Correlated Selection Responses: Pleiotropy, Linkage, or Drift?. (C01-casler071222-Oral)

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Abstract:

Neutral detergent fiber (NDF) concentration is highly predictive of voluntary intake potential and animal performance. However, forage yield appears to be positively correlated with NDF concentration. One cycle of divergent selection for NDF concentration were completed in four smooth bromegrass (Bromus inermis Leyss) populations. These populations were used to create a statistical separation of the effects of pleiotropy, linkage, and drift as causal effects of the genetic correlation between NDF and four fitness traits. Pleiotropy was estimated as the main linear selection effect. Linkage was estimated as the interaction of linear selection with population. Drift was estimated as the non-linear (asymmetrical) selection effect. Pleiotropy appeared to the the most important factor regulating the genetic correlation between forage yield and NDF. Linkage appeared to be the most important factor for survival and lodging. Drift appeared to be the most important factor for seed yield, a trait highly sensitive to inbreeding depression.

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Presentation Information:

Presentation Date: Thursday, November 14, 2002
Presentation Time: 8:15 am

Keywords:

genetic correlation, statistical methods, selection methodology, Bromus inermis