AUSTRALIAN LOT FEEDERS' ASSOCIATION

GRAIN RECEIVAL, STORAGE & FEEDING CONSIDERATIONS FOR A WET HARVEST

Wet harvests can create a challenge for feedlot operations. Feedlots can often be offered grain that would normally be directed to higher quality markets (bread and noodle wheat, malt barley), but become unsuitable due to weather damage. This downgraded grain can appear attractive due to discounting. Or alternatively, the feedlot is expected to make use of weather damaged grain that is harvested from associated farms.

Whatever the situation, decisions relating to purchase and receival of moisture effected grain need to be balanced with potential issues of storage and feed quality. The main areas of concern with a wet harvest include receiving high moisture, sprouted and/or moldy grain. These grain characteristics can directly affect grain transfer efficiency, cattle performance, health and welfare.

GRAIN RECEIVAL

Receival is a critical control point at which grain sampling and quality assessment occurs for final acceptance or rejection of grain delivered. Criteria for grain acceptance is defined by grain trading standards. These standards for specific grain type can be found on the Grain Trade Australia website (www.graintrade.org.au). Ensuring the point of receival has these standards in place with staff that understand how to interpret, sample and measure/assess grain is critical. The standards that relate to a wet harvest include proportion of grain (%) or specific number of grains within a half litre measure that are affected by field fungus or mold, is shot or sprouted and minimum falling numbers value.

STORAGE

The maximum recommended moisture for receiving winter cereals is 12.5% and lupins 14%. Storing grain at higher moistures promote risk of mold and insect infestation. Higher moisture grain also increases angle of repose, altering storage capacity and changing grain flow characteristics.

FEEDING

Wet harvest conditions increase opportunity of fungal spores to germinate within the grain head, discolouring the grain (field fungus) and sometimes creating fungal bodies (smut, ergot). Fungal contamination of grain creates odour, reducing palatability and increases the potential for mycotoxins. Mycotoxins are potent metabolites and have a range of negative effects on cattle production and health. Winter cereals are at most risk of Fusarium contamination (white to pinkish white discolouration). Fursarium can produce a range of feed refusal toxins that depress feed intake and cause vomiting (spews). Ergot contamination can depress feed intake and interfere with animal's temperature regulation as described in the following table.

Effect of ergotamine added to diet on thermoregulation in cattle (Osborn et al, 1992)

EFFECT	ERGOTAMINE ADDITION	
	NO	YES
Skin temperature °C	35.6	33.0
Rectal temperature °C	39.5	40.3
Respiration rate breaths/min	72	90
Feed intake kg/hd/day	5.7	2.9
Daily gain kg/hd	0.6	-0.5

SUMMARY

Rainfall resulting in wet harvests increases the risk of grain becoming shot and sprouted.

- Shot grain indicates germination has started and the grain appears slightly open (husk begins to lift).
- Sprouted grain is easily identified as the shoot or root are clearly visible.

Shot and sprouted grain is often assessed using a falling number test. This test provides an indicator of enzyme activity related to germination and the effect on degradation of both start and protein. Falling numbers of +300 indicate little enzyme activity, whereas a value of less than 100 indicate extensive activity and degradation of starch and protein.

As a general rule, assuming other receival specifications are met, avoid accepting grain that has a falling number less than 150 and/or with more than 30% of sample sprouted.

ALFA would like to thank Dr. Rob Lawrence from Integrated Animal Production for his assistance in providing information contained in this document.

INTEGRATED ANIMAL PRODUCTION

PO Box 1821, 70 West Street, Toowoomba, QLD 4350 Australia
Int. Ph: + 61 (07) 4659 6900
Int. Fx: + 61 (07) 4659 6904
admin@iapnutrition.com