



# Growth, meat yield and meat quality of lambs born to ewes submitted to energy restriction during mid gestation

L.Piaggio<sup>1</sup>, G.Quintans<sup>2</sup>, R. San Julian<sup>2</sup>, F. Baldi<sup>3</sup> and G.E.Banchero<sup>2\*</sup>

<sup>1</sup>Secretariado Uruguayo de la lana, Uruguay; <sup>2</sup>INIA, Instituto Nacional de Investigación Agropecuaria, Uruguay ; <sup>3</sup>Universidad Estatal Paulista, Jaboticabal, São Paulo, Brasil. \*E-mail: [gbanchero@inia.org.uy](mailto:gbanchero@inia.org.uy).



## Objective:

➤ Evaluate the effect of energy restriction from day 45 to day 115 of gestation in adult ewes bearing single or twin lambs on lamb's birth, weaning and slaughter weight, carcass and some meat traits.

## Materials and Methods:

- **Animals:** 78 adult Polwarth ewes sired with Texel rams, 39 bearing single lambs and 39 bearing twin lambs
- **Experimental design:** T70 or T100 to provide 70% or 100% of the energy requirements for the second third of gestation
- Ewes were offered a total feed ration (TMR) 863,2g DM.kg<sup>-1</sup>; 137,2g CP.kg DM<sup>-1</sup>; 237,6 gADF.kg DM<sup>-1</sup> from day 45 to day 115 of gestation. On day 120 all ewes were shorn and grazed oat grass until weaning (109 days of age).
- After weaning, 90 lambs (34 single and 56 twins from both treatments) were lot-fed (TMR: 152 g CP.kg DM<sup>-1</sup> and 2.6 MCal ME/kg DM<sup>-1</sup> *ad libitum* to determine ADG. At 167 days of age, lambs were shorn and slaughtered.
- The model included the type of birth, sex, treatment, and the interaction between these factors. For weaning and final weight and carcass characteristics, age was included as covariate. Carcass and meat traits were adjusted by slaughter weight. Means were compared by the Tukey test.

## Results and Discussion:

- Energy restriction affected lamb birth weight but no later live weights or live weight gain.
- There was no interaction between sex with treatment or litter size with treatment for all the traits analysed.
- Litter size affected lamb live weights at birth, weaning or final, but no effects were obtained for pre and post weaning live weight gain.
- Sex and litter size affected slaughter weight ( $p < 0.05$ ), however no effects were obtained for treatment.
- Lambs born T70 ewes had lower weight and yield of French rack cut and lighter legs weight which tended to yield less than those of lambs from T100 ewes.
- back fat thickness increment during the finishing period was higher for lamb from T70 ewes compared to T100 (0.37 vs 0.21mm).

Trait	Treatment		Sex		Litter Size		P-Value		
	T70	T100	M	F	S	T	Trt	Sex	LS
Birth Weight, kg	4.55±0.09	4.22±0.09	4.53±0.09	4.24±0.08	4.84±0.09	3.92±0.08	0.02	0.02	<.01
Slaughter Weight, kg	32.0±0.67	33.0±0.69	34.2±0.74	30.9±0.61	33.9±0.75	31.1±0.60	0.3	<.01	<.01
French Rack, grs	718±9.31	746±9.83	730±10.8	734±8.69	719±10.8	745±8.49	0.048	0.73	0.07
Leg Weight, grs	3873±39.1	3775±41.3	3775±45.3	3872±36.5	3827±45.5	3821±35.6	0.09	0.11	0.92
French Rack yield, %	2.25±0.03	2.33±0.03	2.28±0.03	2.29±0.03	2.25±0.03	2.33±0.03	0.047	0.79	0.06
Leg yield, %	12.2±0.14	11.9±0.15	11.9±0.17	12.2±0.14	12.0±0.17	12.0±0.13	0.12	0.17	0.88
Shear Force, kgf	4.43±0.35	3.63±0.35	3.91±0.35	4.15±0.35	3.93±0.35	4.12±0.35	0.11	0.63	0.72

Note: the interaction between Treatment and Sex or Treatment an LS were not significant ( $P > 0.05$ ) so they are not presented

## CONCLUSIONS:

Restriction of energy during gestation might alter lamb carcass composition with more fat deposition, less yield of valuable cuts and a tougher meat.