

Ewe Lamb Nutrition and Ewe Productivity

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Nutrition of Ewe Lamb Replacements

- **Feeding replacement ewe lambs for maximum gains may decrease adult productivity.**
- **Over-feeding may decrease her adult milk production and weaning weights of her lambs.**

Prepubertal ADG in Danish Dairy Cattle

Breed	ADG, lb.	Milk, lb.	%
Jersey	.80	11,275	100
	1.07	10,450	93
	1.23	9,075	80
Danish Red	1.21	12,485	100
	1.58	10,780	86
	1.86	10,340	82
Friesian	1.28	11,935	100
	1.61	11,880	100
	1.89	10,780	90

Hohenboken et al. 1995. Acta Agric. Scand. Sect. A Anim. Sci. 45:92-98.

Breeding Weight in Ewe Lambs

Trial	Trt.	Weight, lb.	24-hr. milk, lb.	%
1	Slow	97.2	3.26	100
	Fast	141.2	2.61	80
2	Slow	100.3	3.46	100
	Fast	126.7	3.02	87
3	Slow	94.2	3.56	100
	Fast	140.4	2.91	82

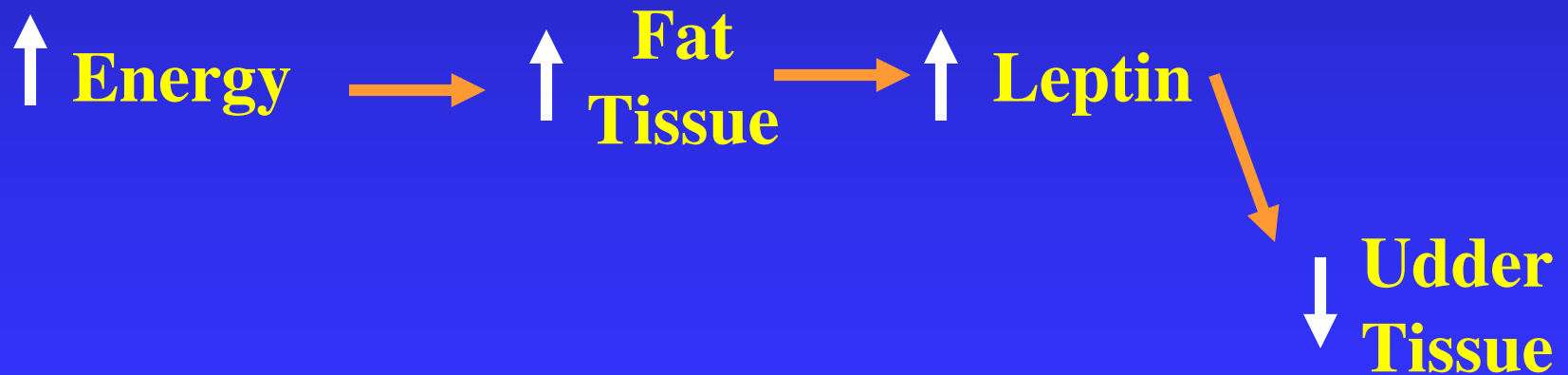
Umberger et al. 1985. Theriogenology 23:555-564. (North Carolina)

Prepubertal ADG in Ewe Lambs

Trial	Trt.	ADG, lb.	4-hr. milk, lb.	%
1	Slow	.35	.77	100
	Fast	.47	.79	103
2	Slow	.38	.75	100
	Fast	.51	.61	81
3	Slow	.44	.59	100
	Fast	.59	.55	93

McCann et al. 1989. Theriogenology 32:55-68. (North Carolina)

Why?



Recommendation From Review of Past Dairy Cattle and Sheep Studies

(Tolman and McKusick, 2001)

**To ensure maximum milk production
in ewes, ewe lamb replacements should
be fed to gain at no more than 65 to
75% of maximum gain from about 1.5
to 5 months of age.**

Spooner Study

- Dairy ewe lambs born in 2004, 2005, and 2006 at the Spooner Ag Research Station.
- Ewe lambs raised on milk replacer and a 22% CP grower diet to 30 days of age
- Full-fed group fed 22% creep/grower diet and then a 13% finishing diet *ad libitum* in inside pens from 1.5 to 5 months of age.
- Restricted-fed group fed same diet as full-fed group but at ~70% of the intake of the full-fed group.

Spoooner Study

- After 5 months of age, two groups fed and managed together.
- Ewes exposed first at 7 to 8 months of age, and production monitored for at least two parities.
- Production traits measured: body weights, gains, and feed consumption during the experimental feeding period; weights at first mating and lambing; fertility; prolificacy; milk production; milk composition.

Feeding Management

- Fed in indoor pens bedded with straw.
- 2 Full-Fed and 2 Restricted-Fed pens each year
- Diet of whole shelled corn + high protein pellet.
- Pen feed consumption was recorded daily, and lambs were weighed weekly.
- Fed small amount of hay (.40 - .45 lb./hd./d).

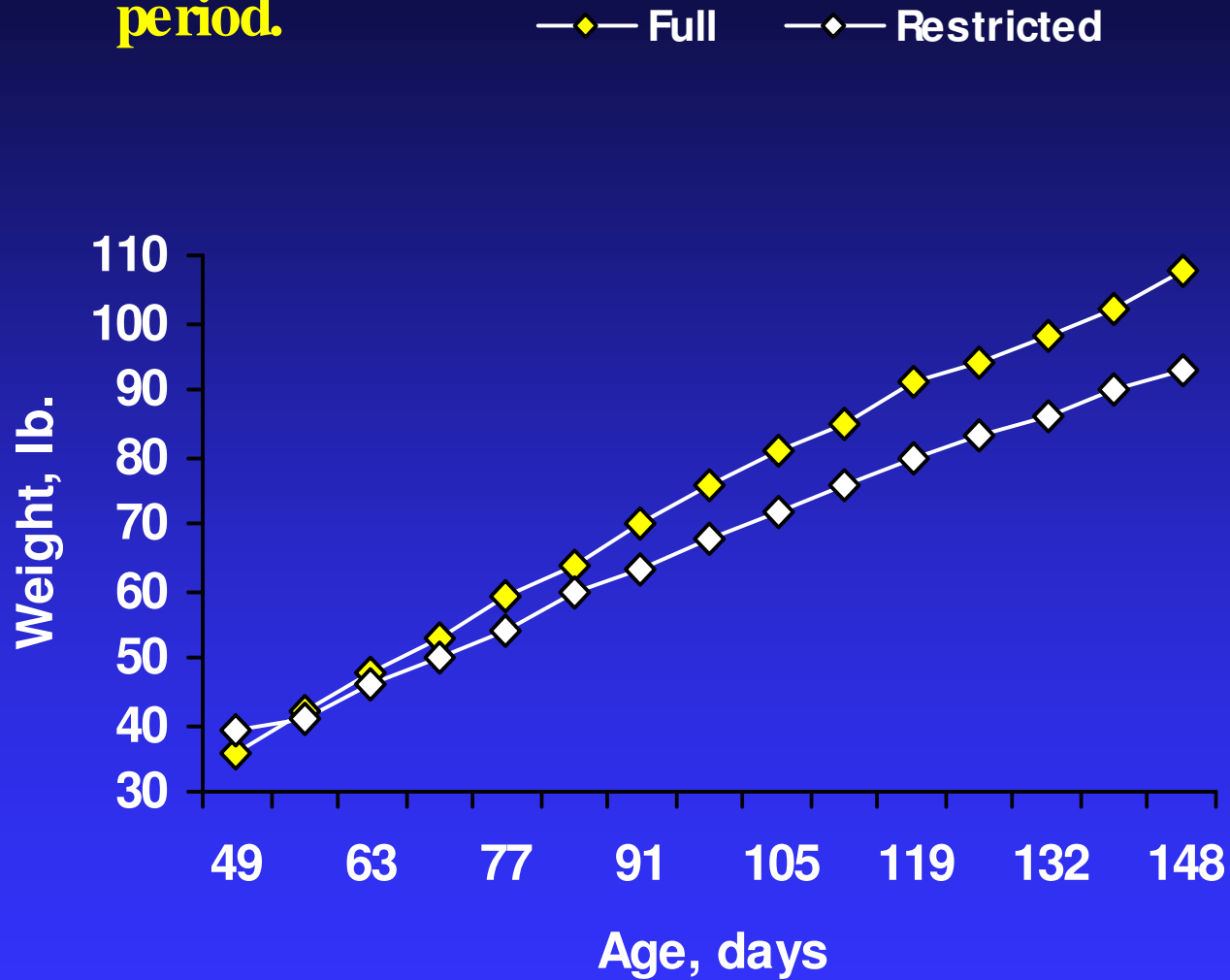


Average daily feed consumption per head for full- or restricted-fed dairy ewe lambs.

Treatment	No. pens	Grain, lb.	Hay, lb.	Total, lb.
Full feed	6	2.67 ^a	.45	3.12 ^a
Restricted	6	1.94 ^b	.41	2.35 ^b
Restricted/ Full		.73	.91	.75

^{a,b} ($P < 0.05$).

Figure 1. Body weights of ewe lambs during the treatment period.



Growth of Full- and Restricted-Fed Dairy Cross Ewe Lambs

Feed	No. lambs	Age, days		Weight, lb.		ADG, lb.
		Start	End	Start	End	
Full	129	51	148	37 ^b	107 ^c	.72 ^c
Restricted	123	49	149	39 ^a	93 ^d	.54 ^d

^{a,b}P < 0.10, ^{c,d}P < 0.05

$$\text{ADG Restricted} / \text{ADG Full} = .54 / .72 = .75$$

First Mating and Lambing Weights of Full- and Restricted-Fed Dairy Cross Ewe Lambs

Feed	No. Lambs	Mating wt., lb.	ADG end-mat., lb.	Lambing wt., lb.	ADG mat.-lamb., lb.
Full	127	136 ^a	.35 ^b	161 ^d	.15 ^b
Restricted	118	132 ^b	.48 ^a	166 ^c	.20 ^a

^{a,b}P < 0.05, ^{c,d}P < 0.10

Reproduction of 1-Year-Old Ewes Full- and Restricted-Fed as Lambs

Feed	No. ewes	Fertility, %	Prolificacy, no.
Full	126	86	1.48
Restricted	118	90	1.50



Reproduction of 2-Year-Old and Greater Ewes Full- and Restricted-Fed as Lambs

Feed	No. ewes	No. exposures	Fertility, %	Prolificacy, no.
Full	102	176	96	2.03
Restricted	101	178	93	2.06

Milking

- Machine milked in a double-12 parlor
- Milk yield, % fat, and % protein measured once per month
- Milking ended when test day yield was less than 1 lb.



Lactation Performance of Ewes Full- or Restricted-Fed as Lambs

Feed	No. ewes	No. lactations	Lactation length, d	Milk yield, lb.
Full	102	236	186	620
Restricted	103	240	183	600



Lactation Performance of Ewes Full- or Restricted-Fed as Lambs

Feed	Fat, %	Fat yield, lb.	Protein, %	Protein yield, lb.
Full	5.8	37	4.9	31
Restricted	5.7	35	4.8	30



Flock Retention to June 30, 2009 by Nutrition Treatment and Breed

Item	No. ewe lambs mated	% present, 6/30/09	Age when leaving, months ^a
Full	127	46	38
Restricted	118	42	39

If all ewes were still present on 6/30/09, average age would have been about 53 months.

Summary of Results

Feeding ewe lambs 73% of ad libitum supplement intake from 1.5 to 5 months of age instead of ad libitum resulted in:

- 75% of maximum ADG,
- .73 lb./hd./d less supplement consumption (73 lb./hd less over 100 days),
- \$5.80 - \$7.30/hd. less supplement cost,
- and no detrimental or positive effects on body weight at first lambing, reproduction, lactation performance, or flock retention

Recommendations

- Young replacement ewe lambs can be fed at 73% of maximum supplement intake for a feed savings of ~ \$6.60, or
- Young replacement ewe lambs can be full-fed with the market lambs for convenience
- However, the results strongly suggest that replacement dairy ewe lambs need to be well-fed from 1.5 to 5 months of age
- The full-fed ewe lambs produced 20 lb. more (N.S.) milk each lactation than restricted-fed ewe lambs for increased milk income of \$14.00/year.



Growth of East Friesian and Lacaune Ewe Lambs

Breed	No. lambs	Age, days		Weight, lb.		ADG, lb.
		Start	End	Start	End	
> 50% EF	126	50	147	39	102 ^c	.64 ^a
> 50% LA	126	50	148	38	98 ^d	.62 ^b

a,bP < 0.10, c,dP < 0.05

First Mating and Lambing Weights of East Friesian and Lacaune Dairy Ewe Lambs

Breed	No. Lambs	Mating wt., lb.	ADG end-mat., lb.	Lambing wt., lb.	ADG mat.-lamb., lb.
> 50% EF	121	136 ^a	.43 ^c	164	.17
> 50% LA	124	132 ^b	.41 ^d	163	.18

^{a,b}P < 0.05, ^{c,d}P < 0.10

Reproduction of 1-Year-Old East Friesian and Lacaune Ewes

Breed	No. ewes	Fertility, %	Prolificacy, no.
> 50% EF	120	88	1.56 ^a
> 50% LA	124	88	1.42 ^b

^{a,b}P < 0.10

Reproduction of 2-Year-Old and Greater East Friesian and Lacaune Ewes

Breed	No. ewes	No. exposures	Fertility, %	Prolificacy, no.
> 50% EF	99	184	94	2.07
> 50% LA	104	170	95	2.03

Lactation Performance of East Friesian or Lacaune Ewes

Breed	No. ewes	No. lactations	Lactation length, d	Milk yield, lb.
> 50% EF	99	242	186	639 ^a
> 50% LA	106	234	183	581 ^b

^{a,b}P < 0.01

Lactation Performance of East Friesian and Lacaune Ewes

Breed	Fat, %	Fat yield, lb.	Protein, %	Protein yield, lb.
> 50% EF	5.5 ^b	36	4.7 ^b	31
> 50% LA	6.1 ^a	36	5.0 ^a	30

^{a,b}P < 0.01

Flock Retention to June 30, 2009 by Nutrition Treatment and Breed

Item	No. ewe lambs mated	% present, 6/30/09	Age when leaving, months ^a
> 50% EF	121	48	40
> 50% LA	124	40	37

If all ewes were still present on 6/30/09, average age would have been about 53 months.