

## 4.4 Supplementation

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# Supplementation

- There will be times when not enough feed supply to match demand (unless farm is very understocked)
- Options
  - Sell livestock
  - Agist livestock
  - Lease additional farm/s
  - Use body condition score on animals
  - Supplementary feeding (or feedlotting, containment feeding)



# Sell livestock

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- Enterprises often have different categories of livestock
- Some are more saleable
- Ideally keep highest priority – often youngest breeding animals e.g. animals on first/second lactation
- E.g. Beef cattle enterprise
  - Initial sale animals – any stock for fattening (steers, non pregnant cows)
  - Then likely older pregnant cattle (>5 y.o.)
  - Then likely young female weaners up to 2 y.o
  - Retain as many breeding stock 2-5 y.o (or 2-4 y.o), in theory highest genetic merit (usually retain bulls unless not suitable for joining)
- For non breeding enterprise will come down to maximising total income from sales



# Agist or lease property

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- Agistment = payment for specified period. Usually on per animal basis over short period (weeks or months)
- Lease = contract to manage farm for a period of years (mostly). Generally 3-5 years but varies from contract to contract.
- Drought = period of abnormally dry weather to cause serious hydrologic imbalance in the affected area.
- During drought enterprises may agist or lease land in areas not affected (or less affected) by drought, or where they have irrigation
- Reduces workload of supplementary feeding
- Can be challenging to assess how long stock might need to be away for, also managing stock safety and biosecurity
- How will animals be monitored on other enterprise and by who?





# Body condition score

- If animals are in good body condition score then it may be reasonable to allow them to lose some of this score during a difficult season
- Unless a feed deficit is fixed rapidly then it is unlikely that this will be sufficient on its own
- This is less applicable for young stock or lactating stock



# Supplementary feeding

- Relatively common process in high rainfall and sheep/wheat zones
- Less common in pastoral areas as stock sold or moved before needing
- Types of supplementary feed
  - Grains
  - Hay and silage
  - Straw
  - Other



# Grains

- Common feed type
- Usually contain about 90% DM
- Varying energy/protein
- Cereal grain mostly similar energy and protein
- Pulses have higher CP (even >30% e.g. lupins)
- May use small % pulses with grain to improve CP

Feed type	Dry Matter (%)	Metabolisable energy (MJ/kg of DM)	Crude Protein (% of DM)	Acid detergent fibre (% of DM)
<b>Grains</b>				
<i>Cereals and pulses</i>				
Wheat	91	12.4-13.3(12.9)	7.5-15.0(11.5)	2.5-4.5(3.0)
Barley	91	11.6-12.2(11.9)	7.0-13.0(11.0)	7.0-9.5(8.0)
Triticale	90	12.0-13.0(12.5)	7.5-14.0(11.0)	3.5-5.0(4.0)
Oats	92	10.4-11.3(10.7)	5.5-13.5(9.0)	16.0-21.5(18.5)
Narrow leaf lupins	92	13.1-14.1(13.7)	27.0-42.0(34.0)	17.5-23.0(20.0)
Albus lupins	92	13.4-15.0(14.0)	34.0-44.0(38.0)	17.0-21.0(19.0)
Peas	91	12.5-13.5(13.0)	21.5-30.0(25.5)	6.0-10.5(9.0)
Vetch	91	12.4-13.2(12.8)	26.0-34.5(29.0)	7.5-9.5(8.5)
Chick Peas	91	12.0-13.0(12.4)	18.0-24.0(21.0)	12.0-16.0(14.0)
Faba beans	90	12.4-13.2(12.9)	22.0-30.0(26.0)	7.5-9.5(8.5)
Canola (>35% oil)	95	15.0-17.0(16.0)	20.0-25.0(22.0)	22.5-26.5(24.0)
<i>Cereal seconds</i>				
Wheat	92	11.8-12.4(12.1)	12.5-17.0(13.5)	3.5-5.5(4.5)
Barley	93	11.1-11.8(11.4)	11.0-14.5(12.5)	9.5-12.5(10.0)
Triticale	92	11.3-12.1(11.7)	10.5-15.5(13.0)	4.5-6.5(5.5)
Oats	93	9.8-10.5(10.3)	4.5-16.0(12.5)	21.0-26.0(23.5)
<i>Sheep pellets</i>				
Maintenance	90	8.0-9.0(8.5)	8.5-9.5(9.0)	29.5-32.0(31.0)
Production	91	10.6-11.4(11.0)	13.5-16.0(15.0)	20.0-25.0(23.0)



# Adjusting to a grain diet

- Grains with low acid detergent fibre (e.g. wheat) cause lactic acidosis if stock aren't used to them
- Need gradual introduction over about 3 weeks
- Generally good idea to gradual change ANY feed
- May be fed using a grain trailer or in feedlot
- Move grain to feed cart using augur (from silo)
- Using trough may reduce wastage

**Table 3.1. Example daily rations of wheat, barley or triticale per sheep (grams/day) when introducing sheep to cereal grains.**

Day	Dry sheep	Lactating ewe
1-2	50	50
3-4	100	100
5-6	200	200
7-8	300	300
9-11	350	350
12-15	430	450
16-19	430	550
20	860*	700
21	0	700
22	860	700
23	0	700
24	860	1400*
25	0	0
26	1300	1400
27	0	0
28	0	1400
29	1300	0

\*Note: Especially watch out for acidosis at this stage.





# Hay and silage

- Differing amount of DM
  - Hay generally 88-90%
  - Silage ranges 25-50%
- Important to consider \$/MJ, not just look at price per tonne as fed
- Significant variation in ME and CP depending on quality of original pasture
- Need some roughage in ruminant diet

Feed type	Dry Matter (%)	Metabolisable energy (MJ/kg of DM)	Crude Protein (% of DM)	Acid detergent fibre (% of DM)
<b>Hays</b>				
<i>Oaten</i>				
Early-cut	90	8.8-10.2(9.1)	7.0-12.5(8.5)	25-32(30.0)
Late-cut	90	8-9(8.5)	4.0-7.5(6.0)	30.0-37.5(32.5)
<i>Wheaten</i>				
Early-cut	90	9-10(9.4)	8.0-11.5(9.5)	25-31(29.0)
Late-cut	90	8-9(8.6)	4.5-7.5(6.5)	30-36(32.0)
<i>Barley</i>				
Early-cut	90	9-10(9.4)	8-11(9.2)	25-31(29.0)
Late-cut	90	8-9(8.6)	4.5-7.5(6.5)	30-36(32.0)
<i>Pasture (grass dominant)</i>				
Early-cut	88	9.0-10.8(10.0)	12-18(14.5)	24-30(28.0)
Late-cut	88	8.0-9.5(9.0)	8-12(10.0)	30.0-34.5(32.5)
<i>Pasture (clover dominant)</i>				
Early-cut	88	9.5-11.2(10.2)	15-23(17.0)	23-29(27.5)
Late-cut	89	8.5-9.8(9.5)	11-15(12.5)	30-33(32.0)
<i>CLIMA legume</i>	89	9.3-11.1(10.2)	14-20(16.0)	27-32(29.5)
<i>Cereal/vetch</i>	88	9-10(9.5)	10.5-15.5(13.0)	29.5-32(31.0)
<i>Pea</i>	88	9-10(9.5)	13-17(15.5)	30-33(31.5)
<i>Lucerne</i>				
Early-cut	88	9.8-10.5(10.0)	20-30(26.0)	27-29(28.0)
Late-cut	89	9.0-9.8(9.5)	13-20(15.0)	30.0-33.5(32.0)
<b>Silage</b>				
<i>Pasture</i>				
Direct-cut				
(chop) wilted	21-33(25)	8.5-10.5(9.5)	12-22(16.0)	28-35(33.0)
(chop and bale)	35-55(45)	8.8-10.8(9.8)	12-25(17.0)	28-33(32.0)
<i>Sorghum hybrid</i>	25-35(30)	8-9(8.5)	6-10(8.0)	32-35(34.0)
<i>Cereal crops (bale)</i>	35-45(40)	8.5-9.8(9.1)	7.0-13.5(9.5)	29-35(32.5)
<i>Cereal/vetch</i>	35-45(40)	8.8-10.0(9.7)	10.5-16.0(13.0)	30-33(31.0)
<i>Lucerne (bale)</i>	45-55(50)	9.1-10.7(9.5)	15-28(22.0)	29.0-33.5(30.5)
<b>Straws/stubble</b>				
Oat	89	6.0-7.7(6.8)	4.0-6.5(5.0)	38-45(43.0)
Barley	89	6.0-7.5(6.7)	4.0-6.5(5.0)	38-47(44.0)
Wheat	91	5.8-7.0(6.5)	2.5-6.5(3.5)	43-52(47.0)
Triticale	89	5.5-7.0(6.3)	2.5-6.0(3.5)	44-52(48.0)
Lupin	92	5.5-9.5(8.0)	6-10(8.0)	36-44(42.0)
Pea	90	6.5-7.8(7.2)	6.0-8.5(7.5)	38-44(42.5)
Canola	92	5.5-7.5(6.5)	4.0-7.5(6.0)	42-50(47.0)
Sorghum	88	5.5-7.0(6.5)	3.5-6.0(4.5)	45-54(48.0)
<b>Chaff-cart residues</b>				
Oat	90	6.5-8.0(7.2)	5-7(6.0)	36-44(41.0)
Barley	90	6.5-8.2(7.5)	5.0-7.5(6.5)	37-45(42.0)
Wheat	90	6.2-8.5(7.5)	4.5-8.0(6.5)	39-50(45.0)
Canola	92	6.0-8.5(7.5)	5.0-9.5(7.5)	42-50(45.0)
Lupin	92	7.5-9.5(8.5)	7.5-11.5(9.5)	35-43(41.0)

Note: These figures have been extracted from data collected by Independent Lab Services, Perth, Western Australia.



# Straw

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- Similar to some late season hays
- Low in both energy and protein, high fibre
- Can be useful drought feed
- May be used as bedding
- Consumed with grain as part of stubble

A simple method to measure the grain available in stubble is to use a 0.1 m<sup>2</sup> quadrat (such as a Hoegrass® square), and perform at least 20 counts on a line across each paddock at right angles to the harvest runs. This will provide an indication of the average levels of residual grain in the stubble.

**One hundred kilograms of grain per hectare on average equals:**

Wheat* and oats	28 grains per square
Barley*	25 grains per square
Lupins	8 grains per square
Field Peas*	5 grains per square
Chick Peas*	5 grains per square
Faba Beans*	2 grains per square

\*The risk of acidosis is high in these crops.



# Other

- Range of novel feedtypes (often as small % of diet)
- Potential risk around WHP/ESI
  - Cotton trash
- Foods left over from human food production e.g. brewers grain

Table 3.2. Some examples of novel feeds.

Energy concentrates	Protein concentrates	Roughage
Almond hulls	Coconut meal (copra)	Rice hulls
Apple pomace	Cottonseed meal	Oat hulls
Brewer's grain	Linseed meal	Lupin hulls
Malt combings	Safflower meal	Sawdust
Citrus peel	Soybean meal	Kelp
Tallow	Canola meal	Waste paper
Grape pomace	Sunflower meal	
Bread		
Bakery waste		
Potatoes		
Rice bran		
Wheat bran and other wheat by-products		
Onions		







# What supplementary feed to use?

- A range of factors will impact decision but often most important = cost per megajoule (\$/MJ)
- Also must have ability to transport, store and then feed the product e.g. may need a front end loader or grain feeder or silage grab
- May be able to purchase in different format e.g. large round roll = 350kg, small square bale = 25kg
- Time and safety in feeding, who is responsible and when done
- Often combine multiple feeds together to come up with best value diet (least cost ration formulation) eg add lupins to a predominantly oat diet
- To work out \$/MJ we need a feedtest or be confident of likely feedtest.



## Comparing different feedst

- Need to work out \$/MJ rather than just price per tonne

Grain	Cost per tonne as fed	Cost per tonne DM (/0.9)	Cost per kilogram DM (/1000)	MJ ME/kgDM	Cost per MJ ME
Wheat	\$310	\$344	\$0.344	13	2.6 c/MJ
Barley	\$240	\$267	\$0.267	11.5	2.3 c/MJ



### Notes:

Change in price is the change since the last report. Prices are estimates based on delivery to dairy farms with allowance for freight, storage, and marketing costs, but exclusive of GST. Wheat prices are for the relevant stockfeed wheat available in a region (ASW, AGP, SFW1 or FED1) and F1 for barley.

### Grain Commentary

- Wheat: Steady (\$305 to \$315/tonne). Barley: Down \$5 (\$235 to \$245/tonne). Maize: Down \$10 (\$325 to \$335/tonne). Canola Meal: Up \$10 (\$480 to \$490/tonne).
- There are reports of grower sentiment rising as more rainfall is forecast over the coming weeks, which will provide improved soil moisture conditions prior to seeding.
- As future markets reduced over this past week, wheat prices have reduced.
- Barley prices remain steady over this past week whilst there are reports of limited offers from Victorian growers.



# Crude Protein (CP)

- Crude protein is generally the second most important measure after energy
- Particularly important for young and lactating stock
- Protein also important to allow stock to maximise intake

