überschritten haben, näher untersucht werden könnten. Hilfsparameter, die die Konstitution charakterisieren, sollten bei Basiszuchten herangezogen werden können, um eine Verknüpfung zwischen physiologischer Voraussetzung und eigentlicher Leistung zu finden. Resultierende Modelle könnten dazu dienen, das Leistungsmuster zu beurteilen auch wenn keine Angaben für einen metabolischen Index vorhanden sind.

ESTIMATION OF THE IMPROVEMENT LAG IN VERTICAL STRUCTURE OF HERDS IN HYBRIDIZATION PROGRAMME IN PIG BREEDING

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Equations for the estimation of genetic response achieved during one reproduction period in a three-tier system of herds were derived to determine the improvement lag between multiplier and elite herds and between commercial and multiplier herds used for the hybridization programme in pig breeding. The mean values of a production trait in individual categories of herds with regard to these improvement lags and reproduction periods are tabulated.

SELECTION INDEX FOR DESIRED GAINS

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Derivation of a selection index (I) to estimate the breeding value of an individual for various traits can be realised by definition of an aggregate genotype (H) in which traits are weighted by (relative) economic weights. Sometimes detection of unique economic weights is impossible. In those cases inspection of expected correlated responses in those traits to index selection may help to decide for a certain set of economic weights. Ultimately, one may wish to dercive a selection index not given economic weights but given desired responses to selection. Solutions to this problem are given and it has been pointed out that, assuming that the number of variates in I is larger than the number of traits in H, an infinite set of index solutions exists : all giving the desired responses to selection in the traits in H. Only one solution among these, however, results in maximum desired responses.

MODELS FOR REALISED AND PREDICTED HERITABILITIES

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The on-farm management practices which may bias phenotypic covariances as estimators of genetic parameters in a commercial pig population are discussed. A procedure is developed which should correct point estimates for environmental bias in a non-rendom mating population.

REDUCING SAMPLING ERRORS IN CONSTRUCTING GENETIC SELECTION INDICES

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A method of modification (bending) of estimates of parameters in constructing selection indices is proposed. The method consists of reducing the spread of the roots of the determinantal equation $|\widehat{G} - \lambda\widehat{P}| = 0$, or, equivalently, the roots of $\widehat{P}^{-1}\,\widehat{G}$. Monte-Carlo simulation indicated that the procedure is effective in improving the achieved response. Methods of choosing the bending factor in practice are considered.