

Molecular genetics in animal breeding

S u m m a r y

The review addresses utilization of advances of molecular genetics in livestock breeding, with a stress put on the marker-assisted selection. Beginning with the expectations which emerged some fifteen years ago, the paper defines the main differences between the classical and marker assisted selections and gives examples of discrepancies between the expectations and the realized effects, presented against the theoretical background. From amongst the possible causes of the discrepancies the following are mentioned: difficulty to detect, the most useful, major genes, recombination between marker and coding region, simplified models of inheritance (estimating marker effects without accounting for pleiotropy, penetration degree, imprinting, tissue specificity of gene expression, epistasis and dominance), insufficient data bases for low heritable traits and failure to properly define breeding goals. The future of breeding relies on the joint efforts of molecular and population genetics. The latter one is, for the time being, the more crucial component of such a union.