

Winter Feeding Guide - Sheep

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A producers guide for supplementary
feeding sheep during winter

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PLEASE NOTE THE FOLLOWING BEFORE USING THIS GUIDE

- The tables in this guide have been calculated using Grazfeed and provide a guide to the level of supplementation required for both Merino and 1st X ewes at various stages of pregnancy and into early lactation.
- **A number of pasture and livestock assumptions have been used when performing the Grazfeed runs. It is important to take note of these assumptions when applying the feeding rates to your own situation.** Remember, these tables are provided as a **guide only** and are designed to help producers fine-tune their feeding rates.
- The suggested feeding rates in this guide are based on feeding cereal grain. **Care should always be taken** when feeding grain to livestock to avoid grain poisoning (acidosis). Refer to the NSW DPI Managing and Preparing for Drought 2018 for further information on how to safely introduce cattle to cereal grain or pellets (available online – click [here](#)).
- Cereal grains tend to be low in both calcium and sodium. When feeding diets that consist mainly of cereal grain, add 1.5% of ground agricultural limestone (calcium carbonate) and 0.5% salt by weight to the ration to avoid calcium and sodium deficiencies (i.e. for every 100kg of grain add 1.5kg of lime and 0.5kg of salt).

Front cover photos sourced from CSIRO (scienceimage.csiro.au) and NSW Department of Primary Industries.

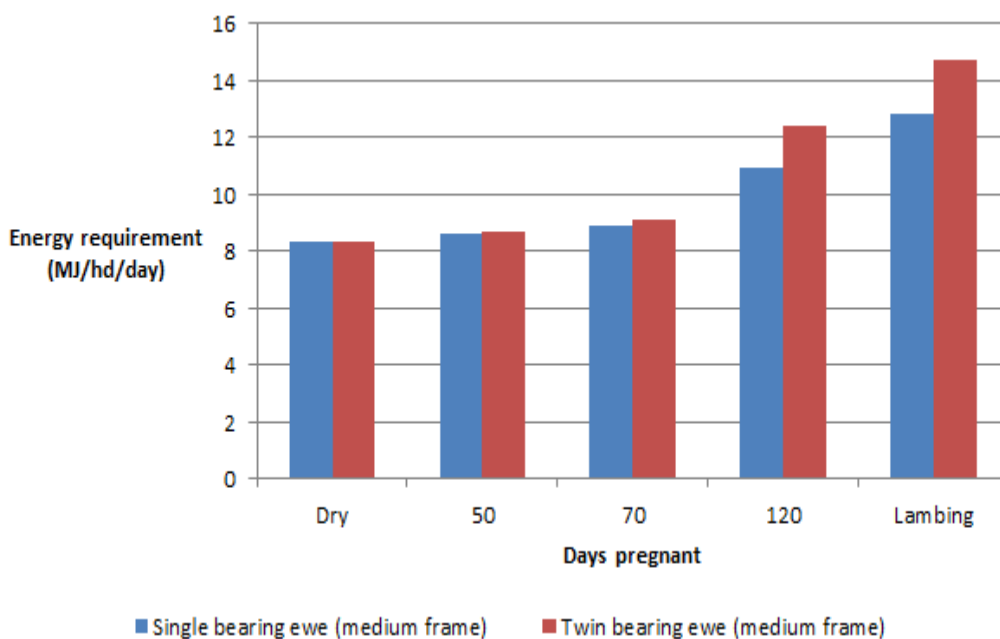
Managing ewes during winter

Pasture availability and quality during winter is highly variable from year-to-year and is largely determined by the amount of carry-over feed from the previous spring/summer period and when the autumn break occurs.

In trying to work out whether additional feed is required it's important to think through a range of factors including the quantity and quality of the pasture available, livestock condition and stage of pregnancy.

Figure 1 shows how energy requirements for single and twin bearing ewes change throughout the year, represented as megajoules of metabolisable energy required per day (abbreviated as MJ/day). As shown below, energy requirements increase dramatically in the last 4-5 weeks of pregnancy, especially for twin bearing ewes. These requirements continue to climb until peak lactation.

Figure 1: Energy requirements of single and twin bearing ewes during pregnancy



Assessing pasture – how big is the nutritional ‘gap’?

Paddocks during autumn and winter often contain a short green ‘pick’. While pasture quality is generally very good during this period (i.e. digestibility of 70% +), lack of pasture height often restricts intake and performance.

Careful assessment of pasture conditions (both quantity and quality) is an important step in deciding where to graze stock (i.e. paddock selection) and level of a supplement is required. **Small changes pasture conditions (height and quality) have a big impact**



Photo: M Lieschke

What supplement do I use and how much do I feed?

To be effective the supplement that you choose should make up for the main nutrient deficiencies in the paddock feed. Energy is generally the biggest limiting factor when sheep are grazing short green feed – the quality of the green feed is high but intake is restricted by the lack of height in the pasture. Protein can also be a limiting factor with lactating ewes grazing very limited, short green pasture.

Choosing a supplement

When choosing a feed a number of factors need to be considered, such as:

Nutrients required: cereal grains (.e.g barley, oats, wheat) or pellets/nuts are often fed out to sheep – these feeds are an ideal supplement for sheep grazing short green pasture as energy is often the major limiting factor.

Adding additional protein into the diet may be required when lactating ewes are grazing very short green pasture (i.e. approximately 1cm in height). Increasing protein intake could be achieved by including protein rich feeds such as lupins, faba beans etc, or alternatively using high protein pellets.

Where green feed is very limited, offering a good quality, high protein hay is also recommended to reduce the risk of digestive upsets and support lactation. Feeding hay is also advised when changing a ration or during cold weather. Low quality hay should not be fed to ewes during late pregnancy and lactation as it cannot supply enough energy and protein to meet requirements.

Storage, handling and feeding out: an important consideration and will largely determine what feeds are going to be suitable for your situation. It's important to choose feeding methods and systems that you can meet the ongoing time and physical commitment of, whilst minimizing disruption to the animals digestive system.

Cereal grains and pellets/nuts can provide the most cost effective way of feeding stock, but they need to be introduced slowly and fed daily over a two to three week period to avoid digestive upsets. Once adjusted, stock can then be fed every second or third day in daily amount multiples. High energy, low starch feeds such as lupins may be fed safely twice weekly without the risk of acidosis.

Refer to the NSW DPI Managing and Preparing for Drought 2018 for further information on how to safely introduce cattle to cereal grain or pellets (available online – click [here](#)).

Cost and availability: Availability of the feed is important as changing feeds can be tricky and brings additional risk of digestive upsets. It is also important to cost out different feeding options and compare them based on an energy basis. This can easily be done using either the [Drought Feed Calculator](#) (a free application that can be downloaded onto your mobile device) or the [Feed Cost Calculator](#) (available [online](#)).

The feeding recommendations in the following tables are a guide only and are based on supplementing ewes with barley containing 12.5 megajoules of metabolisable energy (12.5 ME) and 11% protein.

Small changes in pasture height and digestibility have a big impact, especially in late pregnancy and for lactating animals. Also, natural variation between sheep means that responses to feed levels will differ.

It's important to monitor pastures and livestock condition regularly and adjust the diet accordingly.

Merino ewes – 90 days pregnant

Table 1: Merino ewes, 90 days pregnant - DAILY weight gain/loss (g/hd/day)

Kg of barley fed/day	Single			Twins		
	Pasture height (green)			Pasture height (green)		
	1cm	2cm	3cm	1cm	2cm	3cm
0	-50	41	73	-79	28	60
0.1	-40			-69		
0.2	-12			-41		
0.3	6			-14		
0.4	19			5		
0.5	33			18		

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to maintain ewe condition with varying levels of pasture.
- Providing that the pasture is of high quality (75% digestibility, 15% clover), ewes only need around 2cm (700kg DM/ha) to maintain body condition at Day 90 of pregnancy.

Assumptions:

- o Merino ewes joined to Merino rams. Ewes have a mature weight of 55kg (no gut fill, fleece-free liveweight).
- o Ewes are grazing a short green pasture at 75% digestibility, 15% legume with pasture height varying from 1cm - 3cm. Paddock contains no dead pasture (i.e. there is no carry over dead feed).
- o Figures in the above table indicate likely weight gain/loss with varying levels of barley (12.5MJ ME; 11% protein).
- o These rates do not take wastage into account OR the impact of cold weather.
- o Pasture height/ herbage mass figures used in Grazfeed:
 - 1cm = 400kg DM/ha
 - 2cm = 700kg DM/ha
 - 3cm = 1100kg DM/ha

1st X ewes – 90 days pregnantTable 2: 1st X ewes, 90 days pregnant - DAILY weight gain/loss (g/hd/day)

Kg of barley fed/day	Single			Twins		
	Pasture height (green)			Pasture height (green)		
	1cm	2cm	3cm	1cm	2cm	3cm
0	-38	70	119	-76	55	103
0.1	-34			-72		
0.2	-6			-44		
0.3	10			-17		
0.4	23			5		
0.5	36			18		

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to maintain ewe condition with varying levels of pasture.
- Providing that the pasture is of high quality (75% digestibility, 15% clover), ewes only need around 2cm (700kg DM/ha) to maintain body condition at Day 90 of pregnancy.

Assumptions:

- o 1st X ewes joined to Terminal rams
- o Ewes have a mature weight of 75kg (no gut fill, fleece-free liveweight).
- o Ewes are grazing a short green pasture at 75% digestibility, 15% legume with pasture height varying from 1cm - 3cm. Paddock contains no dead pasture (i.e. there is no carry over dead feed).
- o Figures in the above table indicate likely weight gain/loss with varying levels of barley (12.5MJ ME; 11% protein).
- o These rates do not take wastage into account OR the impact of cold weather.
- o Pasture height/ herbage mass figures used in Grazfeed:
 - 1cm = 400kg DM/ha
 - 2cm = 700kg DM/ha
 - 3cm = 1100kg DM/ha

Merino ewes - late pregnancy

Table 3: Merino ewes - DAILY weight gain/loss (g/hd/day); 120 days pregnant

Kg of barley fed/day	Single			Twins		
	Pasture height (green)			Pasture height (green)		
	1cm	2cm	3cm	1cm	2cm	3cm
0	-118	11	43	-206	-41	12
0.1	-108			-195	-40	
0.2	-81			-162	-21	
0.3	-54			-130	-3	
0.4	-27			-101	6	
0.5	0			-73	16	
0.6	12			-46		
0.7				-19		
0.8				2		

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to maintain ewe condition with varying levels of pasture.
- Nutritional requirements increase considerably in the last month of pregnancy, especially for twin-bearing ewes. Gradually increase the amount of feed, either through pasture or rate of supplement provided, to match increasing demand (again, especially for twin-bearing ewes).

Assumptions:

- o Merino ewes joined to Merino rams. Ewes have a mature weight of 55kg (no gut fill, fleece-free liveweight).
- o Ewes are grazing a short green pasture at 75% digestibility, 15% legume with pasture height varying from 1cm - 3cm. Paddock contains no dead pasture (i.e. there is no carry over dead feed).
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- o These rates do not take wastage into account OR the impact of cold weather.
- o Pasture height/ herbage mass figures used in Grazfeed:
 - 1cm = 400kg DM/ha
 - 2cm = 700kg DM/ha
 - 3cm = 1100kg DM/ha

1st X ewes - late pregnancy

Table 4: 1st X ewes - DAILY weight gain/loss (g/hd/day); 120 days pregnant

Kg of barley fed/day	Single			Twins		
	Pasture height (green)			Pasture height (green)		
	1cm	2cm	3cm	1cm	2cm	3cm
0	-118	11	43	-206	-41	12
0.1	-108			-195	-40	
0.2	-81			-162	-21	
0.3	-54			-130	-3	
0.4	-27			-101	6	
0.5	0			-73	16	
0.6	12			-46		
0.7				-19		
0.8				2		

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to maintain ewe condition with varying levels of pasture.
- Nutritional requirements increase considerably in the last month of pregnancy, especially for twin-bearing ewes. Gradually increase the amount of feed, either through pasture or rate of supplement provided, to match increasing demand (again, especially for twin-bearing ewes).

Assumptions:

- o 1st X ewes joined to Terminal rams
- o Ewes have a mature weight of 75kg (no gut fill, fleece-free liveweight).
- o Ewes are grazing a short green pasture at 75% digestibility, 15% legume with pasture height varying from 1cm - 3cm. Paddock contains no dead pasture (i.e. there is no carry over dead feed).
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- o These rates do not take wastage into account OR the impact of cold weather.
- o Pasture height/ herbage mass figures used in Grazfeed:
 - 1cm = 400kg DM/ha
 - 2cm = 700kg DM/ha
 - 3cm = 1100kg DM/ha

Merino ewes - early lactation with single lamb

Table 5: Merino ewe with single lamb at foot – Ewe and lamb performance, 14 days into lambing

Kg of barley fed/day	Pasture height (green component)					
	1cm		2cm		3cm	
	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)
0	-132	100	-47	212	7	240
0.1	-131	115	-49	205		
0.2	-120	131	-39	213		
0.3	-108	146	-29	221		
0.4	-96	162	-18	227		
0.5	-85	177	-7	232		
0.6	-73	192				
0.7	-61	207				

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to drive lactation and **achieve 80-85% of growth potential** in the lamb.
- Where ewes are lambing down on **1cm of green pasture** (i.e. 400kg – 500kg DM/ha):
 - **add additional protein** into the diet. This could be achieved by feeding 20 – 30% lupin grain with the barley, or using another high energy, high protein feed such as Dried Distillers Grain.
 - provide a small amount of good quality hay - feed **1kg/hd/week** in addition to the grain.
- The amount you feed will be a function of current ewe condition – higher feeding rates may be required if ewes are in lighter condition as there is less capacity to ‘milk off her back’.
- **Daily feeding or use of self-feeders** is recommended in early lactation so that ewes receive a constant supply of feed. Self feeders also help to reduce mis-mothering. If using self feeders it’s important to match the number of self feeders to the size of the mob.

Assumptions:

- o Merino ewes joined to Merino rams. Ewes have a mature weight of 55kg (no gut fill, fleece-free liveweight).
- o Ewes are grazing a short green pasture at 75% digestibility, 15% legume with pasture height varying from 1cm - 3cm. Paddock contains no dead pasture (i.e. there is no carry over dead feed).
- o Ewes are in Fat Score 3 at the point of lambing.
- o Figures in the above table indicate likely weight gain/loss with varying levels of barley (12.5MJ ME; 11% protein).
- o These rates do not take wastage into account OR the impact of cold weather.
- o Pasture height/ herbage mass figures used in Grazfeed:
 - 1cm = 400kg DM/ha
 - 2cm = 700kg DM/ha
 - 3cm = 1100kg DM/ha

Merino ewes - early lactation with twin lambs

Table 6: Merino ewe with twin lambs at foot – Ewe and lamb performance, 14 days into lambing

Kg of barley fed/day	Pasture height (green component)					
	1cm		2cm		3cm	
	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)
0	-226	64	-138	139	-82	165
0.1	-226	67	-140	134	-82	165
0.2	-215	77	-130	138	-74	167
0.3	-203	86	-121	142		
0.4	-192	95	-111	147		
0.5	-180	104	-102	151		
0.6	-169	113	-92	155		
0.7	-158	122	-82	158		
0.8	-146	131	-72	162		
0.9	-135	140				
1	-124	149				

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to drive lactation and **achieve 80-85% of growth potential** in the lamb.
- Where ewes are lambing down on **1cm of green pasture** (i.e. 400kg – 500kg DM/ha):
 - **add additional protein** into the diet. This could be achieved by feeding 20 – 30% lupin grain with the barley, or using another high energy, high protein feed such as Dried Distillers Grain.
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1st X ewes - early lactation with single lamb

Table 7: 1st X ewe with single lamb at foot – Ewe and lamb performance, 14 days into lambing

Kg of barley fed/day	Pasture height (green component)					
	1cm		2cm		3cm	
	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)
0	-193	210	-63	352	21	383
0.1	-190	212				
0.2	-185	229				
0.3	-173	245				
0.4	-162	261				
0.5	-150	278				
0.6	-139	295				
0.7	-127	311				
0.8	-116	327				
0.9	-101	338				
1.0	-85	344				

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to drive lactation and **achieve 80-85% of growth potential** in the lamb.
- Where ewes are lambing down on **1cm of green pasture** (i.e. 400kg – 500kg DM/ha):
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1st X ewes - early lactation with twin lambsTable 8: 1st X ewe with twin lambs at foot - Lambing performance at 14 days into lambing

Kg of barley fed/day	Pasture height (green component)					
	1cm		2cm		3cm	
	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)	Ewe weight gain/loss (g/hd/day)	Lamb growth rate (g/hd/day)
0	-339	137	-221	245	-135	273
0.1	-334	137				
0.2	-333	148				
0.3	-323	158				
0.4	-312	168				
0.5	-300	178				
0.6	-288	187				
0.7	-277	196				
0.8	-266	205				
0.9	-254	214				
1.0	-243	223				
1.1	-232	233				
1.2	-221	242				

Key points:

- The green shaded numbers in the table provide a guide to the amount of barley required (kg/hd/day) to drive lactation and **achieve 80-85% of growth potential** in the lamb.
- Where ewes are lambing down on **1cm of green pasture** (i.e. 400kg – 500kg DM/ha):
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More information

For further information contact your Local Land Services Livestock Officer or District Veterinarian.

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