

## Partial Budgeting Exercise: Alternative Diets for Ewes

### Objectives:

- 1) To gain additional experience with partial budgeting methods for a specific nutritional management question
- 2) To explore the sensitivity of partial budgeting results to changes in assumptions

### Situation:

A sheep producer in Conkal pueblo has 50 breeding ewes, and currently feeds them a diet based on improved pasture species (*Estrella* and *Taiwan* grasses). The ewes are also provided with energy supplementation in the form of cracked sorghum grain and ground soybean. In addition, the ewes receive 75 grams per day of calcium phosphate to ensure that their mineral needs are met. The producer has heard that citrus pulp is a nutritious feed for sheep that is much less costly than sorghum or soybeans. He has worked with an animal nutritionist who has access to the CNCPS Sheep model version. The nutritionist has formulated an alternative diet based on forage, citrus pulp and calcium phosphate that is roughly nutritionally equivalent to the current diet. However, the nutritionist does not have access to current price information, so the farmer is still trying to determine whether the effort involved in changing the diet will increase his profitability.

### Exercise:

- 1) Examine the attached information from the CNCPS Sheep model for the current and alternative diets and note any relevant differences in DMI, ME intake or nutrient balances.
- 2) Use the attached information on the reproductive parameters and the costs of feed to complete the appropriate cells in the Excel spreadsheet (“Base” and “Alternative” worksheets) provided. This spreadsheet incorporates costs for ewes and revenues from sales of finished animals and culled ewes. The measure of profitability used in this case is “net income over feed costs” which, as the name implies calculates total revenues and subtracts the cost of feed. In this case we will consider only the costs of feed for the ewes, because this is the only management change being considered. Note that the groups will receive different price information, so the outcome of the calculations may differ.
- 3) Examine the results for the two feeding strategies and make a recommendation to the farmer based on the calculated outcomes. Prepare to present your recommendation to the overall group, along with any other comments about the results and any factors that might be considered in a more complete analysis.

## Base Diet Formulation and CNCPS Sheep Evaluation

Default Lactating Ewe (11/4/2004)

### Sheep Results

#### Energy, Protein and Mineral Balances

	ME Mcal/day	MP g/day	Ca g/day	P g/day
<b>Intake</b>	4.282	213	17	22
<b>Maintenance</b>	1.764	64	3	2
<b>Maintenance (Cold Stress)</b>	0.000	-	-	-
<b>Lactation</b>	2.426	134	9	4
<b>Pregnancy</b>	0.000	0	2	1
<b>Total Requirement</b>	4.190	199	14	7
<b>Balance</b>	0.092	14	3	16

#### Diet

Entered DMI: 1.78 kg/day  
 Predicted DMI: 1.84 kg/day  
 Level of DM Intake: 4.87 %BW  
 Level of NDF Intake: 2.05 %BW  
 Dietary Forage: 67.6 %DM

Effective NDF Required: 0.355 kg/day  
 Effective NDF Intake: 0.297 kg/day  
 CHO B2: 573 g/day 76.5 %NDFI  
 NDF Intake: 0.749 kg/day

Dietary CP: 18.9 %DM  
 Dietary NDF: 42.2 %DM  
 Dietary NSC: 26.3 %DM  
 Dietary Ash: 11.4 %DM  
 Dietary Fat: 4.0 %DM

#### Ration Summary

	DM Fed (kg/day)	As-Fed (kg/day)	Total	Cost (\$/day)
Sorghum (S. vulgare) Grain cracked, Brazil Medium	0.250	0.287	14.08%	\$0.00
Soybean (Glycine max) Meal, Mexico Finely ground	0.250	0.281	14.08%	\$0.00
Pasture- Grass - Summer (109) Over grazed	1.200	4.800	67.61%	\$0.00
Calcium - Phosphate (Mono) (807)	0.075	0.077	4.23%	\$0.00
<b>Total</b>	1.775	5.445	100.00%	\$0.00

## Alternative Diet Formulation and CNCPS Sheep Evaluation

Default Lactating Ewe (11/4/2004)

### Sheep Results

#### Energy, Protein and Mineral Balances

	ME Mcal/day	MP g/day	Ca g/day	P g/day
<b>Intake</b>	4.607	206	23	21
<b>Maintenance</b>	1.723	69	3	2
<b>Maintenance (Cold Stress)</b>	0.000	-	-	-
<b>Lactation</b>	2.426	134	9	4
<b>Pregnancy</b>	0.000	0	2	1
<b>Total Requirement</b>	4.149	203	14	7
<b>Balance</b>	0.459	3	8	15

#### Diet

Entered DMI: 1.98 kg/day  
Predicted DMI: 1.84 kg/day  
Level of DM Intake: 5.42 %BW  
Level of NDF Intake: 2.61 %BW  
Dietary Forage: 83.5 %DM

Effective NDF Required: 0.395 kg/day  
Effective NDF Intake: 0.386 kg/day  
CHO B2: 726 g/day 76.2 %NDFI  
NDF Intake: 0.953 kg/day

Dietary CP: 13.4 %DM  
Dietary NDF: 48.3 %DM  
Dietary NSC: 26.1 %DM  
Dietary Ash: 12.1 %DM  
Dietary Fat: 3.3 %DM

#### Ration Summary

	DM Fed (kg/day)	As-Fed (kg/day)	Total	Cost (\$/day)
Pasture- Grass - Summer (109) Over grazed	1.650	6.600	83.54%	\$0.00
Calcium - Phosphate (Mono) (807)	0.075	0.077	3.80%	\$0.00
Citrus Pulp, Brazil, Loose	0.250	0.288	12.66%	\$0.00
<b>Total</b>	1.975	6.965	100.00%	\$0.00

**Reproductive Parameters for the Farm:**

<b>Parametro</b>	<b>Valor</b>
Vientres, animals (promedio/año)	50
% de desecho, anual	20%
Fertilidad, % anual	90%
Intervalo entre partos, días	240
Prolificidad, crías / hembra parida	1.5

**Price Information (observed during current month):**

<b>Alimento, Animal</b>	<b>Precio, \$/kg</b>
Pasto mejorado (costo de producción)	
Sorgo	
Soya	
Citrus pulp	
Calcium phosphate	
Animales finalizados	
Hembras de desecho	