Understanding Sheep Nutrition

Presenter:

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Host/Moderator: Jay Parsons

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This webinar is being offered in cooperation with the American Sheep Industry Association Rebuild the Sheep Inventory Committee.

Feeding Sheep

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What is the best thing to feed?

- Many would reply high quality alfalfa

  Why

Feeding Sheep

Realistic and practical

Facilities and equipment

Flock size

What is 16% grower feed?

Feed that contains

16% crude protein.

Is it better than

14% finisher?

Feed tags list items on

an as fed basis

Feed Tags are State Controlled
T.M. SALT w/ Selenium

T.M. Salt for sheep

GUARANTEED ANALYSIS

Salt, min	94.00%	
Salt, max	95.00%	
Zinc, min	0.60%	6000 PPM
Magnesium, min	0.52%	5200 PPM
Manganese, min	0.25%	2500 PPM
Iron, min	0.25%	2500 PPM
Iodine, min	0.01%	100 PPM short
Cobalt, min	0.003%	30 PPM
Selenium	90 PPM	.009% max.

PPM = mg/kg

DGM:ISU:2012

INGREDIENTS

Salt, Vegetable Oil, Calcium Sulfate, Magnesium Oxide, Zinc Oxide, Ferrous Sulfate, Manganese Sulfate, Sodium Selenite, Cobalt Carbonate, Ethylenediamine Dihydroiodide, Sodium Molybdate.

FEEDING DIRECTIONS

Feed XXXXXX Sheep Trace Mineral Salt on a free choice basis to sheep. Do not permit excessive consumption. Intake of supplement trace mineral salt mixture should not exceed 0.3 PPM on a complete ration basis, or 0.69 milligrams per head per day. An intake of ¼ oz. of this mineral per head daily will supply 0.63 milligrams.

DGM:ISU:2007

What is in feeds?

- water (5-80% water)
- minerals (ash 1-4%)
- energy (TDN 40-85%)
  - forages more variable than grains
- protein (5-80%)
- vitamins

  ADEK, B's and C

Iowa Hay Quality Survey

Hay type	Crude protein		TDN	
Grass	Ave.	Range	Ave.	Range
1st cut	11.6	(6-20)	55.7	(47-67)
all others	15.2	(12-19.7)	61.8	(57-70)
Mixed				
1st	13.9	(8-22)	56.1	(41-69)
2nd	16.8	(10-22)	59.6	(47-70)
3rd	18.3	(11-23)	62.4	(49-73)
Legumes				
1st	16.9	(10-22)	56.7	(48-69)
2nd	18.3	(14-22)	57.7	(45-68)
3rd	19.9	(13-23)	59.4	(47-70)

Evaluating what to feed your sheep?

Cost

Nutrient density

Feeding waste

- **if they do not eat it is very expensive bedding.**

No best feed

- **soybean hulls, alfalfa hay, shelled corn,**
- **complete feed**

How much will sheep eat?

Daily intakes

- **ewes 2-5% body weight**
  - **lactating ewes have highest**
- **lambs 3-6%**
  - **goes down as lambs get heavier**
    - **50 pounder 4-5%**
    - **130 pounder 3-3.5%**

Condition scoring

Evaluating ewes for fatness

Monitor changes

1-5 system

11% weight change =

one condition score

Nutrient Requirements

Reading those charts

Stage of Production	Body weight	Daily gain or loss	Dry Matter Intake		Energy TDN	Energy ME	Crude Protein	Cal-cium	Phos-phorous	Vit.	Vit.
	lb		lb	%BW	lb	Mcal	lb	grams	grams	A IU	E IU
Maintenance	125	0.02	2.3	1.8%	1.26	2.07	0.22	2.3	2.3	2800	18
	150	0.02	2.6	1.7%	1.45	2.38	0.25	2.6	2.4	3210	19
	175	0.02	2.9	1.7%	1.62	2.66	0.28	2.9	2.7	3610	20
	200	0.02	3.2	1.6%	1.79	2.94	0.31	3.2	3.0	3990	21
	225	0.02	3.5	1.6%	1.96	3.21	0.33	3.5	3.2	4360	22

TDN is total digestible nutrients
454 grams = 1 pound
IU is international units
NRC = National Research Council

Nutrient Requirements

- Using those charts
- ex. 175 ewe 1.62 TDN and .28 CP

- Alfalfa 50% TDN 1.62/.5 = 3.2 lbs.
- 3.2 X 16%CP = .51 lbs. of CP
- Sheep Brands Ration Software


What is your
cheapest feed source ???
Iowa it is corn, maybe

Stages of Production intensive system

- Maintenance
  - weaning until 14 days pre-breeding (138 days)
- Flushing/Breeding
  - 2 weeks pre-breeding till end of breeding (49 days or more)
- Early/mid gestation
  - Completion of breeding until 4 weeks pre-lambing (80 days or more)

Concerns During Early Mid Gestation

- 21 days of severe underfeeding
- 80 days of moderate underfeeding
- Both result in smaller placenta leading to reduced birthweights

Mid Gestation Nutrition Goals

- **Maintain condition - mature ewes**
- **Yearlings and two year olds - increase condition**
  - ISU data higher incidence of fetal loss
- **Specific nutrients**
  - **Protein maybe**

    Other species - protein deficiency severely impacts placental size more than energy

    Crop aftermath grazing or dormant range - ?? protein

Stages of Production

- Late gestation, second most important
  - singles 2 weeks
  - twins 3-4 weeks
  - triplets 4-6 weeks
- Early lactation, *most important*
  - 42 days
- Late lactation
  - 21 days
- Weaning ration
  - 7 days

Recommendations for LG Feeding

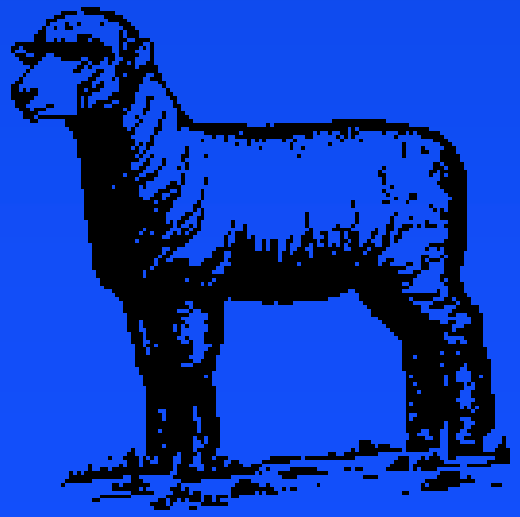
- Alfalfa hay based diets
  - Barley or other economical energy sources
  - Guideline - 1 LB. concentrate per fetus
- Limit roughage intake
  - Mature ewes with 3 fetus or more
  - All ewe lambs
- Low quality roughage as base ration require both protein and energy supplementation
- Low energy diets with poor roughage's may respond to escape protein - MLC, 1983

Late Gestation

Secretory tissue development occurs.

Larger placenta → more placenta lactogen.

Ewes with multiples have larger placenta weight.



Consequences of Underfeeding

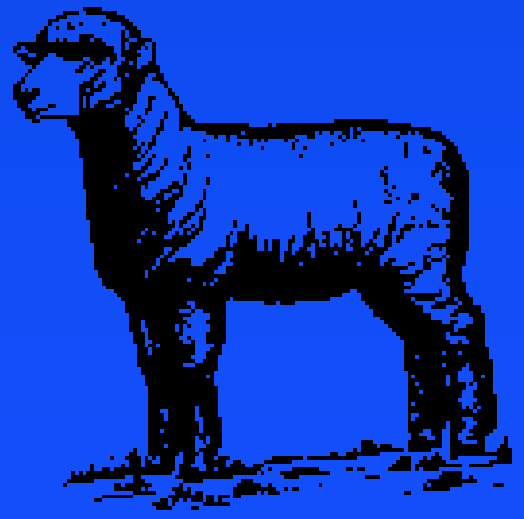
- Weak, small lambs with high mortality
- Reduced colostrum quality and quantity
- Retarded weight gain both pre & post weaning
- Reduced peak milk yield and less total production
- Decreased re-breeding success
- Reduced wool production via fewer secondary follicles

Consequences of Overfeeding

- Thin wallets
- Fat ewes
- Upper limit on birthweight

Factors Which Affect Milk Production

- Lactation Diet Energy Status
- Lactation Diet Protein Status
- Late Gestation Nutrition - precaution
- Ewe Fatness or Condition
- Prolificacy




What is a highly productive Ewe?

High producing ewes

- Twins or better
  - Moderate birth weight
- Raises them all
- 7.5 pounds of milk per day

  twins gaining .75 lb birth to weaning
- Long lived
- Breeds back if desired
- Eats like a horse

Ewe Lambs

- Lamb at 12-14 months
- Group drop rate of >150% w/ 200% ideal
- Produce 4 pounds of milk
  - Lamb gain on twins of .4 lb/d birth to weaning

Feeding Management

- Separate by need
  - Singles vs twins vs triplets
  - Age: ewe lambs vs mature
  - Early vs late lambers

Late Gestation Rations

175 pound ewe

	13 lb S	11.5 lbTw	9.5 lb Tr
Brome/alfalfa[a]	4	4	3
Barley	1	1.5	2.5

[a] Hay quality good, 13.9 % CP and 56% TDN

Trace mineral and Vitamin E

Late Gestation Rations

120 pound ewe lamb

	10 lb S	8.5 lbTw
Brome/alfalfa[a]	2	1.75
Barley	1.5	2.25

[a] Hay quality good, 13.9 % CP and 56% TDN

Trace mineral and Vitamin E

Lactation rations

175 pound ewe

	Single		Twins		Triplets	
Lamb gain	.75	1	.5	.75	.4	.50
Brome/alfalfa[a]	5.5	5.5	5.5	5.5	5.5	5.0
Barley	.75	1.0	1.0	2.0	2.0	2.5
Soybean meal		.3	.3	.7	.5	1.0

[a] Hay quality good, 13.9% CP and 56% TDN

Trace mineral and Vitamin E

Lactation rations

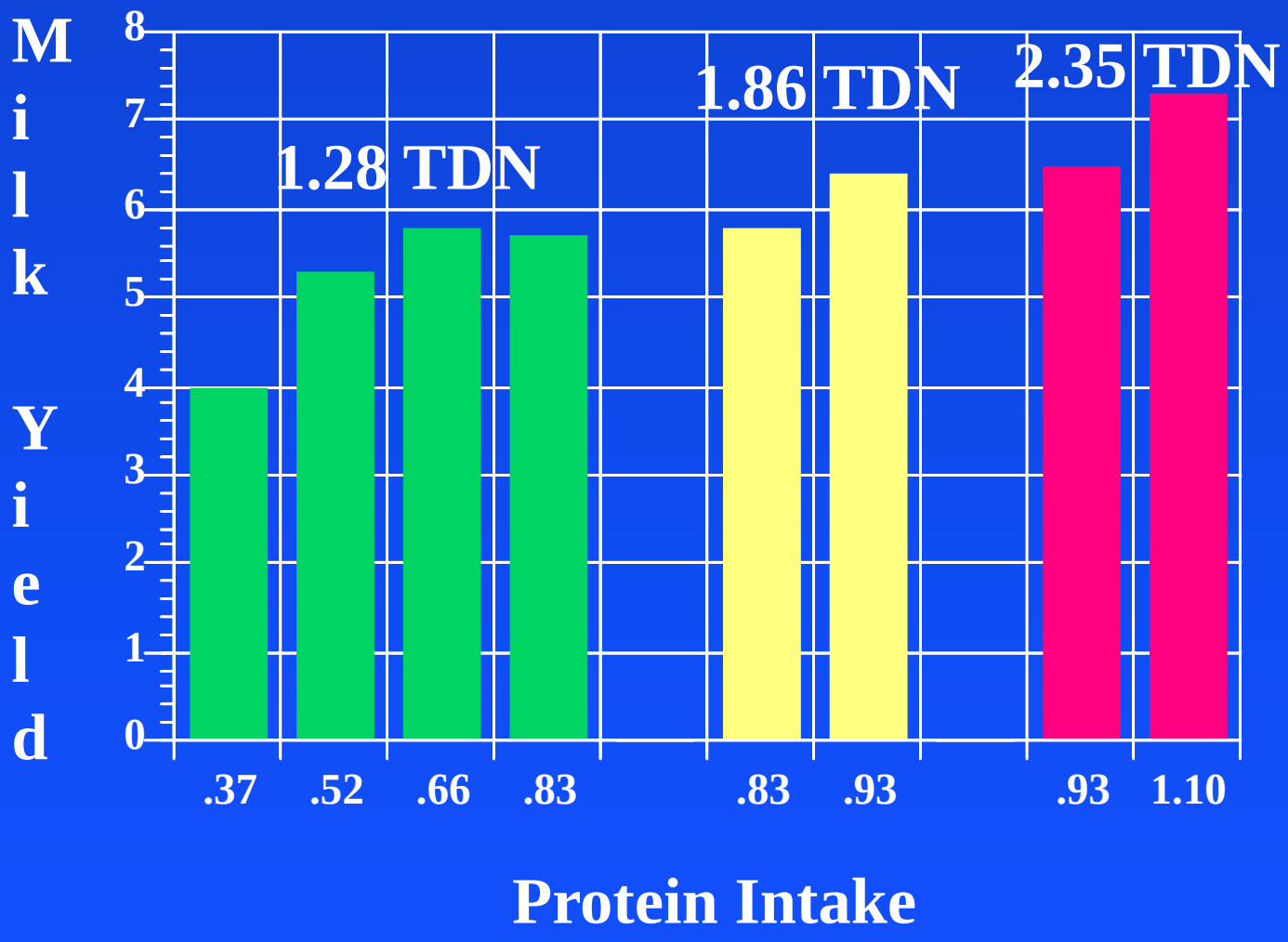
125 lb ewe lamb

	Single	Twin
Lamb gain	.6	.4
Brome/alfalfa[a]	3	4
Barley	1.5	1.5
Soybean meal	.5	.5

[a] Hay quality good, 13.9% CP and 56% TDN

Trace mineral and Vitamin E

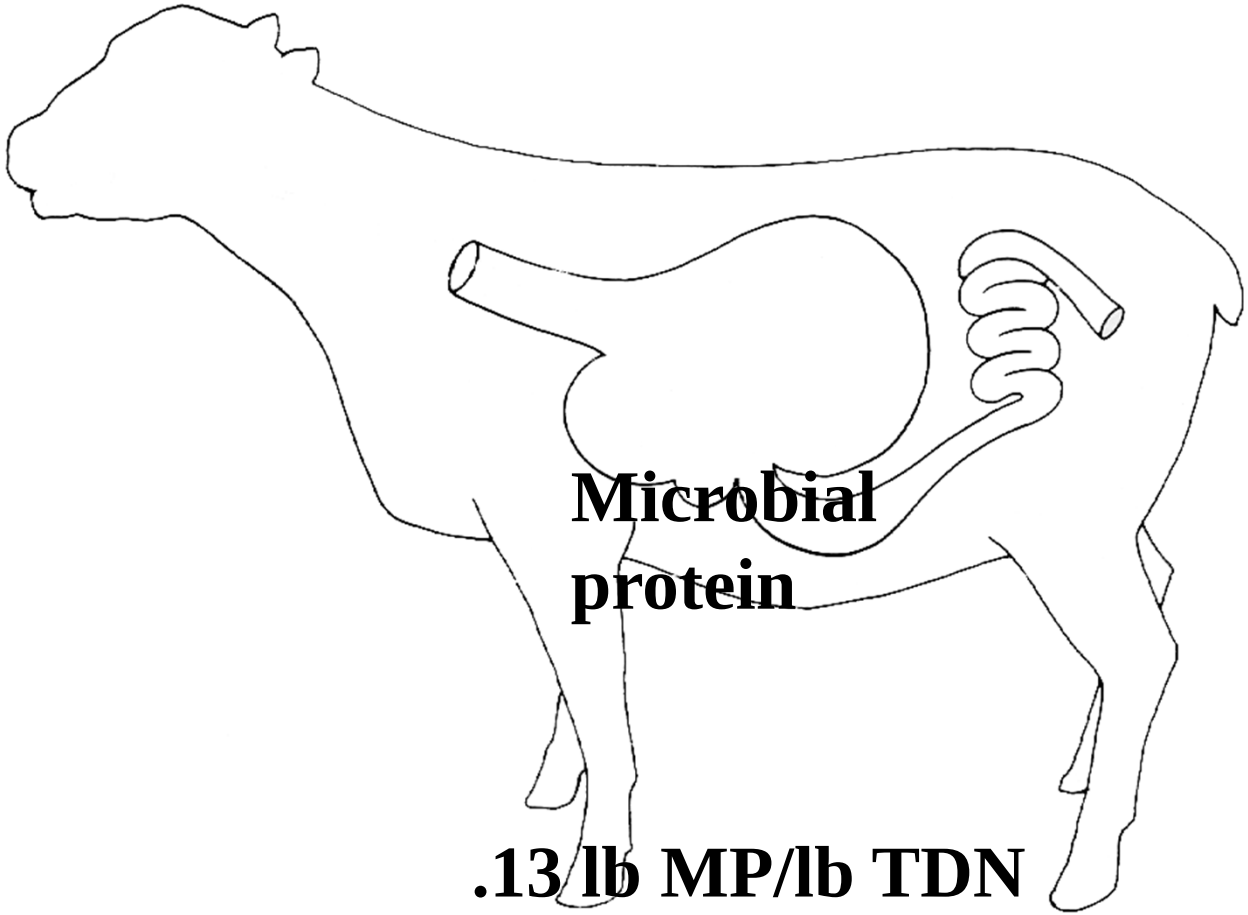
Energy and Protein vs. Yield



Low labor feeding system

Precautions with net wrap

Protein Sources



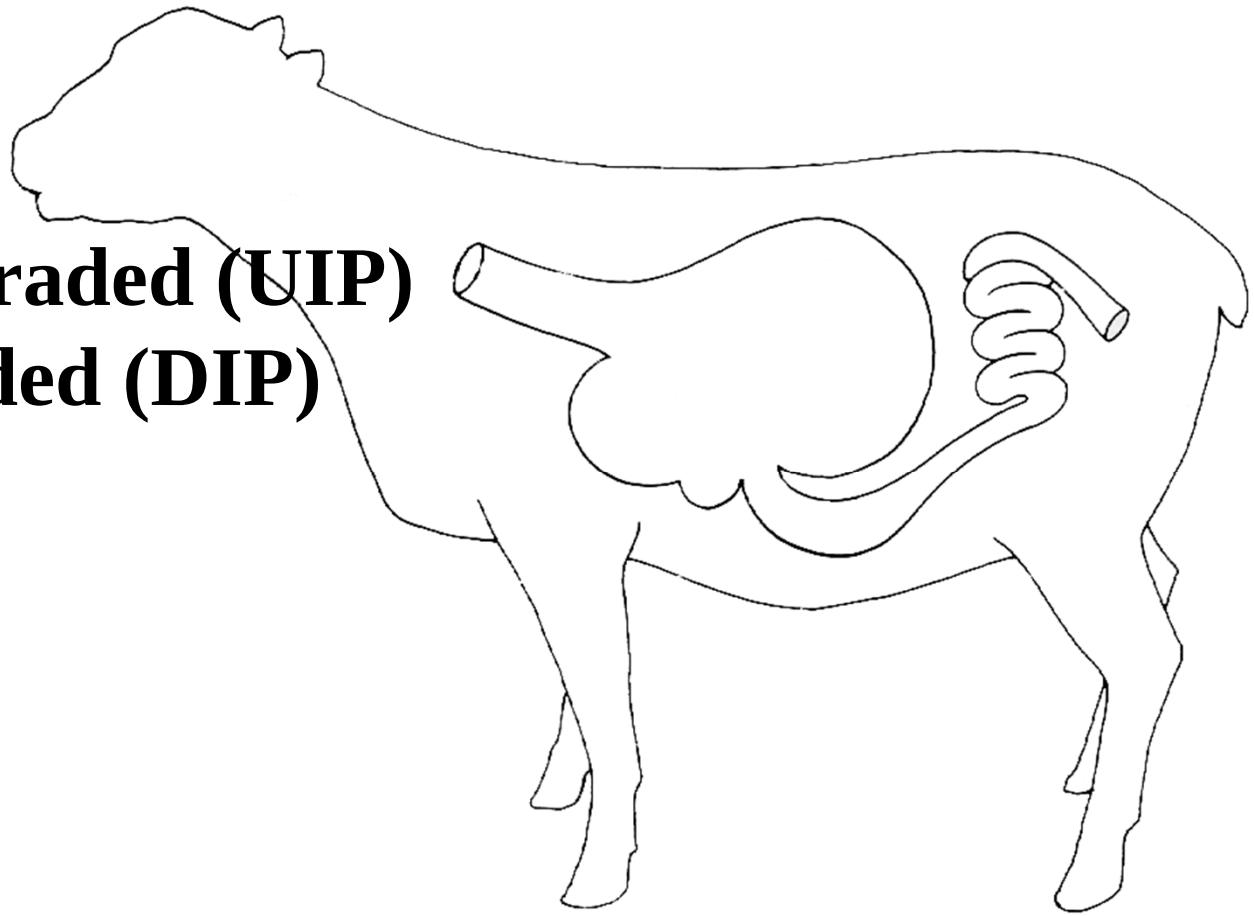
Intake protein

Microbial protein

.13 lb MP/lb TDN

Intake Protein

Undegraded (UIP)
Degraded (DIP)



Value of Protein Sources for UDP

	% CP	% UIP	UIP Conc. %
Grass Pasture	6-20	10	2
Alfalfa Hay	16-24	15	2.7
Barley	13.5	20	2.7
SBM 44, Solvent	44	25	11
SBM 44, Expeller	43	50	21.5
CGM	60	40	24
DDGS	28	55	15.4
Blood Meal	85	80	68
Fish Meal	60	40-80	24-48

Milk Yield Results from Additional Protein

Protein Source	Protein Added	
	.18 lbs.	.44 lbs.
Urea	.29	0
Nut meal	.88	0
Soybean Meal	.88	0
Meat & Bone Meal	.88	0
Linseed Meal	1.32	0
Fish Meal	1.32	.55
Blood Meal	1.32	.74

145 lb. ewes rearing twins fed

base diet 2.67 TDN 11.6% CP

Gonzalez et al. 1982

Vitamin E

100 IU/day/head extra above feed E

14 d pre-lambing through 35 d lactation

Mineral source of E is inadequate

- **20 pounds of mineral mixed with**
- **4 pounds of E (20K IU/lb)**
- **assumes ½ ounce intake per day**

Iodine

Lactation Ration = .8 ppm or mg/kg

Most mineral mixtures are short

needs to be 140 ppm in mineral with .5 ounce intake level

Solution free choice iodized salt

Summary

All phases of production are important

Correctly feeding the flock requires more than one pen

Adequate protein for placental development

LG prepares for lactation and adequate birth weights for high survival

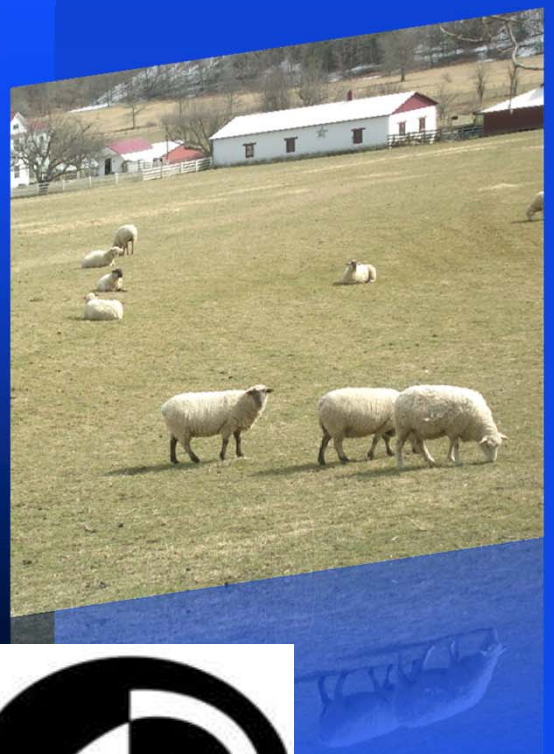
Lactation takes both protein and energy, wt. loss hurts production

Summary

Sheep have limited to no nutritional wisdom.

They do not read fact sheets or NRC.

Shepherds have to make the decisions on what and how much to feed.



Next Webinar

Presenter:

Dr. Richard Ehrhardt

Sheep Extension Specialist

Michigan State University

Host/Moderator: Jay Parsons

September 23, 2014

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