

# Drought affected canola & wheat - feed quantity and quality decline in standing crops

Nigel Phillips<sup>1</sup> and Guy McMullen<sup>2</sup>

<sup>1</sup>Technical Specialist, Pastures (South), Wagga

<sup>2</sup>Research Agronomist, Northern Farming Systems, Tamworth

## Key points

- Baling drought affected crops for hay or silage at flowering will capture the highest quality feed, optimize the cost per MJ and deliver the best animal performance when fed.
- Leaf and head/pod material is significantly higher in feed value than the stem. Grazing a standing crop will allow animals to select a diet higher than the whole crop average and this will be reflected as higher animal performance.
- Leaf and pod loss in canola is more rapid than with wheat. Grazing canola crops first to capture this material may be one strategy to maximize utilization.
- Allow growing livestock to graze crops first while high quality feed is available.

## Background

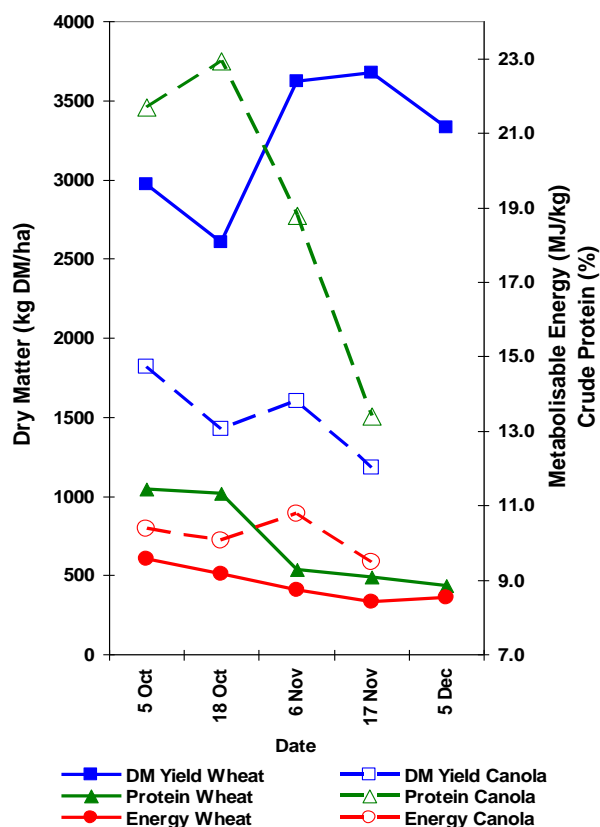
In recent years baling of drought affected canola and wheat crops for silage or hay has often provided the greatest economic return. However, it is not always possible or desirable to bale these crops and in many instances crops are left standing as a feed source for livestock. Standing crops are subjected to environmental conditions which will not affect stored fodder resulting in greater change in both quantity and quality over time. But unlike hay or silage, standing crops may be selectively

grazed by animals to deliver a diet higher than the average nutrient value of the crop. Understanding the changes in quantity and quality can assist producers to better manage grazing from these crops.

Trial plots of canola and wheat were left standing at Ganmain and Eurongilly to measure changes in feed quantity and quality from early October to December 2006. Plots were cut to ground level and divided into leaf, stem and head/pod. Each component was tested for feed quality. Rainfall during this period was quite low (Ganmain 38.2mm, Eurongilly 40.6mm) and it can be expected that with greater rainfall after crop death losses in both quantity and quality would be higher. The results presented here have been averaged over both

Figure 1. Whole Plant Yield & Quality of 2006 Drought Affected Crops

(Source: G McMullen & N Phillips NSW DPI)



<b>Table 1. Canola</b>			
<b>Date</b>	<b>Dry Matter (kg/ha)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Pods</b>
<b>5 Oct 06</b>	505	1178	135
<b>18 Oct 06</b>	376	861	189
<b>6 Nov 06</b>	292	1100	209
<b>17 Nov 06</b>	126	934	121

	<b>Crude Protein (%)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Pod</b>
<b>5 Oct 06</b>	31.4	17.4	22.8
<b>18 Oct 06</b>	32.2	17.5	28.6
<b>6 Nov 06</b>	32.2	15.2	17.3
<b>17 Nov 06</b>	33.4	11.9	12.6

	<b>Metabolisable Energy (MJ/kg DM)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Pod</b>
<b>5 Oct 06</b>	11.1	9.2	10.8
<b>18 Oct 06</b>	11.1	8.5	10.6
<b>6 Nov 06</b>	10.7	8.1	13.6
<b>17 Nov 06</b>	11.5	7.2	11.7

sites.

### Whole crop quantity & quality

Figure 1 shows Dry Matter yield, Metabolisable Energy (ME) and Crude Protein (CP) for canola and wheat. For both crops there is a general decline in ME and CP after flowering with canola showing a small increase in ME during pod fill. At all stages canola exhibits better feed quality than wheat.

Dry matter yields for wheat are greater than canola at all stages. The wheat also produced a substantial increase in yield after flowering as grain formed in the head. This reflects the greater ability of cereals to handle drought conditions compared to canola.

Energy and protein levels are initially quite high, particularly with canola, and experience shows that animal performance on silage or hay made from this material is good. The relative animal performance can be modeled using Grazfeed®. Hay or silage made from cutting the crop on the 5<sup>th</sup> October are predicted to produce weight gains in a 33 kg lamb of 124grams per day for canola and 82grams per day for wheat. By cutting hay or silage on the 17<sup>th</sup> November weight gains when fed out would only be 79g/day for canola and 26g/day for the wheat. The take home message is that to maximize animal performance and minimize cost per unit of energy from baled drought affected crops they should be cut early, ideally around flowering.

### Plant part quantity & quality

Table 1 shows the changes in plant part quantity and quality for canola. Notably, stem makes up 60% to 80% of available feed. The high nutrient value leaf material retains its energy and protein well over the period compared to wheat (Table 2) but quantity declines rapidly and while the pod quantity and energy values increase during seed fill it represents less than 14% of the available feed.

In 2006 it was observed that livestock would readily eat canola stem. This was not a universal experience with stock rejecting older tougher stems in some instances. The best value from canola will likely come from grazing the leaf and pod while they are still available, and grazing stem when relatively soft and palatable

<b>Table 2. Wheat</b>			
<b>Date</b>	<b>Dry Matter (kg/ha)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Head</b>
<b>05 Oct 06</b>	883	1282	805
<b>18 Oct 06</b>	517	920	1170
<b>06 Nov 06</b>	720	1051	1848
<b>17 Nov 06</b>	657	1188	1831
<b>05 Dec 06</b>	626	1074	1629

	<b>Crude Protein (%)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Head</b>
<b>05 Oct 06</b>	16.9	7.0	12.2
<b>18 Oct 06</b>	12.4	6.3	14.7
<b>06 Nov 06</b>	8.6	3.6	12.8
<b>17 Nov 06</b>	6.7	4.1	13.0
<b>05 Dec 06</b>	7.1	3.6	13.1

	<b>Metabolisable Energy (MJ/kg DM)</b>		
	<b>Leaf</b>	<b>Stem</b>	<b>Head</b>
<b>05 Oct 06</b>	9.3	9.6	9.8
<b>18 Oct 06</b>	8.6	8.7	10.2
<b>06 Nov 06</b>	8.0	6.7	11.3
<b>17 Nov 06</b>	7.5	7.0	11.2
<b>05 Dec 06</b>	7.5	6.9	11.2

The leaf component of wheat was greater than canola in both total amount (up to 500kg/ha more) and percentage of available fodder (19% to 30%). Retention of the leaf was much higher than canola with over 70% remaining by early December. However, the feed quality was consistently lower and declined more rapidly than canola. Head material accounted for around 50% of dry matter and over 60% of the available MJ/ha after flowering.

The best grazing response from failed canola or wheat crops will come from early grazing where

animals can select a high quality diet before the leaf content or quality declines. Growing or lactating livestock should get priority.

---

© State of New South Wales through NSW Department of Primary Industries 2009. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Primary Industries as the owner.

ISSN 1832-6668

Check for updates of this Primefact at:

[www.dpi.nsw.gov.au/primefacts](http://www.dpi.nsw.gov.au/primefacts)

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Job number