

### FEED MANAGEMENT BUDGET

R R Fraser, Farm Management Consultant, Waipukurau  
J Stantiall, Farm Management Consultant, Levin

---

This workshop aims to give an overview of deer feed planning and feed management. Techniques to assist in determining whether the level of nutrition is a causative factor in any immediate animal health problem and the use of feed profiling to assist in the solving of longer term feeding problems are discussed.

#### Steps to set up a grazing system

- # Establish production targets.
- # Calculate Liveweights and liveweight gain profiles to achieve these targets.
- # Estimate feed supply profile. (a) Opening Pasture Cover  
(b) Pasture Growth Rates  
(c) Supplements
- # Feed Profile to match Feed & Demand Supply.
- # Formulate grazing plan to ensure:
  - (a) Daily Feed Requirements are met
  - (b) Grazing levels (RDM's-post grazing Dry Matter/ha) are adequate to achieve desired intakes.
- # Monitor progress - both feed supply and liveweight gains and adjust where necessary.

#### FEED MANAGEMENT PROJECT

**Situation:** newly established deer farm in the first year of operation with venison stag unit. Farms 210 Weaner stags with the aim of killing these at 12-15 months of age.

Stags purchased April at 45 kgs L.Wt.  
Liveweight 1.6.88 = 50kgs.  
Total farm area = 300 ha.  
Area deer fenced = 20 ha.  
Stocking rate = 10 wnr. stags/ha  
End of June major crisis = yersiniosis outbreak - 5% deaths

**Objective:** Solve the problem

What feed management options are open to this farmer to solve the:

- \* short term feed situation (i.e. halt the deaths)
- \* medium term feed situation (i.e. get through the remainder of winter)
- \* long term situation (i.e. for future years).

**Basic details:** Deer farm sub-divided into 10 main grazing paddocks of equal size (2 ha).

Stags being break-fed behind electric fence @ 2 days/ha.

Currently grazing Paddock 10 (1200 kg/DM/ha. pre-grazing) and due to be shifted to Paddock 1.

**Supplements**

on hand: 1.5 tonne maize. Currently feeding 0.25 kg maize/stag/day.

Av. liveweight: 50 kgs/stag, range 40-60 kg with 20% less than 45 kg.

**Feed cover as at 30.6.88**

**Pasture Growth Rates**

Feed cover as at 30.6.88		Pasture Growth Rates	
Paddock 1	1500 kgs DM/ha	Jan.	30 kgs DM/day
Paddock 2	1400 kgs DM/ha	Feb.	25 " "
Paddock 3	1200 kgs DM/ha	Mar.	30 " "
Paddock 4	1100 kgs DM/ha	Apr.	30 " "
Paddock 5	1000 kgs DM/ha	May	20 " "
Paddock 6	900 kgs DM/ha	June	15 " "
Paddock 7	800 kgs DM/ha	July	10 " "
Paddock 8	700 kgs DM/ha	Aug.	20 " "
Paddock 9	700 kgs DM/ha	Sept.	30 " "
Paddock 10	800 kgs DM/ha	Oct.	45 " "
		Nov.	45 " "
		Dec.	35 " "

**SHORT TERM SITUATION**

**Q. WHAT IS THE CURRENT FEEDING LEVEL?**

Paddock Area	=	2ha	being fed 1 ha/2 days
Pre-grazing DM	=	1200 kgs DM/ha	
Residual DM	=	(800)kgs DM/ha	
		-----	
Available DM (Pasture)		400 kgs DM/ha	
		-----	
Maize Supplement		110 kgs Dm	0.25 kg/hd*200 stags* 2 days
		-----	
Total Kgs DM for 2 days		510 kgs DM	
		-----	
KGsDM/Stag/Day		1.3 kgsDM/Stag/Day	
		=====	

**Actual Feed Requirements:**

- \* 1.54 kgsDM/Stag/Day for Maintenance
- \* 1.71 " " " for 50 gms/day LWgt.Gain
- \* 1.88 " " " for 100 " " " "

**Conclusions**

- \* Stags are being significantly underfed especially if weather conditions are wet and cold.
- \* Residual dry matter (RDM) is well below desired level to ensure adequate feed intakes (i.e. 2000-1500 kgsDM/ha).

**Q. HOW LONG SHOULD PADDOCK 1 BE GRAZED FOR?** assuming no maize is fed

<b>Feed Supply</b>	<b>Nil LWG</b>	<b>LWG 50g/day</b>	<b>LWG 100g/day</b>
Pre-Grazing DM	1500	1500	1500 kgsDM/ha
Residual DM	(900)	(1000)	(1200)kgsDM/ha
Available DM (Pasture)	600	500	300 kgsDM/ha
Paddock Area = 2 ha			
<b>Total Pasture DM available:</b>	<b>1200</b>	<b>1000</b>	<b>600 kgsDM</b>
<b>Feed Requirements</b>			
KgsDM/stag/day	1.54	1.71	1.88kg/stag/d.
<b>Total feed requirement</b>	<b>310</b>	<b>342</b>	<b>376kgDM/200stag/d.</b>
<b>Therefore Paddock 12 will last</b>	<b>3.9 days</b>	<b>2.9 days</b>	<b>1.6 days</b>

**Solution to Short Term Problem**

Because of the feed crisis situation options to rectify the problem are limited to:

- Increase pasture allowance and Residual Dry Matters, i.e. reduce grazing pressure. Split up mob into at least 2, preferably 3.
- Feed Supplement - must be high energy supplement, e.g. Maize, Barley, Deer Nuts.

**MEDIUM TERM SITUATION**

**Objective:** To get through the winter (end of September) with:

- \* no more deaths
- \* adequate weaner growth rates (50-100 g/day)
- \* minimum cost maximum profit

Current situation: Insufficient pasture feed on hand (1000 kgDM/ha) and Stags are too light.

Remainder of Winter desired minimum Liveweight Gain Profile:

	LWG/day	LWG/mth	End Mth. L. Wt.	Daily Feed Req.
	-----	-----	-----	-----
July	50 gms	1.5 kgs	51.5 kgs	1.7 kgsDM/ha/day
August	50	1.5	53.0	1.8
September	100	3.0	56.0	2.0

**OPTIONS**

- . Do nothing
- . Continue feeding supplement, e.g.: 0.75 kgs/stag/day maize
- . Expand deer farm area, e.g.:increase area by 10 ha. with low cost build up fencing
- . Apply nitrogen, e.g.: apply 20 kgN/ha, pasture response of 10 kgDM/kgN.
- . Sell proportion of stock, e.g.: sell 40 stags.

The following table gives a summary of the average pasture cover as a result of implementing the above options.

**End of Month Average Pasture Cover (KgsDM/ha)**

	July	Aug.	Sept.	Cost
Option	-----	-----	-----	-----
Do nothing	790	850	1150	-
Maize .75kg/hd/d. July	1040	1100	1400	\$1,125
Nitrogen 20kgN/ha.	1040	1200	1600	\$1,525
+ Maize .75kg/hd/day/July				
Expand Farm Area (10ha)	1050	1410	2160	\$2,500
+ Maize 0.3kg/hd July				
Sell 40 stags	892	1060	1480	?

**Points to note**

Nitrogen alone will not solve the immediate feed deficit. Maize had to be fed at .75kg/hd/day for July. Overall feed position improves more rapidly than if nitrogen is not applied.

Expanding farm area improves the situation significantly and reduces the need for maize in July.

Selling stags will not solve the problem in the short term and in the longer term insufficient stock would be available to cope with spring feed supply. The impact of the lower stocking level through this spring period on reduced profitability would be significant.

**LONG TERM SOLUTION**

**Target:** To produce 500 kg venison/ha from 200 stags on 20ha.  
Increase start liveweight to 50kg end of March.

**Target Liveweight Gain Profile & Feed Requirements**

Month	LWG/Day	End Month L.WT	Feed Req'd.
April	150 grams	55 kg	2.1 kgDM/stag/day
May	100	58	2.0 " "
June	100	61	2.1 " "
July	100	64	2.1 " "
August	100	67	2.2 " "
September	150	71	2.5 " "
October	270	79	2.9 " "
November	270	87	3.3 " "
December	250	94	3.4 " "

**Key Factors**

- \* Opening pasture cover
- \* Stocking rate
- \* Level of supplement fed.

The following table outlines the impact of how these factors influence the end of month average pasture cover.

**End of Month Average Pasture Cover (KgsDM/ha)**

	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>
<b>Opening Pasture Cover</b>					
1400 kgDM/ha	1430	1280	950	890	1040
1600 kgDM/ha	1630	1480	1150	1090	1240
2000 kgDM/ha	2030	1880	1550	1490	1640
<b>Reduce No's (190 stags)</b>	1690	1539	1240	1213	1401

Opening cover 1600 kgDM/ha

Significance of opening pasture on hand is evident. To achieve desired liveweight gains would require a minimum low point pasture cover of 1200-1400 kgDM/ha. To achieve this would need opening cover of 2000 kgDM/ha. If an opening pasture cover is 1600 kgDM/ha would need to feed additional supplement.

Note relatively small changes in stocking rate has a significant effect on low point pasture cover. In the above example a 5% decrease in stag numbers wintered lifts minimum pasture cover by approximately 100 kgDM/ha.

**GROWING STAG FEED REQUIREMENTS - KgsDM/head/day**

<b>Liveweight gain (grams/day)</b>	<b>Liveweight (kgs)</b>											
	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>100</b>	<b>110</b>	<b>120</b>	<b>130</b>	<b>140</b>	<b>150</b>
0	1.30	1.54	1.77	1.98	2.19	2.40	2.59	2.78	2.97	3.16	3.34	3.51
50	1.48	1.71	1.94	2.15	2.36	2.57	2.76	2.96	3.14	3.33	3.51	3.68
100	1.65	1.88	2.11	2.33	2.54	2.74	2.93	3.13	3.31	3.50	3.68	3.86
150	1.82	2.06	2.28	2.50	2.71	2.91	3.11	3.30	3.49	3.67	3.85	4.03
200	1.99	2.23	2.45	2.67	2.88	3.08	3.28	3.47	3.66	3.84	4.02	4.20
250	2.16	2.40	2.62	2.84	3.05	3.25	3.45	3.64	3.83	4.01	4.19	4.37
300	2.33	2.57	2.79	3.01	3.22	3.42	3.63	3.81	4.00	4.18	4.36	4.54
350	2.50	2.74	2.97	3.18	3.39	3.59	3.79	3.98	4.17	4.35	4.54	4.71

**NB:** 1 kg Dry Matter contains 10.8 Megajoules Metabolizable Energy.

**GROWING HIND FEED REQUIREMENTS - KgsDM/head/day**

**Liveweight (kgs)**

**Liveweight gain  
(grams/day)**

	40	50	60	70	80	90	100	110	120	130	140	150
0	1.30	1.54	1.77	1.98	2.19	2.40	2.59	2.78	2.97	3.16	3.34	3.51
50	1.56	1.80	2.02	2.24	2.45	2.65	2.85	3.04	3.23	3.41	3.59	3.77
100	1.81	2.05	2.28	2.49	2.70	2.90	3.10	3.29	3.48	3.66	3.85	4.02
150	2.07	2.31	2.53	2.75	2.96	3.16	3.36	3.55	3.74	3.92	4.10	4.28
200	2.32	2.56	2.79	3.00	3.21	3.41	3.61	3.80	3.99	4.17	4.35	4.53
250	2.58	2.81	3.04	3.26	3.47	3.67	3.87	4.06	4.24	4.43	4.61	4.79
300	2.83	3.07	3.29	3.51	3.72	3.92	4.12	4.31	4.50	4.68	4.86	5.04
350	3.09	3.32	3.55	3.77	3.97	4.18	4.37	4.57	4.75	4.94	5.12	5.30

**NB:** 1 kg Dry Matter contains 10.8 Megajoules Metabolizable Energy.

APPENDIX 1

Target Weight Guidelines

<u>Age/Month</u>	<u>Red</u>		<u>Fallow</u>	
	Hinds	Stags	Does	Bucks
Birth	8.5	9.5	4.5	5.0
Weaning/Mar	45	50	20	22
Ylgs/Dec	80	100	30	45
15mnths/Mar	85	105	35	50
2yr/Dec	100	130	40	60
Mixed aged	120	170	40-45	90-110

\*\*\*\*\*

APPENDIX 2

Feed Requirements: Red Deer (kg D.M./head/day)

	Autumn (65 days)	Winter (100 days)	Spring (100 days)	Summer (100 days)
<b>Hinds</b>				
3 - 15 mnths	1.5	1.8	2.5	2.6
15 - 27 mnths	2.2	2.5	2.3	4.2
older	2.2	2.9	2.5	4.2
<b>Stags</b>				
3 - 15 mnths	1.5	2.0	3.0	2.6
15 - 27 mnths	2.2	3.0	3.4	2.9
older	1.7	3.5	4.4	3.8

For Fallow Deer, halve the above requirements.

\*\*\*\*\*

APPENDIX 3

Energy Requirements: Red Deer (MJME/head/day)

	Autumn	Winter	Spring	Summer
<b>Hinds</b>				
3 - 15 mnths	15	18	22	21
15 - 27 mnths	23	20	23	45
older	23	22	24	47
<b>Stags</b>				
3 - 15 mnths	16	19	27	26
15 - 27 mnths	24	28	31	30
older	19	35	42	38

For Fallow Deer, halve the above requirements.

\*\*\*\*\*

APPENDIX 4

Protein Requirements: Red Deer (% of D.M. of feed)

(Estimates only, as guidelines)

Lactating hinds	16 - 18 % D.M.
Fast - growing young stock	14 - 16 % D.M.
Mature deer, - maintenance	10 - 12 % D.M.



APPENDIX 5

RESIDUAL DRY MATTER AND  
LIVEWEIGHT GAIN RESPONSES FOR RED DEER

		<u>Residual Dry Matter</u> (kg D.M./Ha)	<u>Liveweight</u> Gain (g/day)
Hinds	Winter	600	0
	Spring (early) (late)	800-1000	50-100
		1200	100
	Summer	1200-1500	Lactn + 130
	Autumn	1000-1200	50-100
Stags	Winter	600-800	0
	Spring	1200	250-300
	Summer	800-1000	200-250
	Autumn	1200	Loss
Young Stock	Winter/Early Spring	1200-1500	80 -100
	Late Spring/Summer	1500	250-300
	Autumn	1200	100

\*\*\*\*\*

APPENDIX 6

GUIDE TO PASTURE COVER ESTIMATION

				Height approx. mm.
				2500+ 150
Total			2000	100
Pasture		1500		75
Cover		1000		40
kg D.M./Ha.		500		0
-----				
	'bare', nothing available to sheep	- good length for sheep, deer	- good length for cattle	- too long, lodging, yellow at base of sward

Note: These figures and comments are a guide only.  
The skill of estimating pasture dry matter cover can only be acquired after practice. e.g.  
(i) by cutting & measuring frequently  
(ii) regular use of a measuring device (mechanical or electronic)  
(iii) regular practice with someone who is already proficient at estimation by eye.

APPENDIX 7

VALUES OF COMMON FEEDS

<u>FEED</u>	<u>% Dry Matter</u>	<u>M.E.</u> <u>Concentration</u> (MJME/kg D.M.)	<u>% Crude</u> <u>Protein</u> D.M.Basis	<u>Relative ME</u> <u>on D.M. Basis</u>
Leafy Pasture	15	10.8	21	1.00
Stalky pasture	30	8.0	10	0.76
Good quality hay	85	8.5	12	0.78
Poor quality hay	85	7.5	12	0.68
Pea vine hay	85	9.5	14	0.70
Silage	20	9.0	18	0.80
Choumollier	15	12.0	14	1.09
Swedes (whole plant)	11	13.0	12	1.26
Potatoes	24	12.6	8	1.19
Greenfeed oats	17	13.0	15	1.22
Barley	85	13.0	12	1.23
Maize	85	14.0	10	1.31
Oats	85	12.0	13	1.13
Peas	85	13.0	26	1.23
Deer nuts	85	11.0	10	1.07

**References:**

Residual Dry Matter levels: K.Milligan: Deer Branch NZVA Course 1 1984.

Energy Requirements for Deer: P.Fennesy: Aglink FPP257

Feed Values: Feed Budgeting Booklet,- ASD, MAF, 1976.

FEED AND PRODUCTION WORKSHOP

Cost of Supplements (Winter 1988)

Feed	Cost		Wintering Costs			
	c/kg D.M.	c/100 Energy units	(If supplements = 50% of diet)	55 kg weaner	95 kg hind	150 kg stag
Wilted silage	11	94		10	12	17
Meadow hay \$5/bale	33	412		43	54	76
Urea boosted grass \$460/t applied	10	85		9	11	16
DAP boosted grass \$560/t applied	31	265		30	40	49
Maize \$200/t	23	168		18	22	31
\$400/t	46	336		36	44	62
Deer Nuts \$500/t	58	490		50	64	90
Potatoes \$30/t	12	99		10	13	18
Barley \$280/t	33	250		29	33	46