

QUALITY FROM YOUR POTATO STORES

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Successful store management starts before one potato is in the store. I want to suggest to you some basic checks that should be made to all potato stores in the few weeks before storage begins.

The aim of the pre-season check is to ensure that once the harvest starts, which can be a very pressurised time of year, nothing foreseeable can get in the way to slow things down. And then once the crop is into the store, you are able to switch on and know that the equipment can be relied upon, so curing, cooling and holding can be carried out with as little hindrance as possible.

PRE-STORAGE CHECKS

- **Temperature probes**
- **Humidity probes**
- **Monitoring system**
- **Control system**
- **Fans**
- **Heaters if fitted**
- **Fridge - pre-season service**
- **Louvres**
- **Lights**
- **Damaged insulation**
- **Re-paint floor markings**
- **Box repairs**

MAINTAINING QUALITY AT HARVEST

It is very possible for you grow the most superb crop of potatoes that will store excellently and fetch top market prices, but for some of that quality and storability to be lost due to carelessness at harvest. The carelessness to which I refer is damage, either bruising or surface scuffing and cuts. It is true that many surface type damages will cure and cork up in store, but this will still leave a marred skin finish, which if severe enough can result in lost pre-pack quality. Bruises however will not cure out, and for a sample of chipping or crisping potatoes has often been the cause of rejected loads, especially in the year when the crop is in abundance. The real crime of that situation is that with care and good management, and a large amount of common sense, it is all avoidable. It is true that some potatoes and in some years damage is more easily incurred, especially after dry years and with the higher dry matter varieties, it is part of the management of the crop to realise this and to take extra precautions in these situations. A good guide is to take the potato dry matter just prior to harvest.

So where does the majority of the damage occur?

POTATO DAMAGE BLACK SPOTS

HARVESTER

- **In the ridge!!** - roller pressure, clods, flints, other potatoes
- **At the share and side discs** - height and line adjustment
- **On the webs** - web speed ratio, haulm/clod fingers, agitation
- **Haulm/clod rollers** - speed, soil removal, adjustment
- **Conveyor/elevator** - compacted soil, poor design
- **Trailer floor** - padding, elevator height, filling method

GRADER/STORE

- **Hopper** - keep full
- **All drops** - keep low and slow, use fall breakers, avoid supporting rollers
- **Screen** – agitation, keep to a minimum
- **Conveyors/elevators** - keep slow and full
- **Box filler** - adjusted correctly
- **Drop into store** - keep low, use magic eye, fall breakers
- **Filling bulkers** - use fall breakers, magic eye, padding, fill onto face

POTATO DAMAGE DETECTION

1.

- **Bruise development** - warm humid conditions 24 hrs, eg. potato hotbox
- **Wash and inspect skin damage**
- **Peel, observe severity and number of bruises**
- **Take immediate action**

2. ELECTRONIC POTATO

- **Measure severity of falls on system**
- **Make adjustments to keep readings to 1 or below**

3. OBSERVATION

- **Watch systems in operation, look for rolling falling etc.**

MAINTENANCE OF QUALITY IN STORE

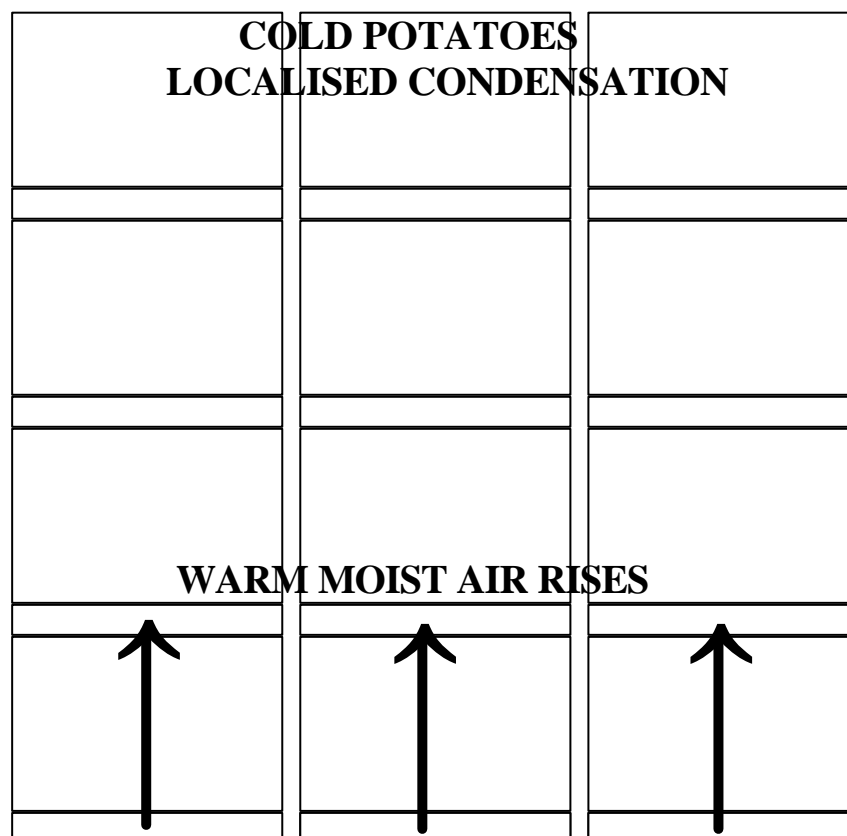
Causes and Control of Condensation

Condensation occurs in potato stores because of warm moist air coming into contact with a cold surface and being cooled to below its dew point so that water is deposited. Nearly always condensation is undesirable as it causes wet crop, increases disease and rot risk and indicates crop moisture loss.

Condensation may appear in one or more of many places and at different times.

OCCURRENCE OF CONDENSATION IN POTATO STORES

- **Building structure** - steel work, hook bolts
- **Duct work** - esp on fridge units
- **On potatoes** - esp top of stack



SUSCEPTIBLE TIMES

- **Curing** - Wet potatoes in store
- **Pull down** - large temperature differences
- **Times of very low ambient temperatures**

Higher temperature stores are more susceptible

In many situations the condensation is temporary, for example during curing, and will clear itself once the steady state has been reached. However, in some cases condensation may become a long term problem that requires remedial action to avoid damage to the crop in store. The remedial action depends upon the nature of the occurrence of condensation, some basic guidelines for the control of condensation are:

CONTROL OF CONDENSATION

1. Structural condensation

- **Upgrade insulation**
- **Plastic caps on bolts**
- **Can applied spray foam on exposed metal**
- **Roof space ventilation**

2. Duct work and coolers

- **Insulate duct work**
- **Cover crop below dripping**
- **Keep temperature differences low**
- **Roof space ventilation**

3. Condensation on crop

- **Recirculation of store air to re-distribute moisture and even out temperature differences**
- **Avoid ventilation with warmer air**
- **Avoid temperature fluctuations**
- **Avoid localised chilling (even air distribution, diffusers, deflectors)**

Other tasks to maintain quality during storage

Despite the growing complexity of store controllers available today, there never will be a substitute for a sound store manager. Andy has already discussed some of the aspects of store quality management which cannot be delegated to a microprocessor. It is important that regular checks are made on the store and storage equipment to ensure that things are not going badly wrong. It is also important to realise that some of the store controller parameters set at store loading will need to be changed in response to the effects on the potatoes in store. It is wise therefore to have a basic checklist to run through when making your regular checks in the store. A suggested list is as follows:

STORE MANAGEMENT CHECKLIST

Potato condition.

Rots, wet, over dry, smell, skin finish, chitting

Crop temperatures

Distribution of temperatures, rogue probes, hot spots, comparison with previous temperatures.

Cooling/ventilation equipment

All OK, run times, trips, settings in relation to current crop condition, louvre operation