



Optimizing Selection on Multiple Identified Quantitative Trait Loci in Population with Overlapping Generations

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Abstract

A new method was developed to realize and optimize selection on multiple identified quantitative trait loci (QTLs) and polygenic inheritance breeding value, in order to maximize a weighted sum of cumulative response to selection over multiple years in a population with overlapping generations. The model allows for a population with multiple age classes, different number of age classes between sires and dams, and varied genetic contribution of the age classes. The optimization problem was formulated as a real-life single optimal selection problem and solved by a forward and backward iteration loop. The practical utility of this method was discussed in an example of pig breeding production with overlapping generations. The selection imagined of this method was significant.

Keywords

QTL; optimization selection; multiple QTLs; animal science

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