



Understanding Sheep Nutrition

Presenter:

Dr. Dan Morriscal
Sheep Extension Specialist
Iowa State University

Host/Moderator: Jay Parsons



August 26, 2014

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

Feeding Sheep

Dr. Dan Morrival

515-294-2904

morrival@iastate.edu



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

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 XXXXX 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 $\frac{1}{4}$ oz. of this mineral per head daily will supply 0.63 milligrams.

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

<u>Hay type</u>	<u>Crude protein</u>		<u>TDN</u>	
Grass	Ave.	Range	Ave.	Range
1 st cut	11.6	(6-20)	55.7	(47-67)
all others	15.2	(12-19.7)	61.8	(57-70)
Mixed				
1 st	13.9	(8-22)	56.1	(41-69)
2 nd	16.8	(10-22)	59.6	(47-70)
3 rd	18.3	(11-23)	62.4	(49-73)
Legumes				
1 st	16.9	(10-22)	56.7	(48-69)
2 nd	18.3	(14-22)	57.7	(45-68)
3 rd	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 lb	Daily gain or loss	Dry Matter Intake		Energy		Crude Protein lb	Cal-cium grams	Phos-phorous grams	Vit. A IU	Vit. E IU
			lb	%BW	lb	Mcal					
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.
- $3.2 \times 16\% \text{ CP} = .51$ lbs. of CP
- Sheep Brands Ration Software

A large pile of yellow corn silage is the central focus, situated within a feedlot. The silage is piled high, with a metal walkway or railing visible along its top edge. In the foreground, several large, cylindrical hay bales are stacked on a concrete or gravel surface. The background shows a clear sky and the structural framework of the feedlot.

***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

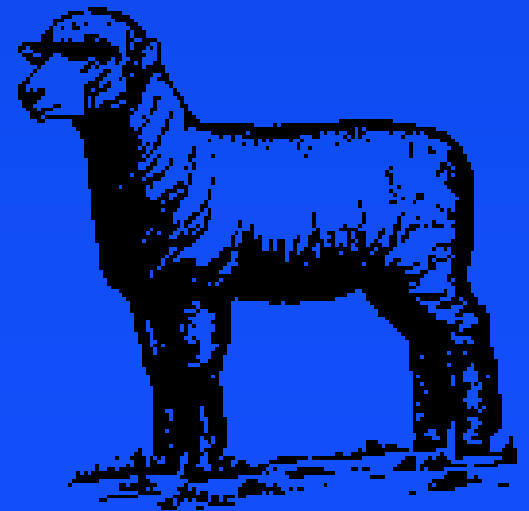
- Alfalfa hay based diets
 - ◆ Barley or other economical energy sources
 - ◆ Guideline - 1 LB. concentrate per fetus
- Limit roughage intake
 - ◆ Mature ewes with 3 fetus or more
 - ◆ All ewe lambs
- Low quality roughage as base ration require both protein and energy supplementation
- Low energy diets 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

	<u>13 lb S</u>	<u>11.5 lb Tw</u>	<u>9.5 lb Tr</u>
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

	<u>10 lb S</u>	<u>8.5 lb Tw</u>
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

	<u>Single</u>		<u>Twins</u>		<u>Triplets</u>	
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

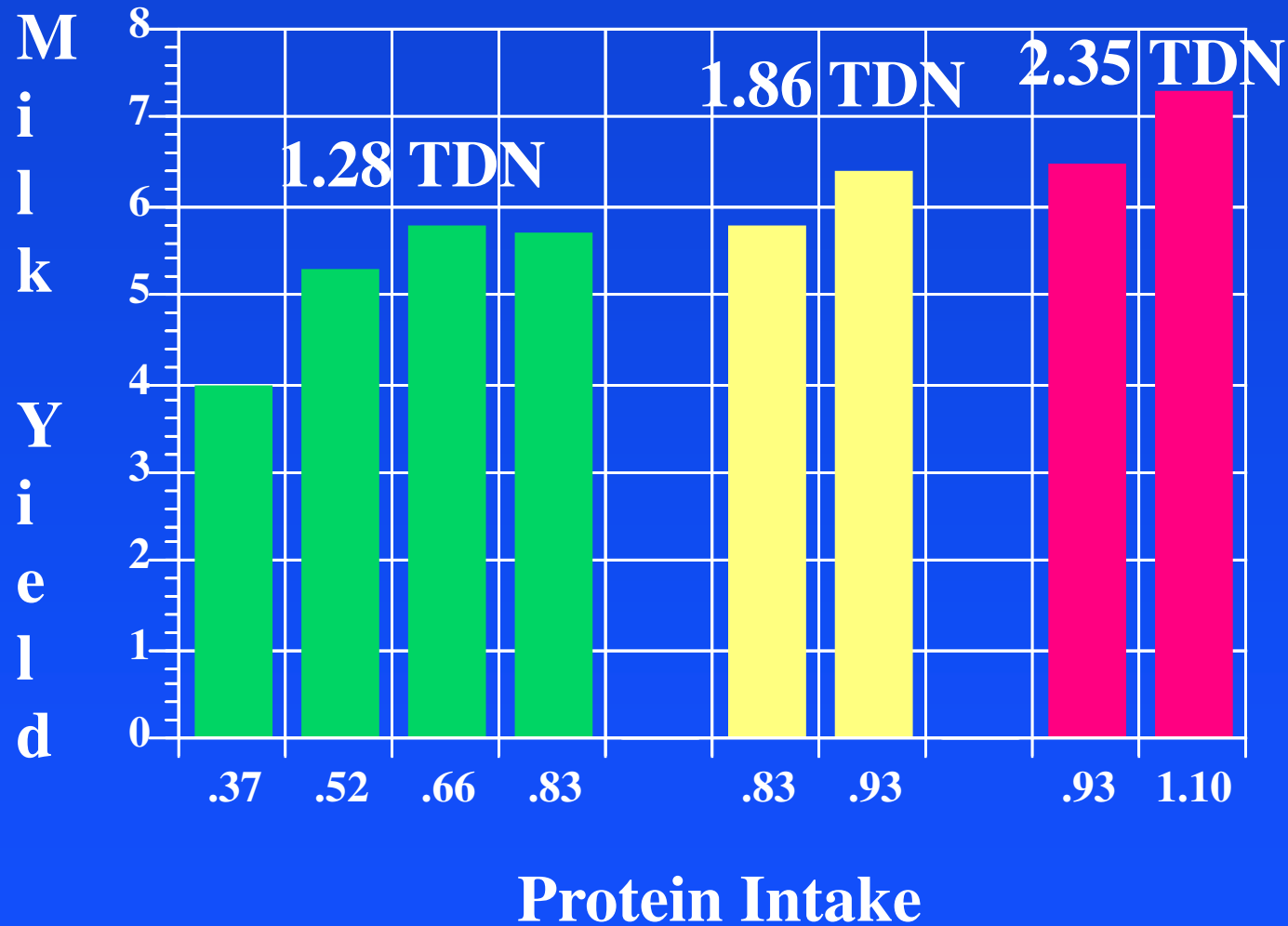
Lactation rations

125 lb ewe lamb

	<u>Single</u>	<u>Twin</u>
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





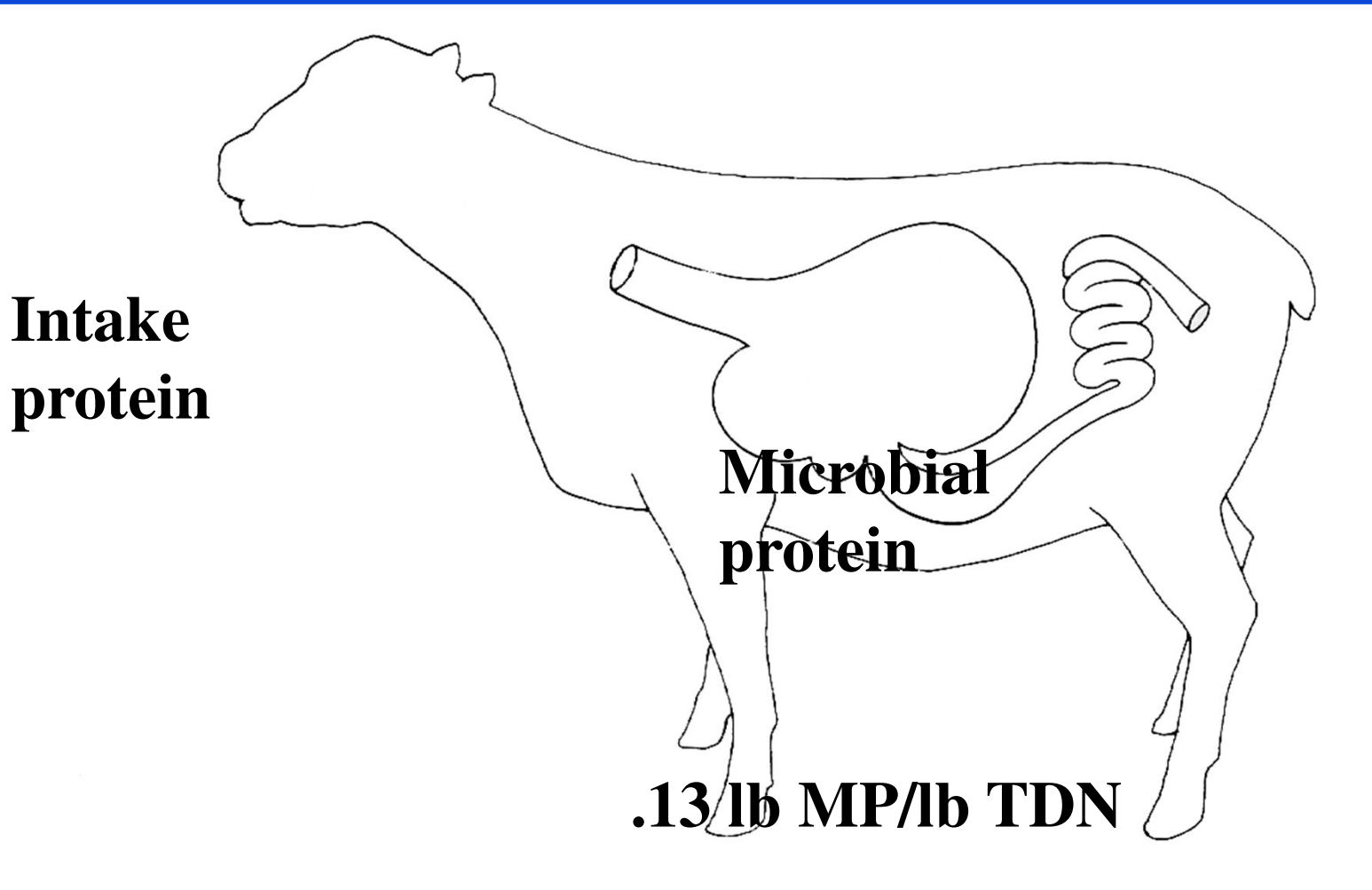
Low labor feeding system



Precautions with net wrap

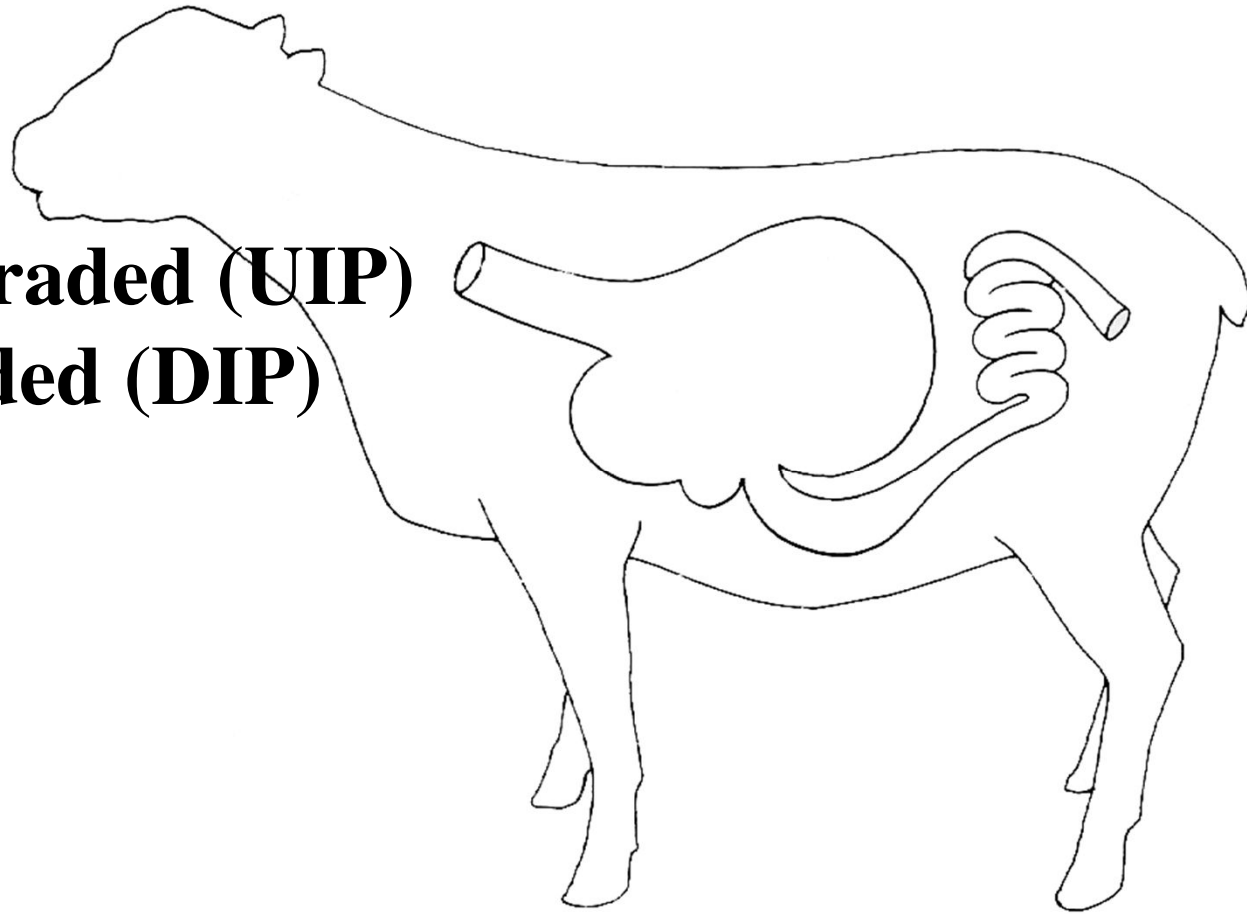


Protein Sources



Intake Protein

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 1/2 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

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