The aim of this study was to estimate genetic parameters and response to selection for body weight at 11 weeks of age in the Ardennaise chicken breed. Estimations were realized over four generations. From an assumed animal model including fixed effects of hatching year and sex interaction, two models were derived; one included direct genetic and residual random effects; the other included, in addition, random maternal genetic effect. Additive direct heritability was found to be moderate ($h^2 = 0.30$), suggesting that selection may be effective in improving body weight and related feed efficiency in our breed. Maternal heritability was low ($h^2 = 0.16$) and the genetic direct-maternal correlation was negative ($r = -0.69$). 

Effectiveness of mass selection was confirmed by the phenotypic results obtained in this experiment with body weight increasing from 924.70g (±206.84 g) to 1443.64 g (±145.79 g) in males and from 766.51 g (±176.99 g) to 1128.99 g (±106.26 g) in females. Selection for higher body weight at 11 weeks in as-hatched chickens resulted in more than one and half folds difference in feed efficiency (5.97 in generation 0 vs 3.64 in generation 3).

**Key Word:**
Ardennaise chicken breed, body weight, genetic parameters, slow-growing