The Easy Way To Treat Grain

Depending on weather conditions at harvest time, mature grain is usually harvested at between 17% and 22% moisture. In storage, it is important to reduce grain losses due to fungal growth and insect infestation which are a health hazard to livestock and farmers. Preserving grain at optimum condition retains its nutritional value and prevents dry matter loss.

To reduce the moisture content and temperature of the grain it should be rapidly dried to below 15% moisture content for long-term storage.

The grain should be rapidly cooled to below 15°C. Check and monitor the temperature and moisture content for all grains in storage and monitor insect and mite activity as these can lead to an increase in temperature.

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FUNGUS & MOULD

Much of the loss of the grain in the grain store or in the clamp is due to fungal growth and moulds. In storage, fungal growth requires temperatures of 20-30°C, at least 1-2% oxygen and 13-18% moisture.

Fungi include Aspergillus, Fusarium and Penicillium with Fusarium being the most prevalent in field cereals. Fungi produce moulds that secrete highly toxic metabolic byproducts called mycotoxins, and it is storage mycotoxins that are of most concern to grain production in Ireland. If these mycotoxins are ingested by livestock, it can lead to reduced appetite and performance and can seriously reduce milk production and fertility in dairy cows.

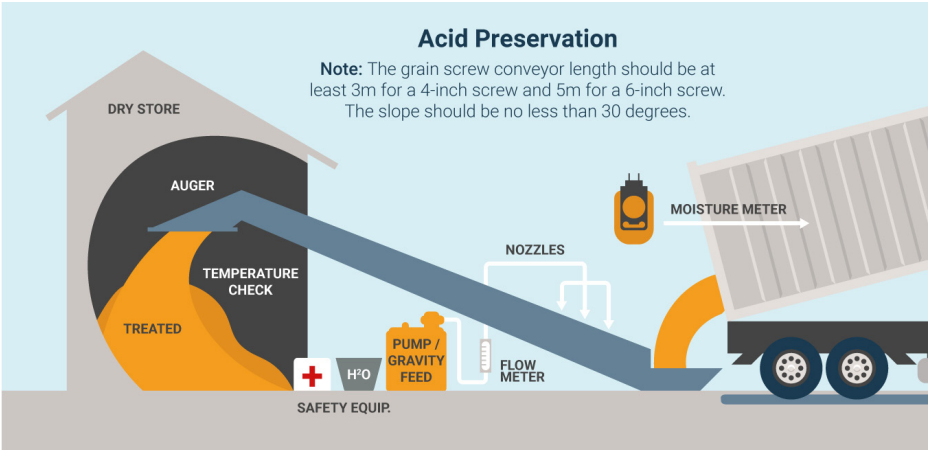
Pre-harvest mould control is often difficult as mould growth is largely regulated by weather conditions at critical times. Therefore, management post-harvest is important in terms of drying and good storage in order to minimise fungal growth. If grain is dried to below 15% moisture, mould and bacterial growth is generally inhibited.

PROPIONIC ACID TREATMENT

Measures taken to ensure good preservation postharvest include drying, ventilation and mould inhibitor treatment. Preservatives can be applied to moist grain (15-25% moisture content) to act against fungal growth.

Preservatives include Propionic acid and salt-based preservatives {e.g. based on ammonium propionate). The most cost effective way of storing moist grain is treatment with Propionic acid which halts all mould and bacterial activity and has been successfully used on farms for over 30 years.

In terms of Propionic treatment, grain refers to any product that can be augured:



barley, wheat, oats, maize, peas or beans can all be treated effectively. Propionic treatment combines the feed benefits of sealed storage or crimping and the handling benefits of dried grain without the disadvantages of either.

All that is required for effective grain treatment is a short auger (minimum 2 metres) and a simple application system with a calibrated flow meter capable of applying the correct dose at the bottom of the auger.

The action of the auger will ensure that all grains are covered completely with Propionic acid - this is essential as any untreated areas will quickly form a "hot spot" which will soon spread to treated areas affecting the whole pile.

Application Rates For Propionic Acid

Grain at 18% moisture will require application of 7 to 8 litres of Propionic per tonne and an additional half a litre added for every percentage of moisture above 18%. Application to rolled cereals or beans should be increased by 10%

Moisture levels should be checked regularly during the day to ensure that the correct application rates are used as it has been well established that under treatment of grain will fail to halt mould and bacterial activity.

The flow rate of the auger should also be checked to calculate the treatment rate. The application rate of the preservative is determined by multiplying the application in litres per tonne by the throughput of the auger.

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MEASURE MOISTURE CONTENT

Remember to measure moisture content of a representative sample before and during treatment using a dependable moisture meter. Most grain moisture meters are generally not accurate above 25% moisture content.

THE BEST STORAGE

- Acid treated grain can be stored on a clean dry floor.
- The treated grain must be kept cool otherwise insects can become a problem.
- It is important that the grain is stored in shallow piles or in a store with some ventilation.
- Grain peaks or cones encourage a chimney effect which promotes heating.
- Do not store untreated grain with treated grain as it can draw in moisture and heat.

EU Hazardous Chemicals Regulations

Propionic acid is an organic acid and its handling and transportation are controlled under EU hazardous chemicals regulations. Trouw Nutrition Ireland ensures the product is packaged and delivered in a way that meets these regulations.

Propionic acid is filled into 25 litre, 200 litre or 1000 litre containers in a purpose built facility. This new facility ensures that the product is accurately packed and properly labelled before being delivered out to merchants by drivers who have had proper hazardous chemicals training and hold a valid ADR licence.