



**MANAGING FAILED CANOLA CROPS**  
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**Feed quality of canola**

Over the past 15 years the occurrence of adverse spring conditions has resulted in canola crops that were at risk of failing being utilised for either grazing or made into hay or silage. As a consequence of tests done on many crops (majority in 1994 and 1997), a considerable amount of data on the quality of green crops, hay and silage has been gathered. The results, which are summarised in Table 1 below, show that whilst there is a range in the actual measured feed quality values, failed canola crops can produce high quality fodder.

Table 1. Feed quality values of green canola, silage, hay and stubble

Canola Material	Digestible Dry Matter DDM %		Crude Protein CP %		Metabolisable Energy MJ/kg	
	Average	Range	Average	Range	Average	Range
<b>Green canola* (17)</b>	61.1	52.9 - 72.5	13.9	7.9 - 21.3	9.6	8.7 - 10.9
<b>Silage (10)</b>	64.9	50.7 - 70.3	19.9	11.9 - 25.2	9.7	7.6 - 10.5
<b>Hay (10)</b>	59.9	53.4 - 70.1	13.9	7.9 - 20.5	9.0	8.0 - 10.5
<b>Stubble (1)</b>	31.0		3.3		4.0	

\* Samples cut at flowering/early podding stage to determine value for making silage or hay.

Figures in brackets are number of samples tested.

(Values in this Table are consistent with tests conducted by the Victorian DPI FeedTest® Service).

The large range of results across all feed types was largely due to the different growth stages at which the samples were cut (green canola) or made into silage or hay. Several of the silage samples were cut too late and should have been classified as 'haylage' rather than 'silage' due to the low moisture content of the wrapped material. Similarly, some of the hay samples were cut beyond the optimum stage reducing the feed quality of the finished product.

Whilst the actual quality of the final product will depend on the nutrition of the crop, especially nitrogen inputs, as well as the stage of growth at which it is cut, the results indicate that silage is more likely to produce the highest quality feed. Given the fact that it contains a higher moisture content than hay, it will also produce a larger volume of feed. However, any differences in the cost between producing hay and silage need to be considered when assessing the value of the two especially when compared to the grazing off of a standing crop.

A comparison of Tables 1 and 2 shows that the feed quality of both silage and hay made from canola is more than adequate for the maintenance feeding of livestock. For production feeding it is recommended that a feed test be carried out on a representative sample of the material that will be fed out to the specific class of livestock intended to be fed.

Table 2. Minimum feed requirements for sheep and cattle

Type of production	Crude Protein CP %	Metabolisable Energy (ME) MJ/kg
<b>Survival</b>	6	6
<b>Lactation and late pregnancy</b>	12	9 - 10
<b>Growth</b>	12	10
<b>Finishing (depending on age)</b>	12 - 15	11 - 12

The quantity of material available for making hay or silage can be assessed by taking sample cuts of one metre square from a representative area of the crop or from a number of locations within the paddock and weighing them. The average weight of material in kilograms per square metre multiplied by 10,000 (the number of square metres in a hectare) will give a guide to the amount of fodder (kg/ha) present in the paddock. For making hay a more accurate determination can be made by taking a sub sample of the total amount of material cut, weighing the small sample and then drying it in an oven or microwave to determine its moisture content to enable a calculation of the total amount of available dry matter to be made.

### **Grazing canola crops and stock health**

Drought affected or failed canola crops are readily eaten by stock. However, over the years there have been some reports of sickness and sudden death of stock, usually at a low level, feeding on grazed crops.

In the 1994 drought when large areas of canola were grazed or made into hay or silage, some reported sheep losses included 1 in 800, 16 in 500 and up to 100 in a mob of 1500. Again in the 2002 drought there were sporadic reports of low levels of sheep losses usually from grazing standing crops.

Although these problems were initially believed to be due to nitrate poisoning, investigations by veterinarians have identified respiratory distress and failure caused by unidentified toxins as being the more common cause of death where it did occur. Anecdotal evidence indicates that the toxicity appears to be greatest when the canola crop is grazed at the full flower stage which may possibly be due to compounds in the flower petals.

Nitrate poisoning is most likely to occur when hungry stock are first introduced onto the canola crop, usually within the first 48 hours and particularly where they have little or no gut fill. Crops which have been grown on strong clover paddocks or which have had high levels of nitrogen fertiliser applied either at sowing or at some stage prior to grazing and then become stressed are considered to be more at risk of causing nitrate poisoning. Over time stock can adapt to high levels of nitrates but care still must be taken to minimise any potential problems.

Animal deaths due to the unidentified toxins are considered to be less predictable than nitrate poisoning in that they can cause problems at any time regardless of how long the stock have been on the canola. The exact nature of these toxins has not been verified but overseas research has identified a specific toxin, S-methyl cysteine sulphoxide (SMCO), as the cause of haemolytic anaemia in stock fed fodder rape. However, stock are often able to deal with toxins if allowed to adapt slowly to the feed. Other animal health problems recorded in stock fed on Brassica crops include:

- respiratory problems from a build up of fluid on the lungs
- photosensitisation causing sunburn on exposed skin
- blindness which can be combined with 'sudden excitability'
- digestive problems including rumen stasis (reduced rate of flow through the rumen) and constipation
- pulpy kidney
- bloat

The following management strategies are recommended to minimise the risk of health problems occurring if stock are to be grazed on a canola crop:

- ensure that the stock have at least a partial gut fill when they are turned onto the crop. **Do not turn hungry stock into the paddock**
- initially restrict grazing to short periods or allow stock to have access to an adjoining paddock in which some alternative feed is available
- where possible, provide supplementary feed such as hay or grain to dilute the intake of canola
- consider introducing a small number of stock and observe them closely for a few days. If there are no problems, introduce the rest of the mob but again ensure they have at least partial gut fill
- monitor the mob regularly and immediately remove them if any unusual behaviour is observed
- take special care and inspect the mob more frequently during dull, rainy weather or following heavy frosts.

### **Canola hay and silage and stock health**

Despite the fact that canola hay and silage are considered to be safer than a standing crop, similar precautions to those recommended when grazing a crop should still be followed when either is first fed out to stock. In the 2002 drought there was a report of several cattle deaths at Warren in western NSW after the mob was given a sudden change of diet from oats and scrub to canola hay without any additional oat supplementation. It was estimated that the cattle ate almost 8kg/head of the canola hay overnight (testifying to its palatability). There have also been isolated reports of cattle having their paunch punctured causing peritonitis when eating canola hay due to the sharp and brittle nature of the dry plant material.

In the same year (2002) three cows were reported to have died at Nyngan after eating canola 'silage'. However, as with the hay, it was again fed out to hungry stock with no gut fill. The problem may have been compounded because the bales were fed to the cattle only 1 or 2 days after wrapping (ie no fermentation had taken place) increasing the risk of nitrate poisoning possibly being involved.

Overall, given the large areas of crop that have been grazed and the quantities of hay and silage fed to stock in past droughts, the level of stock health problems has been low. Despite this care must be exercised at all times to minimise any potential risks to stock.

### **Plastic Silage Wrap**

In 1997 problems were experienced with the plastic wrap on bales of canola silage breaking down and the bales required re-wrapping. At the time this was believed to be due to either the high sulphur content of the green canola material (from the glucosinolates in the plants) or the sulphur content of the silage inoculants applied to the cut material prior to wrapping causing problems during the fermentation process. The manufacturers changed the formula of the plastic wrap and there have been no subsequent problems including in 2002 when a large quantity of wrapped canola silage was made and stored on farm.

### **Pesticide residues**

Before grazing or cutting a crop for hay/silage a check must be made of the withholding period (WHP) for any pesticide that has been applied to the canola crop. The withholding period varies with the product and can even vary with the timing of use of a single product. As an example, atrazine has a 15 week withholding period where it is applied pre-emergence but only 6 weeks when applied post emergence whilst simazine has a straight 15 week WHP used either way. Given that the majority of the Australian canola crop is sown to triazine tolerant (TT) varieties this is an important issue for stock owners particularly as livestock are more likely to have to be off loaded early during a drought.

If canola hay or silage is offered for sale, the grower must be prepared to offer the buyer a Vendor Declaration or similar statement which specifies the following information:

- the pesticide treatments applied to the crop
- whether the appropriate WHP for cutting for fodder for all pesticides applied has been observed
- whether the crop was exposed to any contamination by spray drift and, if so, by what pesticide(s)
- whether the paddock from which the fodder was cut is contaminated by organochlorine chemicals.

Failure to adhere to these legal requirements can result in significant penalties being applied.

### **Soil Conservation Issues**

Grazing or cutting canola usually results in the paddock being left very bare with a potentially increased risk of soil erosion. Removal of the crop material at the onset of drought conditions will significantly increase this risk especially where a paddock is grazed bare. Both wind and water erosion are of concern and it is recommended that growers take steps to minimise the potential for erosion to occur. There are no easy fixes under drought conditions but one method used successfully in past droughts has been a shallow cultivation with a tyned implement to leave the soil surface rough and cloddy and less prone to erosion especially from wind.

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