPORT
As a smaller volume crop, chestnuts are usually transported with other fruit or vegetables. Truck temperatures may be adjusted to suit those other goods, which may be higher or lower than the ideal temperatures for chestnuts.

At the start of the 2015 season a shipment (or possibly several shipments) of chestnuts arrived at the Sydney wholesale markets with temperatures in excess of 30°C. This suggested that not only had the shipment been left unrefrigerated during transport, but that heat of respiration inside the tightly packed bags had further increased temperatures. Incomplete cooling before transport may have also contributed.

MAINTAIN THE COOL CHAIN AT AS NEAR AS POSSIBLE TO 0°C.

REFER TO THE CAI POSTER ON COOL CHAIN

The Chestnut Cool Chain

MARKET AGENTS

Will be rigorously checking consignments for temperature

Will be cutting nuts for indications of NUT ROT

COMMUNICATE – AGREE – COMMUNICATE AGAIN

Communicate with your market agent and/or retailer and agree upon the arrangements

- **TEMPERATURE ON DELIVEREY**
- **PACKAGING**
- **LEVEL OF KNOWN NUT ROT FROM YOUR TESTING**
- **RETURN POLICY**

REFER TO THE CAI POSTER ON COOL CHAIN

The Chestnut Cool Chain

RETAILERS

Retailers need to keep chestnuts refrigerated, either in a wall cabinet or on a flat but refrigerated shelf display.

Past research has shown that some retail stores were not using refrigerated display units for chestnuts. As a result, chestnut temperatures varied quite dramatically across retailers from 5.7°C to 13.8°C

The Chestnut Industry recommends that all chestnuts displayed by retailers should be in or on refrigerated units/shelves.

REFER TO THE CAI POSTER ON COOL CHAIN

The Chestnut Cool Chain

FINAL NOTE

Please feel free to forward this information onto any chestnut grower who may not be aware of these industry standards