LONG- AND SHORT-TERM CONSIDERATIONS IN BREEDING GOALS AND ECONOMIC WEIGHTS

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Problems connected to the definition of breeding objectives are discussed with special reference to a systems approach to breeding programs.   Three system networks are identified:
— The components in the development and running of breeding programmes;
— The dissemination and the expressions of an achieved genetic change in the population;
— The economical mechanisms involved in the utilization of genetic gain.

The last network expands the system under consideration to the whole agricultural system and society.   Obviously the development of breeding objectives is an activity where several advantageous features of a systems analysis approach can be utilized.   There seems to be and immediate need for development of computational methods based on systems philosophy.   In addition, establishment of a proper course of action in developing breeding objectives in practice seems essential.

SYSTEMS ANALYSIS APPROACH TO ORGANIZATION OF ANIMAL BREEDING

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In connection with animal breeding various structures of organization were developed. It is appropriate to understand these structures as systems and to form them after the principle of systems analysis.
To demonstrate this an example is given relating to the organization of the federal hybrid breeding program for pigs in the Federal Republic of Germany.   The problem is to form the regional organizations of this breeding center as efficiently as possible.   By using the systems analysis the objective, the elements (being e. g. the production steps such as multiplying, piglet production and fattening) the relations between the elements and the system behaviour have to be analysed.   It is shown how on this basis of systems analysis, proposals can be worked out for the organizational development.
The systems analysis can then be completly utilized if systematic controls of the experiences of organization take place.   It is to be examined, whether simulation models can be applied to form organizational structures for animal breeding and how these structures can be involved in the analysis of whole systems of animal production.

INCOME AND RISK FOR DAIRYMEN SELECTING SIRES FOR ARTIFICIAL INSEMINATION

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Expected income and risk for dairymen was computed for alternative sire selection methods. Different levels of mean transmitting ability (TA) for dollars of young, unproven and old, progeny tested bulls were considered.   The accuracy of the progeny test (repeatability), the total number of bulls, and the proportion of young bulls used in the herd   were varied.   Risk was defined as the standard deviation of income.   The semen price for old tested bulls was computed from mean TA and repeatability.   A constant semen price was assumed for young bulls.   With the same mean TA for young and old bulls, the expected income increased with increasing proportion of young bulls and decreasing repeatability of the old sires' proofs because of the higher semen price for old bulls and increasing semen price with increasing repeatability.   Risk increased with increasing proportion of young bulls, decreasing repeatability of the old sires' proofs, and decrasing total number of bulls used.   The decision of what selection alternative to use depends on the dairyman's individual weighting of expected income vs. risk.