A Ewe for Every Season?

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What are the advantages and disadvantages of:

Winter lambing – January/February?

Spring lambing – April/May?

Fall lambing – September/October?

Feed is the largest cost of raising sheep

- Feed costs = up to 70% of total operation costs
- Ewe feed costs = up to 60% of total feed costs
- Therefore, ewe feed costs = up to 40% of total operation costs

Ewe Nutrient and Feed Requirements – Once per year lambing, 175 lb. ewe, twins, confinement

	Daily feed, lb.		Daily nutrients required (fed), lb.	
Stage	Alfalfa hay	Corn	TDN	CP
Dry, 19 wks.	3.5	-	1.7 (1.8)	.30 (.57)
Flushing, 4 wks.	4.0	1.0	2.6 (2.8)	.45 (.74)
Early preg., 15 wks.	3.5	0	1.7 (1.8)	.30 (.57)
Late preg., 6 wks.	4.0	1.0	2.6 (2.8)	.45 (.74)
Lactation, 8 wks.	4.5	2.5	4.2 (4.2)	.90 (.95)

Feed a salt/mineral mix prepared for sheep, free-choice .

Winter Lambing (Feb. 1)

Stage	Dates	Feed source?	Cost
Dry, 19 wks.	Apr. 1 – Jul. 30	Pasture	$6.12
Flushing, 4 wks.	Aug. 1 – Aug. 30	Pasture + 1 lb. corn	$1.29 + $1.99 = $3.28
Early preg., 15 wks.	Sept. 1 – Dec. 14	75 d pasture + 30 d crop aftermath & 1 lb. hay	$3.45 + $0.60 + $2.88 = $6.93
Late preg., 6 wks.	Dec. 15 – Jan. 30	4 lb. hay + 1 lb. corn	$16.13 + $2.98 = $19.11
Lactation, 8 wks.	Feb. 1 – Mar. 31	4.5 lb. hay + 2.25 lb. corn	$24.19 + $8.95 = $33.14
		Total annual ewe feed costs	$62.46

Average IN/OH/KY prices: Alfalfa hay = $.096/lb., Corn = $.071/lb. (http://future.aae.wisc.edu/index.html)

Pasture costs = $.046/ewe/day (210 days, 4 ewes per acre, rent of $38.41/acre, http://extension.missouri.edu/p/G427)

Crop aftermath grazing = $.02/ewe/day (my guess)

Spring Lambing (May 1)

Stage	Dates	Feed source?	Cost
Dry, 19 wks.	Jul. 1 – Oct. 30	Pasture	$6.12
Flushing, 4 wks.	Nov. 1 – Nov. 30	2 wk pasture & 2 wk crop aftermath + 1 lb. hay & 30 d 1 lb. corn	$.64 + $.28 + $2.13 = $3.05
Early preg., 15 wks.	Dec. 1 – Mar. 14	3.5 lb. hay	$35.28
Late preg., 6 wks.	Mar. 15 – Apr. 30	4 lb. hay + 1 lb. corn	$16.13 + $2.98 = $19.11
Lactation, 8 wks.	May 1 – Jun. 30	Pasture + 1 lb. corn	$2.58 + $3.98 = $6.56
		Total annual ewe feed costs	$70.12

Average IN/OH/KY prices: Alfalfa hay = $.096/lb., Corn = $.071/lb. (http://future.aae.wisc.edu/index.html)

Pasture costs = $.046/ewe/day (210 days, 4 ewes per acre, rent of $38.41/acre, http://extension.missouri.edu/p/G427)

Crop aftermath grazing = $.02/ewe/day (my guess)

Fall Lambing (Oct. 1)

Stage	Dates	Feed source?	Cost
Dry, 19 wks.	Dec. 1 – Mar. 31	3.5 lb. hay	$12.77
Flushing, 4 wks.	Apr. 1 – Apr. 30	4 lb. hay + 1 lb. corn	$10.75 + $1.99 = $12.74
Early preg., 15 wks.	May 1 – Aug. 14	Pasture	$4.83
Late preg., 6 wks.	Aug. 15 – Sept. 30	Pasture + 1 lb. corn	$1.93 + $2.98 = $4.91
Lactation, 8 wks.	Oct. 1 – Nov. 30	Pasture + 1 lb. corn	$2.58 + $3.98 = $6.56
		Total annual ewe feed costs	$41.81

Average IN/OH/KY prices: Alfalfa hay = $.096/lb., Corn = $.071/lb. (http://future.aae.wisc.edu/index.html)

Pasture costs = $.046/ewe/day (210 days, 4 ewes per acre, rent of $38.41/acre, http://extension.missouri.edu/p/G427)

Crop aftermath grazing = $.02/ewe/day (my guess)

Ewe Feed Costs

- Winter and spring have higher feed costs: $62.46 & $70.12, respectively
- Fall lambing advantage: $41.81, approx. $21 to $28 less than winter or spring lambing, due primarily to pregnancy and lactation on pasture

Lamb Feed Costs?

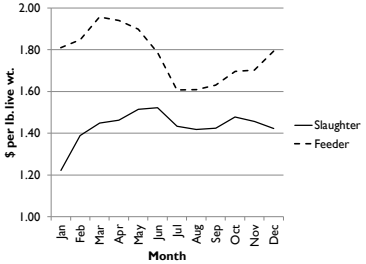
- Winter lambs, most likely, and fall lambs, definitely, finished in confinement to 125 lb.: 115 lb. gain x 5 lb. feed x $.122/lb. x 2 lambs per ewe = $140.30
- Spring lambs raised on pasture to 105 lb. and finished in confinement to 125 lb.
  - 1 lamb on pasture equivalent to .33 ewes = pasture cost of $.015/day x 180 days x 2 lambs = $5.40/lamb.
  - Feed from 105 to 125 lb. in confinement = 20 lb. gain x 8 lb. feed x $.122 x 2 lambs = $39.04
  - Total feed costs for 2 lambs = $5.40 + $39.04 = $44.44

Ewe & Lamb Feed Costs, 125 lb. lambs

- Winter lambs = Ewe feed ($62.46) + Lamb feed ($140.30) = $202.76
- Spring lambs = Ewe feed ($70.12) + Lamb feed ($44.44) = $114.56
- Fall lambs = Ewe feed ($41.81) + Lamb feed ($140.30) = $182.11

An advantage in total feed costs of spring lambs over fall lambs (less ~$68/ewe) and winter lambs (less ~$88/ewe).

Average Monthly Lamb Prices, 2010-2015 (Sioux Falls, SD)



https://www.extension.iastate.edu/agdm/livestock/pdf/b2-10.pdf

Lamb Value & Returns Over Feed, 125 lb. Lambs

- Winter lambs = Born in Feb., Marketed in Jul. = 125 lb. x 2 lambs x $1.43 = $357.50; Returns over feed costs = $357.50 - $202.76 = $154.74/ewe
- Spring lambs = Born in May, Marketed in Jan. = 125 lb. x 2 lambs x $1.22 = $305.00; Returns over feed costs = $305.00 - $114.56 = $190.44/ewe
- Fall lambs = Born in Oct., Marketed in Mar. = 125 lb. x 2 lambs x $1.45 = $362.50; Returns over feed costs = $362.50 - $182.11 = $180.39/ewe

Potential profit selling 2 market weight lambs/ewe: Spring Lambs ≥ Fall Lambs > Winter Lambs.

Lamb Value & Returns Over Feed, 60 lb. Lambs

- Winter lambs = Born in Feb., Marketed in May = 60 lb. x 2 lambs x $1.90 = $228.00; Returns over feed costs = $228.00 - $117.36 = $110.64/ewe
- Spring lambs = Born in May, Marketed in Sep. = 60 lb. x 2 lambs x $1.63 = $195.60; Returns over feed costs = $195.60 - $73.12 = $122.48/ewe
- Fall lambs = Born in Oct., Marketed in Jan. = 60 lb. x 2 lambs x $1.81 = $217.20; Returns over feed costs = $217.20 - $96.71 = $120.49/ewe

Potential profit selling 2 light-weight lambs/ewe:
Spring Lambs ≥ Fall Lambs > Winter Lambs.

Seasonal Effects on Ewe Reproduction

Ewes tend to have greater fertility and prolificacy from a fall mating (Sept. – Dec.) than from a spring/summer mating (Mar. – Jul.)

Reproduction in a commercial flock in New York (> 2,000 mature Dorset-Finn-Ile de France ewes)

Mating month	Fertility, %	Prolificacy, no.	Lambs/ewe mated, no.
January	91	1.92	1.75
March	81	1.82	1.47
May	75	1.76	1.32
July	83	1.80	1.49
September	95	2.12	2.01
November	96	2.20	2.11

Adapted from: Richard Ehrhardt, Michigan State University, Opportunities and Challenges for Year-Round Lamb Production, Wisconsin Sheep and Wool Festival, Sept. 10, 2016.

Lamb Feed Costs
(reduced reproduction with fall lambing)

- Winter lambs finished in confinement to 125 lb.: 115 lb. gain x 5 lb. feed x $.122/lb. x 2 lambs per ewe = $140.30
- Spring lambs raised on pasture to 105 lb. and finished in confinement to 125 lb.
  - 1 lamb on pasture equivalent to .33 ewes = pasture cost of $.015/day x 180 days x 2 lambs = $5.40/lamb.
  - Feed from 105 to 125 lb. in confinement = 20 lb. gain x 8 lb. feed x $.122 x 2 lambs = $39.04
  - Total feed costs for 2 lambs = $5.40 + $39.04 = $44.44
- Fall lambs finished in confinement to 125 lb.: 115 lb. gain x 5 lb. feed x $.122/lb. x 1.32 lambs per ewe = $92.60

Ewe & Lamb Feed Costs, 125 lb. lambs
(reduced reproduction with fall lambing)

- Winter lambs = Ewe feed ($62.46) + Lamb feed ($140.30) = $202.76
- Spring lambs = Ewe feed ($70.12) + Lamb feed ($44.44) = $114.56
- Fall lambs = Ewe feed ($41.81) + Lamb feed ($92.60) = $134.41

An advantage in total feed costs of spring lambs over fall lambs (less ~$20/ewe) and winter lambs (less ~$88/ewe).

Lamb Value & Returns Over Feed, 125 lb. Lambs
(reduced reproduction with fall lambing)

- Winter lambs = Born in Feb., Marketed in Jul. = 125 lb. x 2 lambs x $1.43 = $357.50; Returns over feed costs = $357.50 - $202.76 = $154.74/ewe
- Spring lambs = Born in May, Marketed in Jan. = 125 lb. x 2 lambs x $1.22 = $305.00; Returns over feed costs = $305.00 - $114.56 = $190.44/ewe
- Fall lambs = Born in Oct., Marketed in Mar. = 125 lb. x 1.32 lambs x $1.45 = $239.25; Returns over feed costs = $239.25 - $134.41= $104.84/ewe

Potential profit selling market weight lambs:
Spring Lambs > Winter Lambs > Fall Lambs.

Lamb Value & Returns Over Feed, 60 lb. Lambs
(reduced reproduction with fall lambing)

- Winter lambs = Born in Feb., Marketed in May = 60 lb. x 2 lambs x $1.90 = $228.00; Returns over feed costs = $228.00 - $117.36 = $110.64/ewe
- Spring lambs = Born in May, Marketed in Sep. = 60 lb. x 2 lambs x $1.63 = $195.60; Returns over feed costs = $195.60 - $73.12 = $122.48/ewe
- Fall lambs = Born in Oct., Marketed in Jan. = 60 lb. x 1.32 lambs x $1.81 = $143.35; Returns over feed costs = $143.35 - $78.04 = $65.31/ewe

Potential profit selling light-weight lambs:
Spring Lambs > Winter Lambs > Fall Lambs.

Spring Lambs

Advantage:

More potential for greater returns over feed costs than with winter- or fall-born lambs due to lower lamb feed costs from pasture rearing.

Spring Lambs – Pastured Reared

Disadvantages:

1. Internal parasites: increased costs for control, greater risk of death, and greater potential for reduced performance compared to barn-reared winter- and fall-born lambs.

Spring Lambs – Pastured Reared

Disadvantages:

2. Predators: Increased risk of death from predators compared to barn-reared winter- and fall-born lambs.

Spring Lambs – Pastured Reared

Disadvantages:

3. A spring lambing will compete for labor needed for planting and other spring activities on crop farms.

An alternative to spring lambing to minimize winter lambing:

- Expose all ewes in Apr./May for Sept./Oct. lambing – preferred lambing time.
- Expose all non-pregnant ewes in Aug./Sept. for Jan./Feb. lambing in order to maintain at least 12-month lambing interval on all ewes.
- Wean Jan./Feb. lambs by 45-60 days of age to allow ewes to recover for Apr./May mating.
- Select replacements from fall-born lambs.

Accelerated Lambing Programs

8-month lambing interval – 3 lambings in 2 years

	YEAR 1												YEAR 2											
MONTH	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
FLOCK A	L			B				L		B								L		B				
FLOCK B					L		B						L		B				L		B			
	L			B	L		BL			B			L		B	L			BL		B			

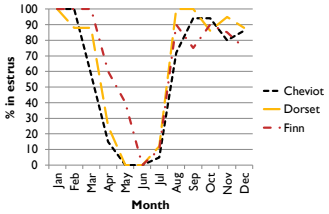
Star system – 7.2-month lambing interval, 5 lambings in 3 years

Disadvantage: All accelerated systems suffer from poorer reproduction during spring/summer matings.

Improved Reproduction in Spring/Summer Matings

Use breeds that tend to be less-seasonal breeders:

1. Dorset
2. Finnsheep
3. Romanov
4. Rambouillet
5. Polypay
6. Katahdin
7. St. Croix
8. Barbados
9. Arcott Rideau
10. Others?



Lamberson and Thomas. 1982. J. Anim. Sci. 54:533-539

Improved Reproduction in Spring/Summer Matings

Use the ram effect:

1. Induces estrus in females about to come out of anestrus
2. One vasectomized or intact male to 50 females
3. Isolate females from males at least 30 days prior to exposure
4. Ewes will exhibit estrus in two groups, either 17-18 or 22-23 days following initial male exposure.

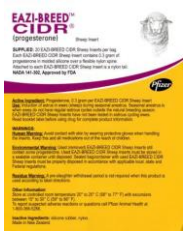
Does it work on ewes in deep anestrus?

Adapted from: Richard Ehrhardt, Michigan State University, Opportunities and Challenges for Year-Round Lamb Production, Wisconsin Sheep and Wool Festival, Sept. 10, 2016.

Improved Reproduction in Spring/Summer Matings

Hormonal control:

1. Insert CIDR for 5 days
2. Administration of a compound with FSH-like activity (PG600) one day prior to CIDR removal may increase ovulation rate in lowly reproductive sheep – not generally recommended.
3. Estrus 1 to 3 days following CIDR removal.
4. 40 – 85% conception in spring-mated ewes.



Improved Reproduction in Spring/Summer Matings

Selection for spring fertility:

1. Heritability is low: 0.08 – 0.18 (Al-Shorepy & Notter, 1994)
2. Evidence of selection progress from research.
3. Observations of improvement in spring fertility in flocks selecting replacements from ewes that consistently lamb in the fall.

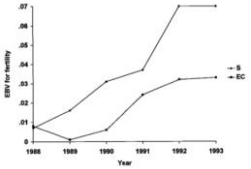


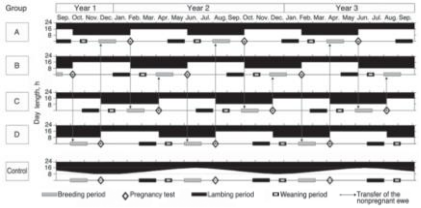
Figure 2. Genetic trends in fertility EBV for ewes mated in S and EC in each year.

S and EC flocks were both mated in the spring. Replacements for S came from the S flock, and replacements for EC came from a fall-mated flock. From: Al-Shorepy and Notter. 1997. J. Anim. Sci. 75:2033–2040.

Improved Reproduction in Spring/Summer Matings

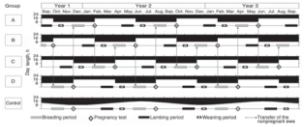
Light control:

1. Intensive light control practiced in large confined flocks in Quebec, Canada.
2. Ewes exposed to alternating 4-month periods of short days (8 hr daylength) and long days (16 hr daylength)



From: Cameron et al. 2010. J. Anim. Sci. 88:3280-3290.

Improved Reproduction in Spring/Summer Matings

Intensive light control:

Reproductive performance of accelerated lambing programs with and without light control, Arcott Rideau ewes			
System	Lambings/ewe/yr (1.5 max.)	Lambs/ewe/lambing	Lambs/ewe/yr
Light control + progesterone	1.37	2.81	3.85
Normal daylength + progesterone	1.26	2.27	2.86
Adapted from: Cameron et al. 2010. J. Anim. Sci. 88:3280-3290.