



Northern Periphery and Arctic Programme
Northern Cereals – New Markets for a Changing Environment

Drying of harvested grain Guidelines

Successful drying of harvested grain is a prerequisite for storage and the production of safe grain for humans and animals.

Harvesting

- Heavy precipitation is of particular concern. Under wet conditions moulds may develop in the field and some mould species can form mycotoxins which are harmful for animals and humans. Grain is also likely to suffer from pre-germination under protracted, wet conditions in the field.
- Grain should dry as much as possible at the field before harvesting. The embryo could decay and die if wet grain is harvested. This is very important for seed and malting barley.

Drying operations

- After harvesting, grain should be dried as soon as possible to prevent spoilage and to prevent the risk of mycotoxin formation. The safe storage period from harvest until drying might be as short as 2-3 hours. The spoilage of grain can start in a short period. The use of cold air for aeration of wet grain can extend the storage life for 2-3 days and make the drying easier. Strong aeration is needed if wet grain is stored before drying.
- It is important to dry grains intended for malting, seed, baking or cooking at relatively low temperature. It is recommended that grain temperature does not exceed 38°C (barley intended for malting or seed) or 43°C (barley intended for food) during drying, due to the risk of overheating and killing the seed embryo which makes malting impossible. Feed grain should not be heated above 60 °C. Grain temperature is measured by removing a grain sample from the dryer and measuring by a thermometer. The dryer manual should be consulted for appropriate temperature settings during drying.

- Mould should not be visible on the grain.
- Farmers should measure the moisture content of grain through the processing chain from field to storage.
- To reduce cost, grain should not be dried more than required for safe storage. Barley moisture content of 12-14% would in most cases be sufficient.
- If appropriate, electricity and geothermal water should be considered as energy sources for increased sustainability.

Storage

- It is very important that grain stores are clean and dry and protected from insects and other pests.
- If conditions in the store are too humid, the grain moisture will increase and damage might occur due to bacteria, mould or insects. Therefore, temperature and humidity should be monitored in the store, together with grain temperature and moisture.