

Calving ability of a bull can be estimated as sire or as grandsire. Are studied the effects of a selection based on: 1) the averages for bulls as sires; 2) the averages for bulls as grandsires; 3) a weighed average of the two — for different values of the variance of maternal effects relative to the variance of direct effects and for different values of the correlation between these two kinds of effects.

It is recommended, for problem breeds, to characterize the genotypes as completely as possible, through progeny-testing and look for favourable genetic combinations regarding: 1) final weight; 2) carcass composition; 3) calving ability in its direct and maternal components.

#### ERFAHRUNGEN MIT UND AUSSICHTEN AUF ANTAGONISTISCHE SELEKTION (AS)

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As und Restringierte Index Selektion (RIS) werden in zunehmendem Maße experimentell bearbeitet. Die Erfolge sind geringer als erwartet, auch wenn die verminderte genetische Variabilität ( $1-r_{\xi}^2$ ) in Rechnung gestellt wird. Nichtsdestoweniger konnten in den meisten Versuchen Veränderungen in der gewünschten Richtung erzielt werden, wenn diese auch nur halb so groß wie erwartet waren. Neben Zufallsdrift und ungenauen Parameterschätzungen scheint bei AS auch die Veränderung der genetischen Korrelation bzw. ihre Asymmetrie eine größere Rolle als in einfachen Selektionsexperimenten zu spielen.

In Haustieren verhalten sich eine Reihe von Merkmalen antagonistisch. In einer Reihe von Rassen und Schlägen konnten solche auch in zufriedenstellender Weise kombiniert werden. Preisverhältnisse allerdings verhindern häufig die Inkaufnahme geringen Zuchtfortschritts des Hauptmerkmals die sich bei AS einstellen würde.

#### ANTAGONISTIC TRAITS IN PIG BREEDING

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A review of some of the literature on antagonistic traits is presented.

In reproductive aspects there is evidence concluding that selection for decreased fatness and/or increased growth would not adversely affect reproductive traits. However, it is clear that there is an environmental/maternal effect in some populations operating against large litter size. Little evidence is available on behavioural aspects.

There is no clear evidence regarding the relationships between feed intake, feed efficiency, growth and lean but most workers agree that selection for growth and for loin eye area will be difficult due to the antagonism between them.

Meat quality aspects are not the remit of this paper but clearly selection for increased lean will, in many populations, result in antagonistic responses for carcass quality.

Relationships which are less than optimal and, therefore, to an extent detrimental, are discussed.

It is concluded that whilst the antagonisms may not be consistent over breeds there is sufficient evidence to indicate the further development will probably be by the use of specialised sire and dam lines, although this policy may create problems for public schemes.

#### SIMULTANEOUS SELECTION WITH FIXED CULLING LEVELS IN THE CASE OF CORRELATED TRAITS

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The special properties and relative efficiency of simultan-selection with fixed selection limits are discussed dependent on selection intensity, correlations between traits, and the relation of the selection limits. The essential results are as follows: