

Avoiding crop waste through effective grain storage monitoring

Storing grain effectively is critical to ensuring that quality is maintained, reducing the risk of crop rejection.

Methods of storage include silos, bins, and flat stores, but in all cases the temperature of the stored grain needs to be monitored to prevent deterioration or contamination by insects and mites, sprouting or fungi growth.

Combinable crops such as wheat, barley and oilseed rape have varying storage requirements depending on their market destination. Malting barley, for example, should be stored at above 10°C to prevent secondary dormancy.



Quality assurance (QA) and food safety requirements are becoming increasingly stringent, requiring regular temperature monitoring of stored grain. Failure to comply could lead to a rejection or even a claim.

Anecdotal evidence suggests many farms store grain with no or limited grain monitoring equipment.

The onset of potential problems is detected by monitoring the grain temperature in the core of the heap and at other points, signaling the requirement for ventilation, cooling, and agitation to remove the risk.

Whilst most modern grain silos come with preinstalled systems for monitoring the stored grain and taking action, many flat stores by their very nature do not.

Grain heaps tend to be in the order of 6-7m in height, so probes are inserted into the heap once formed, to a depth of around 2.5-3m. The signal from the probes is monitored along with ambient conditions and software used to trigger alarms and notifications.

Most commercially available solutions use wired probes, which are highly prone to cable damage.

SmartRural has identified a solution that comes with a choice of probe lengths (1.5m & 3m).

As well as monitoring the temperature at probe depth, the device also reports ambient temperature and humidity, which helps support other decisions in the management of the stored crop.

The software will trigger alarms (to limits set by the farmer) and populate a report suitable for Scottish Quality Crops and other buyer QA purposes.

