

Managing Animal Nutrition within the Seedstock Operation

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Overview

- My Role
- Seedstock Nutrition – the difference
- Nutrition Management & Feedstuffs
- Targets/Requirements/Timelines
- Creating a Sale Ram plan
- The individual farm

My Role

- To interpret research .
- To understand how best to implement research at a farm level.
- To aim for incremental improvement of the farm business
- To find the best management fit to suit individual needs

For example

Early exposure of Ram-Lambs to Ewes

Changes Ram Behaviour At the U.S. Sheep Experiment Station near Dubois, ID about 15 to 20% of ram lambs show no interest in breeding ewes in heat. Of those about half or 6 to 8% prefer to breed other males rather than females. These rams are sometimes referred to as non-breeders. Interestingly, when researchers put non-breeder rams into a typical breeding herd, they bred as many ewes as rams labelled as low-libido rams but not as many as high libido rams. Researchers at the sheep station wondered if early exposure to cycling ewes would change the behaviour of non-breeder rams. Researchers exposed ram lambs just after puberty (7 to 8 months of age) to cycling ewes for 17 days. Another group of ram lambs were not exposed to cycling ewes. At the time of breeding when lambs were 17 to 18 months of age, rams in the early exposure group engaged in more courtship behaviour, mounts and ejaculations than rams without early exposure to ewes. Also, the percentage of non-breeders in the early exposure group was only 1%.

Seedstock Nutrition – the difference

- More than performance alone.
- The phenotype needs to back up the genotype
- Why? We are not completely rational beings
- Expectations – it needs to look like what we think it should, this can be very individual.
- The animal not only needs to look good , it needs to perform and last – just like every good product.
- Often we are on show through out the year, a first impression may be a lasting impression.

What does this amount to?

- In the stud game it is not just performance, it is about **MARKETING** the product as well.
- Remember we are in sales, just like every other small business, numbers alone may not be the defining point, nutrition alone may not be the defining point, presentation alone may not be the defining point, but add them all up and it starts to make a big difference.

We need to like what we see!



It is in our make up.





Feeding should not comprise longevity.

There is no escaping the fact presentation counts, but we do not want that to come at the expense of the ability of the individual to breed on.



Nutritional management – How can it help or hinder success?

- From a commercial producers view there are number of excellent projects that focus on management of the ewe flock (Sheep CRC), grazing strategies (Prograze) and benchmarking that allow producers to successfully improve \$/ha generated.
- All these practices are very relevant to the sheep seedstock industry, but there are also some differences in the focus due to the end product – that is the sale ram.
- However the feedstuffs are the same it is just how we apply them that may be different....

Feedstuffs

- We need to have some knowledge of the basic groups of feedstuffs we are likely to encounter on farm;
 - Concentrates
 - Forages
 - Minerals
 - Feed Additives

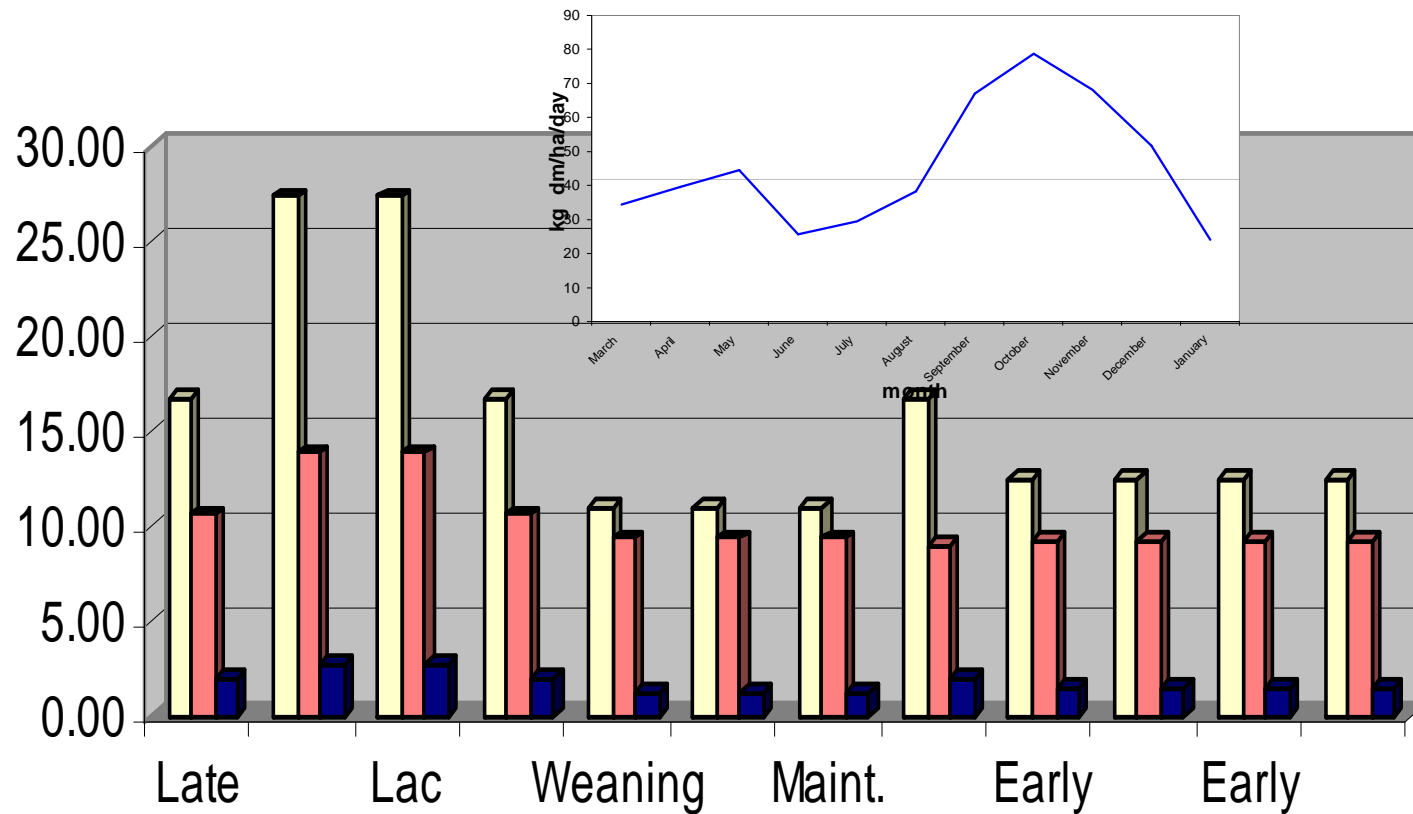
Feedstuffs - Concentrates

- Cereal Grains, Pulses, Protein Meals
- What are the nutritional specifications?
- What grains are best fed to what class of animal both economically and nutritionally?
- What can go wrong, what are the nutritional risks, short term and long term?
- What facilities and equipment do I have on farm?
- Time, how much do I have?

Feedstuffs - Forages

- What is the expected quality of home grown feed?
- Can I influence this?
 - Grazing Management
 - Fertiliser Program
 - Pasture Varieties
 - Variable Rate Treatment
 - Short and Long Term Plans for the business
 - Conservation strategies
 - Nutritional knowledge, understanding forage quality on hand

80kg Ewe 150% Lambing Rate - Autumn Lambing



Met. Energy MJ/day
 Crude Protein %
 DMI kg/day

Does this mean I have to change my lambing dates?

- In short, No, but a changing in thinking may be what is required...
- Plan ahead, know requirements, seasonal region risk, secure / store required feeds well ahead of time
- Explore more optimum lambing date based on local climatic conditions
- Consider forage options, can I grow more when I really need it ?

Not all grasses were created
equal!!!



Using varieties to match needs

Relative Forage Ratings – Annual ryegrass trials 2006 - 2009

Cultivar	ploidy	winter	spring	total	Flowering	ME	CP	NDF	Extra Meat	Extra Milk	no. of
Early maturity		yield	yield	yield	Tetila = 0	MJ/kg DM	%	%	Value	Value	trials
Sungrazer T	tetraploid	99	106	103	-4 days						7
Surrey	diploid	88	100	95	-2 days						1
Grassmax	diploid	105	105	104	-1 days						4
Missile	diploid	96	103	101	0						2
Tetila	tetraploid	100	100	100	0	10.53	23.95	48.67	\$0	\$0	19
Maximus	tetraploid	102	110	106	0	10.52	25.22	49.67	-\$6	-\$7	8
Andy	diploid	104	106	104	+1 days						2
SF Flyer	diploid	106	105	106	+1 days	10.75	25.07	46.00	+\$160	+\$326	23
SF Tetra Star	tetraploid	106	111	107	?days						3
SF CatapuIT	tetraploid	106	112	109	+2 days	10.73	24.65	46.00	+\$165	+\$347	13
SF Sprinter	tetraploid	111	111	113	+4 days	10.68	26.12	48.33	+\$129	+\$247	22
Mid maturity											
Pronto	diploid	94	104	100	+6 days						21
Abundant	tetraploid	106	115	110	+6 days						6
Tama	tetraploid	104	110	108	+7 days	10.80	25.80	48.83	+\$115	+\$213	4
Winter Star	tetraploid	98	114	108	+8 days						2
T Rex	tetraploid	101	105	104	+8 days						10
Winter Star II	tetraploid	103	116	111	+8 days	10.75	23.52	47.83	+\$134	+\$273	23
SF Adrenalin	tetraploid	111	119	116	+9 days	11.07	25.80	45.67	+\$312	+\$632	23
SF Sultan	diploid	109	122	115	+10 days	10.90	27.35	47.67	+\$220	+\$423	23
Late maturity											
SF Speedyl	tetraploid	111	121	116	+12 days	11.05	27.35	46.33	+\$293	+\$584	17

*relative ratings have been undertaken by comparing all yields as a percentage of control cultivar Tetila

*feed quality data undertaken prior to each of 6 grazings July - December 2008 at Seed Force's Gundagai research base

*feed quality analysis undertaken by NSW DPI Feed Quality Service at Wagga Wagga

*meat and milk values estimated using Seed Force's Animal Performance Calculator™ based on the following assumptions:

*Meat at 65% feed utilisation, based on 300kg steer with 44MJ for maintenance and 45MJ/kg livg at \$1.70/kg

*Milk at 75% feed utilisation, based on 600kg cow with 100MJ for maintenance/exercise/pregnancy and 5.5MJ/litre at \$0.35 per litre

*all growing costs and retail seed price by variety included in the Gross Margin analysis

*meat and milk values are differences in Gross Margins relative to control cultivar Tetila

Role of minerals in flock performance

Element	Function	Manifestation of deficiency		Likely occurrence of deficiency
		Severe	Marginal ^a	
Calcium	Mineralisation of bones and teeth. Nerve conduction. Muscle contraction. Blood clotting. Hormone secretion. Message transmission.	Lameness and stiffness of gait. Enlarged painful joints. Malformed teeth and jaws. Milk fever, including muscle tremors, general inertia, inappetance and death. ^b	Reduced growth. Reduced milk production.	High grain diet especially during drought. Increased requirements in lactation. Low calcium, acid soils in the tropics. Low vitamin D.
Phosphorus	Bone formation. Energy metabolism. Component of DNA, RNA. Acid-base balance.	Softening of bones, lameness. Depressed appetite. Abnormal appetite causing botulism.	Reduced growth. Reduced reproductive rates.	Low soil phosphorus. Prolonged dry period with dead pasture.
Sodium	Maintenance of osmotic pressure. Acid-base balance. Water metabolism. Rumen microbial growth.	Abnormal appetite, licking of soil. Depressed appetite. Loss of weight. Decreased milk production.	Abnormal appetite (pica). Reduced growth. Decreased milk production.	Tropical or dry arid climates. Rapidly growing or lactating sheep. High grain diets.
Sulfur	Component of amino acids methionine and cysteine. Component of biotin and thiamine. Sulfated polysaccharides in cartilage and joint lubrication. Removal and/or storage of toxic elements and compounds.	Reduced feed intake. Reduced dry matter digestibility. Reduced production of sulfur amino acids by rumen microbes. Possible accumulation of copper in animal tissues and copper toxicity.	Reduced feed intake. Reduced wool growth.	Low sulfur soils. Dry pastures.
Cobalt	Essential for the production of vitamin B ₁₂ by rumen microbes. Use of volatile fatty acids for energy (as vitamin B ₁₂). Recycling of methionine (as vitamin B ₁₂).	Loss of appetite. Loss of weight, reduced wool growth. Watery discharge from eyes. Anaemia. Poor reproductive performance. White (fatty) liver disease.	Reduced growth/ unthriftiness. Reduced wool production.	Occurs under range of soils and climatic conditions. Sandy or volcanic soils. Green lush pasture. Young growing or reproducing sheep.

MINERAL DEFICIENCY PROBLEMS IN GRAZING SHEEP: AN OVERVIEW – D.G. MASTERS

Role of minerals in flock performance

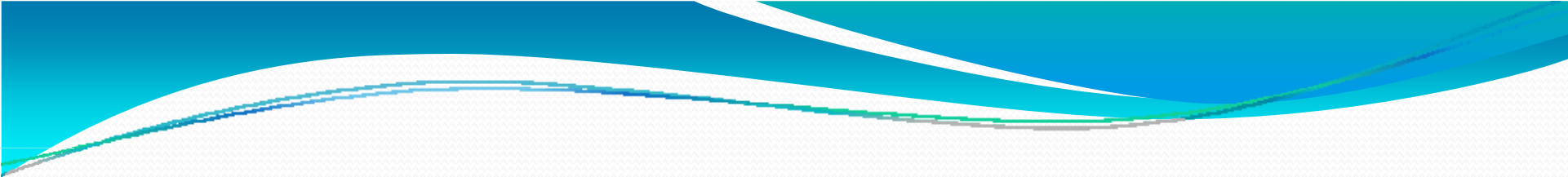
Element	Function	Manifestation of deficiency		Likely occurrence of deficiency
		Severe	Marginal ^a	
Magnesium	Cofactor in many enzymes. Nerve conduction. Muscle contraction.	Tetany as indicated by muscle twitching, staggers and convulsions. High mortality. Depressed appetite.	Possible loss of condition. Possible reduced milk production.	Green pasture. Often but not always associated with lactation. High potassium, low sodium.
Copper	Mobilisation and transport of iron in the body. Collagen cross-linking in bone and elastic tissue. Pigmentation of hair and wool. Maintenance of myelin sheath around nervous tissue. Crimp formation in wool. Antioxidant.	Enzootic ataxia (swayback) as paralysis or staggering gait in newborn lambs. Bone fragility. Anaemia. Depigmentation of wool. Loss of crimp and tensile strength of wool. Reproductive disorders.		Leached low copper soils. Peat soils high in molybdenum. Use of molybdenum fertilizer.
Iodine	Component of thyroid hormones that are essential for energy and protein metabolism and for foetal growth and development.	Enlarged thyroid gland (goitre) inability to withstand cold stress. Reduced foetal size and retarded brain development. A range of developmental disorders, wool loss.	Increased lamb mortality and thyroid size relative to body size. Small depression in wool and milk production.	Low soil iodine. Recent glaciation. Mountainous areas. Long distance from the sea. Low rainfall. Goitrogens in herbage.
Selenium	Detoxification of peroxides. Activation of thyroid hormone.	Lesions in heart and skeletal muscle (nutritional myopathy or white muscle disease). Increased mortality. Infertility in ewes. Induced thyroid hormone deficiency.	Reduced growth/illthrift. Reduced wool growth.	Green pasture. Low selenium in soil. High rainfall. Young growing or reproducing sheep. Low vitamin E.
Zinc	Cofactor in a large number of enzymes. DNA and protein synthesis.	Reduced feed intake. Reduced growth rates. Reduced wool growth and loss of crimp. Alopecia, parakeratosis.	Reduced growth rate. Reduced reproductive performance.	Low zinc soils. Dry pasture.

^a Marginal signs may also be seen during severe deficiency.

^b Acute deficiency resulting from a rapid loss of calcium during milk letdown.

Feed Additives – specialist situations

- Yeasts – Levucell SC
- Rumen Buffers – Acid Buf
- Rumen Modifiers – Bovatec
- Organic (Chelated) Trace Minerals
- Mycotoxin Binders
- Electrolytes
- Protected Fats
- Protected Amino Acids
- Protected B group vitamins



We need to understand what are our feedstuff options (to meet **requirements**), how they can help or hinder (reaching our **targets**) and how long to we need to get there (**timeline**).

Targets/Requirements/Timelines

- **Targets** – what are required or acceptable weight for age targets. What condition score when, what visual description
- **Requirements** – Dry matter intake potential, protein, energy, mineral and vitamin requirements, what may be limiting growth potential, fertility etc.
- **Timelines** – How long have I got, plan well ahead of time, execute plans as agreed.

Creating a Sale Ram plan

It all begins with the planned mating of a ram and a ewe.



Creating a Sale Ram plan

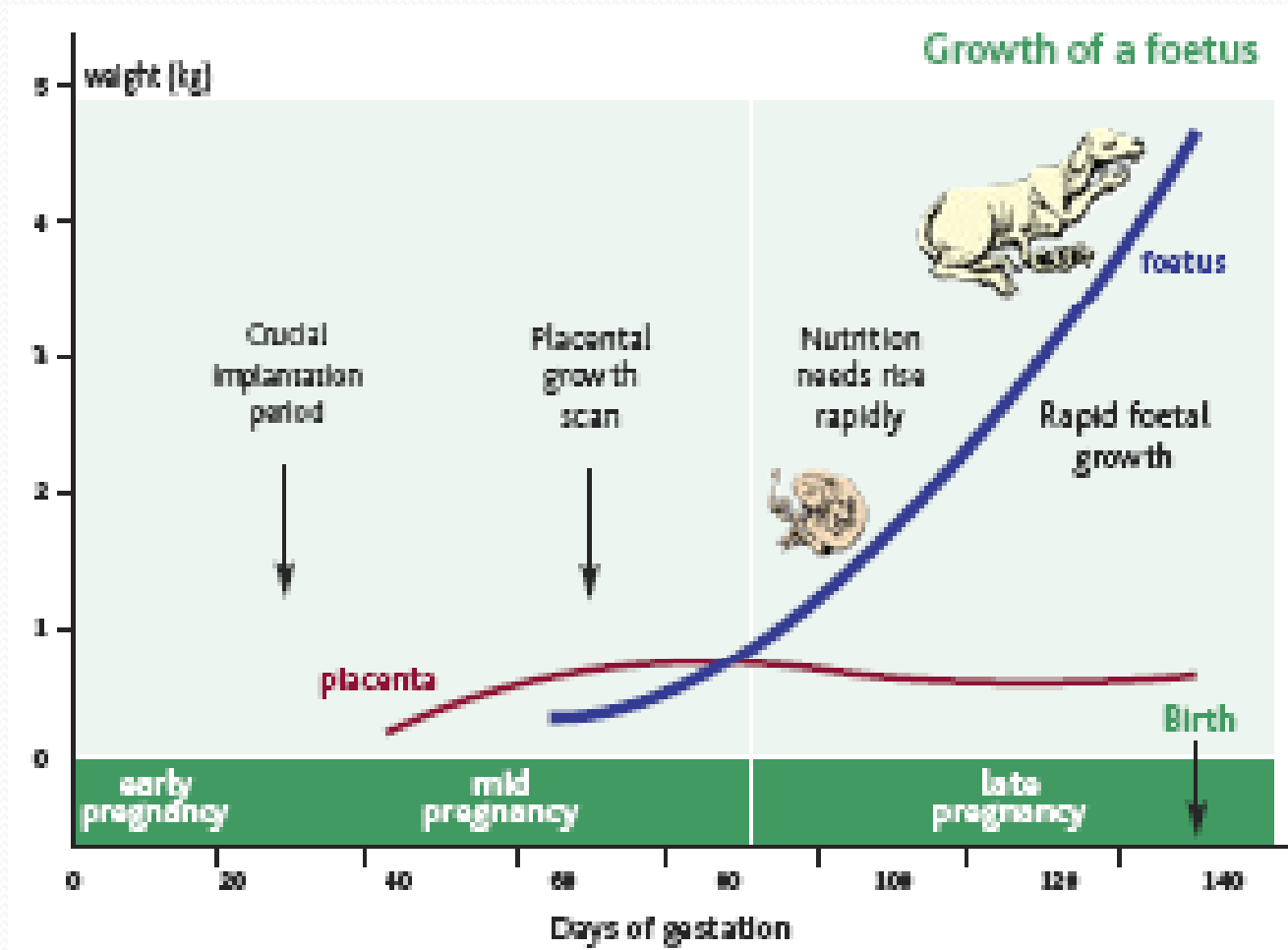
- **Flushing/Conception/Early & Mid Pregnancy**

Aim:

- To achieve as many pregnancies as possible.
- To improve lamb survival rates.

Influencing nutritional factors:

- Poor feeding or body condition before mating increases embryo loss and barrenness.
- Increasing nutrition with forage or concentrates before breeding – increases ovulation rate in ewes and sperm production in rams
- High protein supply prior to joining increases ovulation rate.
- Excess protein (high BUN's) after joining may cause early embryonic losses.
- Feed composition matters. Selenium deficiency and excessive phosphorus increase embryo loss; as does grazing ewes in early pregnancy on red clover, kale or rape (high oestrogen levels).
- High feed intake in early pregnancy can also lower conception rates.
- Feeding specific LCFA (fatty acids) are known to increase progesterone production, follicle size, CL size in cattle.



Creating a Sale Ram plan

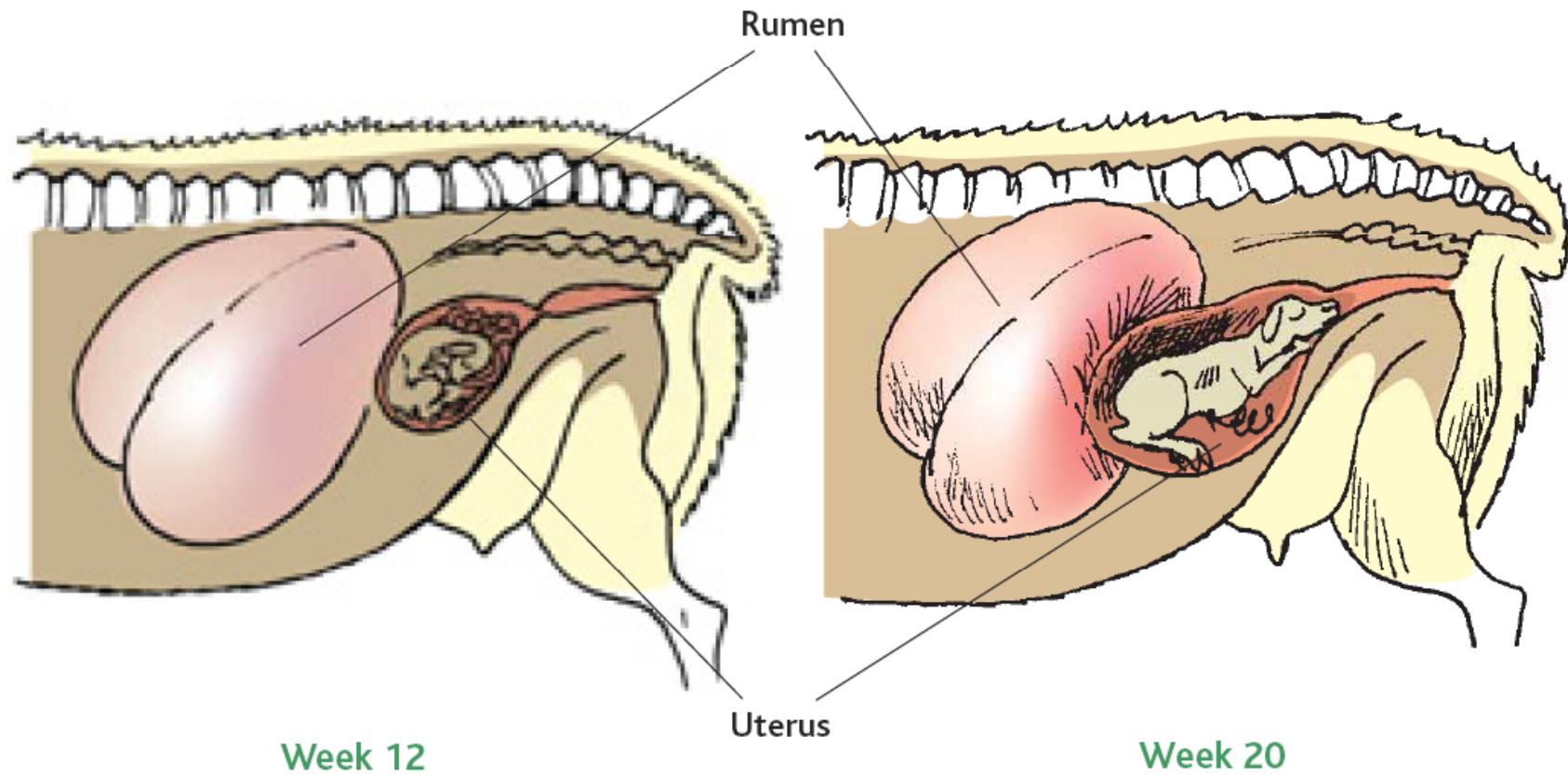
- **Pre-Lambing (last 6 weeks)**

Aim:

- About 70% of fetal growth during this phase, thus this is the most critical period!
- Need to be supplying additional energy to accommodate for rapid foetus growth and set up lactation.

Influencing nutritional factors:

- Poor nutrition at this time will result in lighter birth weights of the lambs, lower energy reserves of newborns, directly impacting survival,
- Adequate nutrition is needed as the placenta develops.
- Also, nutrition during this phase can influence milk production after parturition.
- Nutrition is critical as the ewe's energy and protein requirements increase rapidly – more than doubling for ewes with twins. However, as lambs grow the ewe's ability to eat bulk reduces.
- Magnesium levels need to be increased to reduce metabolic disease risk.



Creating a Sale Ram plan

- **Lambing/Early Lactation**

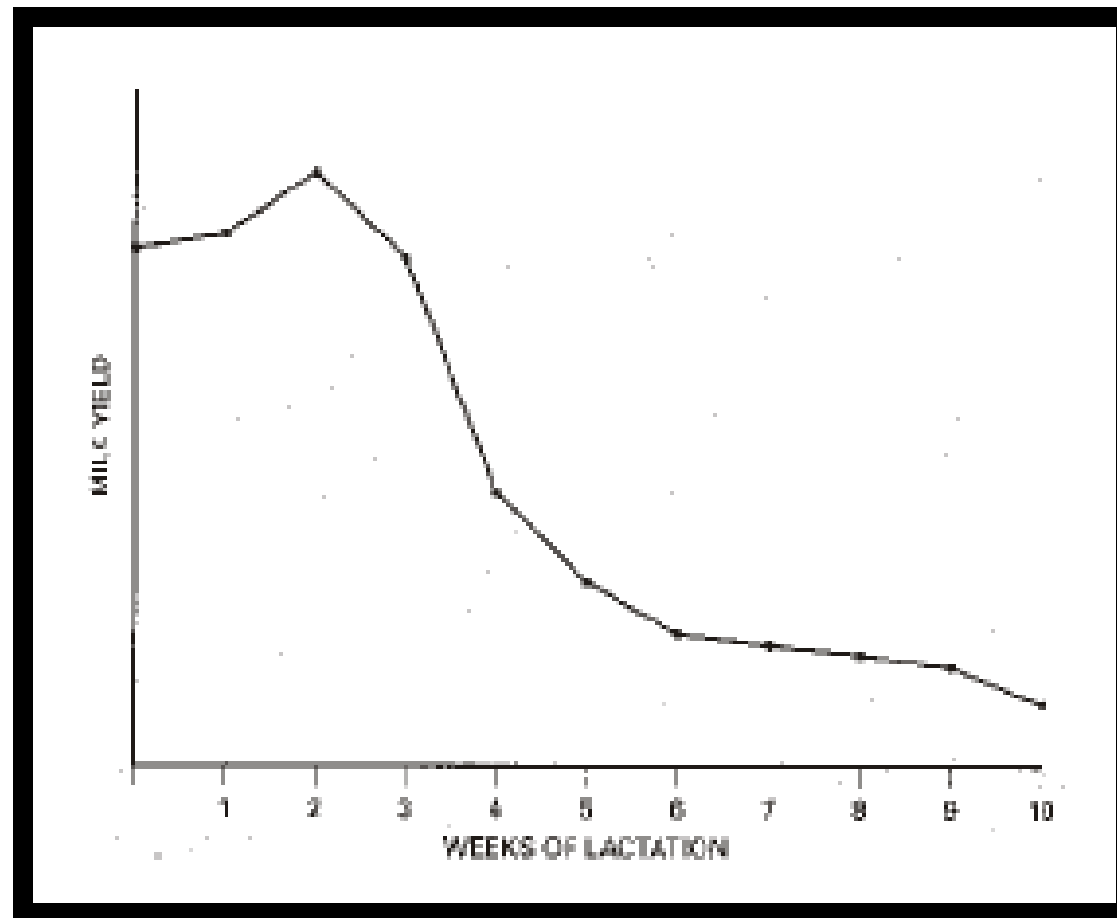
Aim:

- Supply adequate energy to meet increased demands - Usually 2 to 3 times greater during lactation than during maintenance.
- Increase Peak Milk production - Peaks early (2 to 3 wks after lambing) and then declines.

Influencing nutritional factors:

- Forage quantity and quality offered post lambing.
- Lower BCS will reduce milk yield.
- May be more efficient to feed the lamb directly than to feed the ewe to feed the lamb beyond 8 to 10 weeks.
- Adequate calcium (2gm/L for milk production)

Ewes milk production (Kott, 1998)



Creating a Sale Ram plan

- **Weaning**

Aim:

- Keep ram lambs growing at a steady rate. Hold in a bloomy/fresh condition.
- Encourage good skeletal development.
- Minimise stress/setbacks.

Influencing nutritional factors:

- Feed high quality forages with high protein, high ME and lower NDF values.
- Use grain legumes or protein meals (limit NPN fed) when weaning lambs on to low quality feeds.
- Ensure adequate supply of macro minerals ie Calcium.
- Avoid the feeding of cereal grains as straight concentrate sources.

Creating a Sale Ram plan

- **Growing Out**

Aim:

- Ensure rams safely meet mature weight targets ahead of time.
- Rams carry adequate body condition ready for joining (can lose up to 15% over the season).
- 50 to 60 percent of mature weight at 5-7 months (puberty).

Influencing nutritional factors:

- Aim to have rams entering spring period in forward condition so that the majority of gain is made from pasture minimising the need for additional energy supplements.
- The onset of puberty is affected by breed and nutrition. Ram lambs on a low plane of nutrition may not reach puberty until they are 12 months old.

Creating a Sale Ram plan

- **Preparation for Sale and Breeding**

Aim:

- Avoid the adverse affects of excessive fatness:
 - Reduced fertility from overheating of the testicles;
 - Lack of aerobic fitness and mating dexterity;
 - Lameness – due to cartilage damage during rapid growth or laminitis;
 - Increased susceptibility to heat stress;
 - Unnecessary feed costs;

Influencing nutritional factors:

- Feed high quality protein supplement(16% crude protein) for 6–8 weeks prior to improve testicle tone and boost semen production.
- Allow adequate time to ‘let down’ rams (up to 7 weeks may be required to return to a fertile state) after feeding.
- Feeding programs for show and sale should be a steady process.
- Nutrition can have a dramatic effect on testicle size. Research has shown that improving nutritional intake during the two-month period before breeding can increase testicle size and subsequent sperm production up to 100 percent.

Individual Farms

- Know your market and clients, what do they expect?
- Understand what resources you have and best to allocate them.
- Aim to manage the ewe flock as productively and possible – more weaned lambs more selection pressure, better sale rams.
- Realise that a nutrition plan is not a one size fits all process and that your own personal goals should be met to make the business one that brings out the passion in you. You will do a better job everytime!

Summary

- **Seedstock Nutrition** – understand the difference and manage your enterprise accordingly.
- **Nutrition Management & Feed Groups** – Consider seeking nutritional advice to determine how best allocate resources and avoid any unnecessary pitfalls. Remember you are marketing the animal.
- **Targets/Requirements/Timelines** - Gather knowledge about your market and plan when and how to get there.
- **Creating a Sale Ram plan** – It is a long process from start to finish and these animals are often the most visible part of the operation to outsiders to judge you on.
- **The individual farm** – Find the formula that best suits you and your farm to deliver the best product possible

References

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Engstrom 2010

Sheep CRC 2010

Sheep Production Handbook

Masters 1996

EBLEX 2008

Behave Outreach Program 2008

Seedforce 2011



- **Animal Nutrition, Health & Feeds**

HFS CHAMPION Sheep Meal

HFS BOOST Sheep Meal

HFS 75 Sheep Mineral Concentrate Pellet

HFS 150 Sheep Protein Balancer Pellet

- **Pasture and Forage Crop Management**

- **Animal Management Supplies**