

Productivity improvement in sheep associating polygenic selection and diffusion of the FecXR allele*J. Folch¹, B. Lahoz¹, J.L. Alabart¹, J.H. Calvo¹, E. Fantova² and I. Pardos³**¹CITA de Aragón, Av. Montañana 930, 50059, Spain, ²Oviaragón-Grupo Pastores Crta Cogullada s/n, 50014, Spain, ³EPS Huesca, Univ. of Zaragoza, Ctra Cuarte s/n 22071 Spain, jfolch@aragon.es*

The Cooperative Oviaragón carries out since 1994 a selection program for prolificacy in Rasa Aragonesa sheep, with 205000 sheep at present. Within this program, a mutation in the BMP15 gene located in the X chromosome (FecX^R allele, ROA[®]) was discovered in 2007. This polymorphism increases prolificacy in heterozygous carriers (R+), resulting in 0.35 extra lambs/lambing ewe, and produces sterility in homozygosis. Due to the productive interest, a controlled program for the outreach of the FecX^R allele by AI has been developed (7,500 AI/year). The program includes: (1) Electronic identification and computerized control to avoid sterility; (2) research on the effects of the FecX^R allele on reproductive traits: ovulation rate (+0.44 in ewe lambs and +0.63 in adults); response to eCG (increased response to the standard dose); preovulatory LH surge (no differences); fertility after AI (trend to increased fertility: +11.6%) (3) Studies on the offspring (no effect on birth weight, growth rate and meat characteristics) (4) Technical-economic studies on 47 farms classified in 3 groups: 'R+' (polygenic selection and at least 5% of R+ ewes), 'Selection' (polygenic selection without R+) and 'Non-selection'. The number of lambings/year were 1.28, 1.19 and 1.03 (P<0.01), and prolificacy was 1.57, 1.36 and 1.29 (P<0.001), respectively, with no differences in triplets or lambs mortality. The 'R+' group sold 0.34 and 0.55 extra lambs/ewe/year compared to 'Selection' and 'Non-selection' groups. Although production costs were higher in 'R+' and 'Selection' groups, they obtained greater gross margins (25,153€ and 25141€ vs 15,644€). As result, the population of R+ has been increasing up to 8,900 recorded ewes. The selection program for prolificacy goes on with a combined polygenic selection and FecX^R allele dissemination. Financed by MEC and INIA (B. Lahoz grant).