Tools for Adapting NMP to Reflect Feed Program

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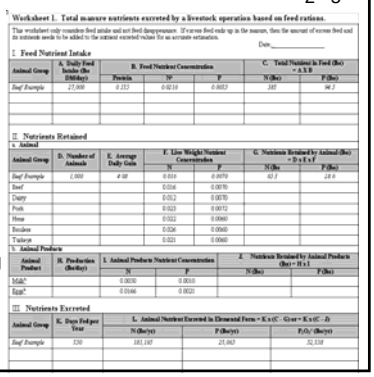
Estimating Excretion based upon a Mass balance Approach

Learning Exercise - Calculate N and $P_2 0_5$

- Calculate the Total Pounds of N and $P_2 0_5$ Produced in a Year.
- 175 Milking Cows consuming 50lbs of feed (dry) per day and producing 65 lbs of milk per day



Worksheet 1. Total manure nutrients excreted by a livestock operation based on feed rations.

This worksheet only considers feed intake and not feed disappearance. If excess feed ends up in the manure, then the amount of excess feed and its nutrients needs to be added to the nutrient excreted values for an accurate estimation.

Date_____

I. Feed Nutrient Intake

Animal Group	A. Daily Feed Intake (lbs /Hd/day)	B. Feed Nutrient Concentration			C. Total Nutrient in Feed (lbs) = A X B	
		Pounds	N*	P	N (lbs)	P (lbs)
Beef Example	*27,000*	*0.155*	*0.0210*	*0.0053*	*585*	*96.3*

II. Nutrients Retained

a. Animal

Animal Group	D. Number of Animals	E. Average Daily Gain	F. Live Weight Nutrient Concentration		G. Nutrients Retained by Animal (lbs) = D x E x F	
			N	P	N (lbs	P (lbs)
Beef Example	*1,000*	*4 lbs*	*0.016*	*0.0070*	*63.1*	*28.6*
Beef			0.016	0.0070		
Dairy			0.012	0.0070		
Pork			0.023	0.0072		
Horse			0.022	0.0060		
Broilers			0.026	0.0060		
Turkeys			0.021	0.0060		

b. Animal Products

Animal Product	H. Production (lbs/day)	I. Animal Products Nutrient Concentration		J. Nutrients Retained by Animal Products (lbs) = H x I	
		N	P	N (lbs)	P (lbs)
Milk*		0.0050	0.0010		
Eggs*		0.0166	0.0020		

III. Nutrients Excreted

Animal Group	K. Days Fed per Year	L. Animal Nutrient Excreted in Elemental Form = K x (C - G or + K x (C - J)		
		N (lbs/yr)	P (lbs/yr)	$P_2 O_5$ (lbs/yr)
Beef Example	*330*	*181,197*	*25,047*	*32,538*

Archived presentation available at:
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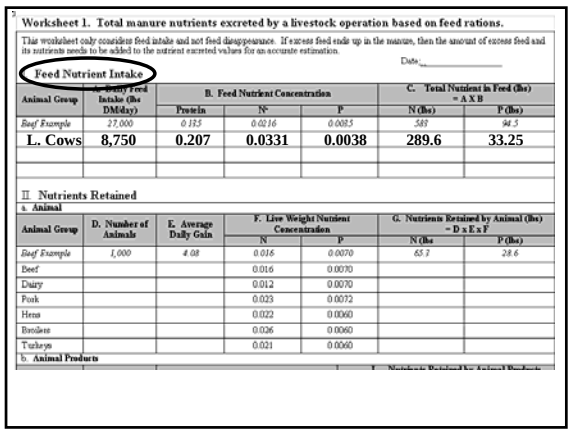

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Date:_____

Feed Nutrient Intake

Animal Group	A. Yearly Feed Intake (lbs DM/day)	B. Feed Nutrient Concentration			C. Total Nutrient in Feed (lbs) = A X B	
		Protein	N	P	N (lbs)	P (lbs)
Beef Example	*27,000*	*0.125*	*0.0216*	*0.0025*	*583*	*94.5*
L. Cows	**8,750**	**0.207**	**0.0331**	**0.0038**	**289.6**	**33.25**

II. Nutrients Retained

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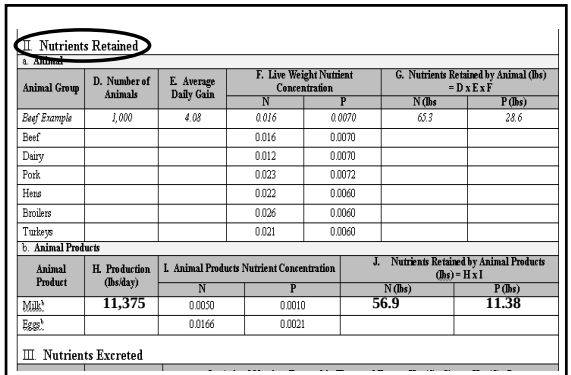
Animal Group	D. Number of Animals	E. Average Daily Gain	F. Live Weight Nutrient Concentration		G. Nutrients Retained by Animal (lbs) = D x E x F	
			N	P	N (lbs	P (lbs)
Beef Example	*1,000*	*4.08*	*0.016*	*0.0070*	*65.3*	*28.6*
Beef			0.016	0.0070		
Dairy			0.012	0.0070		
Pork			0.023	0.0072		
Hens			0.022	0.0060		
Broilers			0.026	0.0060		
Turkeys			0.021	0.0060		

b. Animal Products



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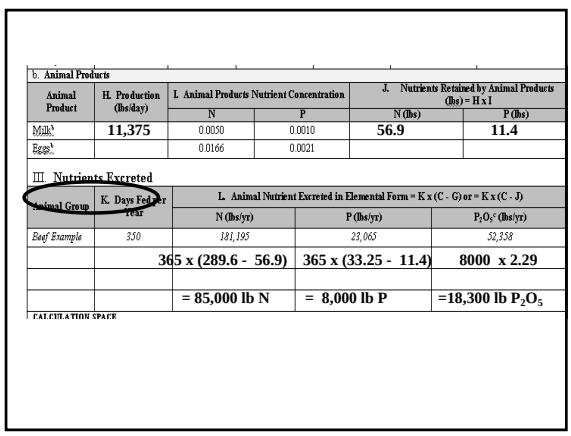
b. Animal Products

Animal Product	H. Production (lbs/day)	I. Animal Products Nutrient Concentration		J. Nutrients Retained by Animal Products (lbs) = H x I	
		N	P	N (lbs)	P (lbs)
Milk[1]	**11,375**	0.0050	0.0010	**56.9**	**11.38**
Eggs[1]		0.0166	0.0021		

III. Nutrients Excreted



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		N	P	N (lbs)	P (lbs)
Milk[1]	**11,375**	0.0050	0.0010	**56.9**	**11.4**
Eggs[1]		0.0166	0.0021		

III. Nutrients Excreted

Animal Group	K. Days Fed per Year	L. Animal Nutrient Excreted in Elemental Form = K x (C - G) or = K x (C - J)		
		N (lbs/yr)	P (lbs/yr)	P_2O_5[2] (lbs/yr)
Beef Example	*350*	*181,195*	*23,065*	*52,358*
	365 x (289.6 - 56.9)	**365 x (33.25 - 11.4)**	**8000 x 2.29**	
		= 85,000 lb N	**= 8,000 lb P**	**=18,300 lb P_2O_5**

CALCULATION SPACE

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