INCREASING EWE PRODUCTION EFFICIENCY:
LEVERAGING EWE LAMBS TO INCREASE FLOCK LAMBING RATES

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Dr. Hulet et al. (1969) provided evidence that an early-puberty ewe (a ewe that will breed before 1 year of age) is superior to a ewe that does not demonstrate puberty as a ewe lamb. From 2 to 6 years of age, Dr. Hulet’s early-puberty ewes birthed about 0.5 more lambs than late-puberty ewes (Hulet, C. V., E. L. Wiggins, and S. K. Ercanbrack. 1969. J. Anim. Sci. 28:246-252)
More recently, when the first year’s production data were subtracted from lifetime performance, Targhee ewes that lambed by 1 year of age weaned 0.4 more lambs over a lifetime compared with ewes that did not lamb by 1 year of age (Taylor, 2009).

Adding back the first year’s data resulted in 1.02 more lambs weaned over a lifetime.
Dr. Kirschten et al. (2013) estimated that the Year-old Lambing Percentage (YLP) heritability was 0.18±0.04.

Not outstanding, but something we can work with over time.

Dr. Kirschten also developed a test YLP breeding value to identify sires that would generate daughters that are more likely to lamb at 1 year of age.

Year-1 pilot lambing results for 1-yr-old ewes sired by Select and Control sires:

- Control line = 47.3% (±6.5%) lambed
  - Comparable to last 20 years
- Select line = 57.7% (±6.6%) lambed

SO, WHY DO SOME PRODUCERS CHOOSE NOT TO HAVE THEIR EWE LAMBS BRED?

Top six assumptions were:

1. Ewe-lamb pregnancy rates are too low in wool-type breeds.
2. Ewes that lamb at 1 year of age may have a shorter life in the flock.
3. Ewes that lamb at 1 year of age may have stunted growth, resulting in a lower mature body weight.
4. Ewes that lamb at 1 year of age may fail to lamb at 2 years of age.
5. Ewe lambs are poor mothers.
6. The cost of ewe-lamb development may be greater than return from resulting lambs sold.

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LEVERAGING EWE LAMBS TO INCREASE FLOCK LAMBING RATES: THE PROOF

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EXTENSIVE ANALYSIS OF TARGHEE EWES WITH REGARD TO LIFETIME REPRODUCTIVE SUCCESS

- From 2007 to 2009, 540 sound Targhee ewe lambs were monitored for signs of puberty and reproductive success.
- From September thru November heat, was monitored daily using vasectomized rams.
- Once heat was detected, monitoring stopped and ewes were exposed to intact rams.
- Pregnancy ultrasound was conducted at ~35 days after rams were removed.
EXTENSIVE ANALYSIS OF TARGHEE EWES WITH REGARD TO LIFETIME REPRODUCTIVE SUCCESS

- Ewes had full opportunity to breed by 240 days of age.
- Lifetime production up to 7 years of age was recorded.
- Ewes were culled based on standard culling practices, such as:
  - Failure to lamb (≥ 2 years)
  - Disease or impairment
  - Breed standards
  - Death
  - Age (> 7 years)

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COMPARING THE ASSUMPTIONS WITH THE RESULTS

1. **Ewe-lamb pregnancy rates are too low in wool-type breeds.**

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6. **The cost of ewe-lamb development may be greater than return from resulting lambs sold.**
**RESULTS: EWE-LAMB PREGNANCY RATES**

- **Pregnancy observed at ~35 days post breeding?**
  - No = 245
  - Yes = 295 (55%)
  - High relationship with lifetime reproductive performance ($P < 0.0001$)

- **Lambed by 1 year of age?**
  - No = 284
  - Yes = 256 (47%)
  - Highest relationship with lifetime reproductive performance ($P < 0.0001$)
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RESULTS: **Ewe Longevity**

Flock longevity and attrition rates of ewes that were either pregnant (Yes; green squares) or not pregnant (No; black diamonds) as ewe lambs

- **No**: 3.3 (0.11) years
- **Yes**: 3.6 (0.11) years

\( y = -16.486x + 112.93 \)

\( y = -15.541x + 113.45 \)

\((P < 0.0001)\)
RESULTS: EWE LONGEVITY

- For ewes that were pregnant (“Yes,” green line in the graph) as ewe lambs:
  - Average culling rate year to year was 15.5%
  - Time in the flock was 3.6 years

- For ewes that were not pregnant (“No,” black line in the graph) as ewe lambs:
  - Average culling rate year to year was 16.5%
  - Time in the flock was 3.3 years

CONCLUSION: Ewes that were pregnant as ewe lambs remained in the flock longer over their lifetime than those that were not pregnant as ewe lambs.
RESULTS: **LONGER LIFE IN THE FLOCK RESULTS IN GREATER LIFETIME PRODUCTION**

Cumulative lifetime reproductive performance of ewes that were either pregnant (Yes; green bars) or not pregnant (No; black bars) as ewe lambs

- **Birthing events**: No - 2.2, Yes - 3.3, +1.1
- **Lambs birthed**: No - 3.6, Yes - 5.0, +1.4
- **Lambs weaned**: No - 2.4, Yes - 3.5, +1.1

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RESULTS: LONGER LIFE IN THE FLOCK RESULTS IN GREATER LIFETIME PRODUCTION

Cumulative lifetime weight-of-lamb-weaned (lb) of ewes that were either pregnant (Yes; green bar) or not pregnant (No; black bar) as ewe lambs

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COMPARING THE ASSUMPTIONS WITH THE RESULTS

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RESULTS: LIFETIME AND YEARLY BODY WEIGHTS

Lifetime post-lambing (~35 days) body weight (lb) of ewes that were either pregnant (Yes; green bars) or not pregnant (No; black bars) as ewe lambs.

CONCLUSION: Over a lifetime, ewes that were pregnant as ewe lambs were slightly heavier than ewes that were not pregnant as ewe lambs.
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RESULTS: SUCCESS OF LAMBING AS A 2-YEAR-OLD AFTER LAMBING AS A 1-YEAR-OLD

- 77% of ewes that lambed at 1 year of age, lambed again at 2 years of age.
- However, for ewes that did NOT lamd at 1 year of age, only 79% lambed at 2 years of age.

CONCLUSION: Lambing at 1 year of age didn’t seem to result in any disadvantage for ewes when lambing again as a 2-year-old.
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As we all know, most ewe lambs are poor mothers. However, anecdotal evidence from lambing-shed managers indicated that ewes that are lambing for the first time as either a 1-year-old or 2-year-old are:

- "Equally stupid"
- "But, 2-year-olds are bigger, and thus are a greater pain to manage in the jug."

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Example: Assume a pregnant ewe lamb with a weaning rate of 0.71 and an open ewe lamb sold for slaughter. Both ewes would be on a “growing/development” diet for about 100 days, with a gain of 0.4 to 0.5 lb/day. Based on the study flock:

- Value per pregnant ewe lamb at first weaning = $34.19
  - 295 pregnant ewes @ 79.52 + (-45.33) = +$34.19/ewe

- Value of open ewe lamb after breeding = $41.74
  - 245 open ewes @ 125.07 + (-83.33) = +$41.74/ewe

This example assumed moderate feed costs (negative number in parentheses) and the lowest lamb and wool values over the last 5 years.

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EXAMPLE: IS THE COST GREATER THAN LAMBING VALUE?

- Based on this example, the open ewe lamb sold as a slaughter lamb would be slightly more valuable in the first year. Keep in mind that the open ewe lamb had to be sold. But, the pregnant ewe lamb had a lamb and was retained in the flock.

- When you add the lifetime production advantage back to the ewe lamb that was pregnant, the minimum return would be $68.09, which results in a +$26.35 advantage for a ewe that is pregnant as a ewe lamb over the ewe lamb that was open and sold for slaughter.

- Again, this example used the lowest wool and lamb prices over the last five years. If the highest prices were used, the advantage for the pregnant ewe lamb could be near $100.
CONCLUSIONS

Based on this study with the Targhee breed, ewes that were pregnant as ewe lambs:

- Had 0.13 more lambs per year over their lifetime
- Stayed in the flock about 10% longer
- Had a slightly greater mature body weight
- Also, had a slightly greater fleece weight, which was most likely a component of the body-weight effect
RECOMMENDATIONS: EWE LAMB BREEDING PROGRAMS FOR WOOL BREED FLOCKS

- Select more ewe lambs than normal for retention.
  - Use age-adjusted weaning weights
  - Focus on ewes from twin-plus litters
- Develop a nutrition program soon after weaning (~120 days of age) that achieves an average daily gain of at least 0.4 lb.
- Very early, consider the marketing venue for open lambs.
- Purchase sires that address multiple traits
  - Consider the NSIP Western Range Index EBV, which focuses on multiple traits

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A ewe lamb breeding program is most effective if the producer has a feed lot and/or can mix and efficiently deliver diets of high nutritional value.

It is not advisable to engage in a ewe lamb breeding program if ewe lambs are managed on medium- to low-quality pasture. Remember, wool-breed ewe lambs must be gaining around 0.4 lb/day soon after weaning or beginning around 120 days of age.

Don’t get stuck with fat open ewes. Make plans in advance of what to do with open ewe lambs. It is best to ultrasound ewes sometime after breeding and consider marketing those that are open.

Beware of “single-trait” selection. Do not sacrifice progress you’ve made towards other important traits just for the sake of getting more ewe lambs pregnant.