CRC for Premium Quality Wool

Follicle Initiation and Nutrition

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Effect of prenatal nutrition on P follicle initiation

- Pregnant ewes denied access to feed and water for 96 hours at either 27 days or 35 days or at both times
  - P follicle density can not be decreased without increasing S:P
  - Changes in wool growth are not solely due to changes in S:P, follicle density or P density
  - Short periods of starvation during P follicle initiation do not affect wool producing ability

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Source: Skerrit et al. (1994)

Effect of underfeeding severely or moderately during pregnancy on birth weight and S:P at birth

A: Well fed during pregnancy
B: Severe underfeeding 112 - 142 days of gestation and then normal.
C: Severe underfeeding 112 - 131 days of gestation and then well fed 132 -142.
D: Severe underfeeding 95 - 116 days of gestation and then well fed 117 - 142.
E: Long term underfeeding (moderate) 35 - 142 days of gestation.
F: Long term underfeeding (moderate) 35 -119 days and then normal 120 - 142

	A	B	C	D	E	F	S.E.M
Weight (kg)	5.12	3.84*	3.97*	4.10*	3.81*	3.65*	0.183
S/P	2.42	1.71*	1.42*	2.10	1.79*	2.06	0.190
n	22	16	16	16	11	6	

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The effect of perinatal nutrition and twins vs singles on S:P ratio

- **Ewes were offered either**
  - Maintenance ration (Maintenance)
  - Maintenance diet supplemented with lupins to give twice maintenance requirement (Lupin).
  - Maintenance diet supplemented with canola to give twice maintenance requirement (Canola).

	Single born	S.E.M	Twin born	S.E.M
Maintenance	18.8	1.16	14.6	1.15
Lupin	18.1	1.43	14.7	1.34
Canola	19.2	1.27	18.5	1.24

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Source: Hocking Edwards et al., (1996)

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Effect of above maintenance intake of ewes from 110 days of gestation on S:P of their offspring

- Control - Ewes fed to maintain maternal liveweight
- Canola - Ewes fed control diet plus canola meal
- Barley - Ewes fed control diet plus barley

Maternal diet	Birth	Weaning
Control	15.7 ± 1.24	17.9 ± 1.71
Canola	15.6 ± 0.71	18.9 ± 1.63
Barley	14.5 ± 0.98	17.7 ± 1.01

- **No effect of diet on S:P at birth or weaning**
- **Barley ewes had greater liveweight at parturition than other ewes**

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Effect of above maintenance intake of ewes on S:P of twins and singles

S:P of single and twin lambs at birth

Maternal diet	Single	Twin
Control	15.3 ± 1.23	14.6 ± 1.39
Canola	17.6 ± 1.12	14.5 ± 1.02
Barley	17.9 ± 1.39	16.0 ± 1.11

- No treatment effect
- Single lambs had a higher S:P than twin lambs ($P < 0.05$)

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Summary

- **Submaintenance diets cause a decrease in S:P ratio at birth compared to maintenance diets**
  - **severe undernutrition in late pregnancy and postnatally reduces birth weight, growth, follicle population and wool production. The effects are cumulative but refeeding can overcome some of the poor nutrition setback (Everitt, 1967)**
  - **S:P ratio is affected by underfeeding during pregnancy but not all body sites respond the same to nutritional manipulations (Kelly et al., 1996).**
- **Prenatal nutrition during late pregnancy does affect follicle initiation but the degree is not always predictable.**

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