

亲本对后代群体的不均等遗传贡献及其优化控制

杨宁, 吴常信

北京农业大学畜牧系

收稿日期 修回日期 网络版发布日期 接受日期

摘要 由于自然选择和人工选择的共同作用, 使不同亲本的基因在后代基因库中所占比例有所不同, 即亲本对后代群体的不均等遗传贡献。本文分析表明, 不均等遗传贡献通过实现选择差和群体有效含量对遗传进展产生影响, 并使传统的预估选择反应公式 $R=i\sigma_p h^2$ 出现误差。育种的目标首先是找出在遗传上真正优秀的个体, 同时还应当使越优秀的个体对后代基因库的遗传贡献越大。但另一方面尚未得到系统的研究。本针对这一点, 提出了以加快群体遗传进展为总目标、充分考虑育种约束条件的优化控制遗传贡献模式下所获得的实现选择差可比实际值提高34.27—216.57%。

关键词 [选择反应, 群体含量, 遗传贡献, 优化](#)

分类号

Unequal Genetic Contributions of Parents to Offsprings and Their Optimal Control

Yang Ning, Wu Changxin

Department of Animal Science, Beijing Agricultural University 100094

Abstract

Due to the joint effects of natural and artificial selection, the proportions of genetic materials originating from different parent may vary in the gene pool of offsprings, and this creates a problem of unequal genetic contributions of parents to offsprings. It is shown that unequal genetic contribution substantially affects the genetic gain via realized selection differential and effective population size, and brings error to the empirical prediction formulae of selection response: $R=i\sigma_p h^2$. The aim of breeding should be to select the genetically superior individuals and then to make more genetic contributions of better parents to offspring gene pool. However, the latter aspect has been ignored in theoretical study as well as in certain breeding practice. To deal with the problem, a method which takes maximizing genetic advance as general objective and considers some breeding restrictions, is suggested to control the percentage of genetic contributions. A numerical example from egg type chicken breeding is used to demonstrate the effects of optimal control of unequal genetic contributions. The result indicates that at the same level of effective population size, the realized selection response for different traits under the optimal pattern of unequal genetic contributions could be 34.27—216.57% higher than that under the actual unequal pattern.

Key words [Selection response](#) [Population size](#) [Genetic contribution](#) [Optimization](#)

DOI:

通讯作者

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(516KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中包含“选择反应, 群体含量, 遗传贡献, 优化”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [杨宁](#)
- [吴常信](#)