in terms of goods rather than in money terms. Taking account of inflation the average cost of borrowing in real terms in the U.K. over the past 32 years (1945-1976) is estimated as 2-3 p. 100. This also provides the best available estimate for discounting future returns, and it brings the opportunity cost rate into line with the social time preference rate often proposed for public investments.

The contrast is made between the value of improvements made in the national interest and of those made by breeders or firms. The former benefit from returns on all national commercial production of improved stocks and the returns accumulate and are recouped over many years. On the other hand breeders and firms benefit only from the extra sales of breeding stock due to their temporary marginal superiority over competitors and they are often at high risk of getting no returns. Implications to the form and amount of investment in animal improvement are discussed.

SENSITIVITY OF OVERALL ECONOMIC GAIN AND CORRELATED RESPONSES TO VARIATION IN ECONOMIC WEIGHTS IN AN AGGREGATE GENOTYPE FOR PIGS

E. W. BRASCAMP

Department of Animal Science, Agricultural University, Wageningen The Netherlands

For the aggregate genotype used in the Dutch national pig breeding scheme effects of variation in economic weights are studied. The effect of adoption of « false » economic weights on the economic response to index selection is small. The contribution of changes in different traits to this economic response varies considerably, however.

EFFECT OF POPULATION TYPE ON THE DEFINITION OF BREEDING GOALS

O. DANELL

Dpt. of Animal Breeding, Agricultural College, S-750 07 Uppsala 7, Sweden

Using examples from sheep populations, the relative importance of male, female and slaughter traits is discussed in relation to different ways of obtaining replacement animals. Three types of population are distinguished, namely *nucleus populations* with self-supply of breeding animals of both sexes, *subnucleus populations* with self-supply of females only, and *commercial populations* buying all breeding animals. Nucleus populations which supply various other populations with breeding animals are also considered.

The examples given indicate that the appropriate breeding objectives need not be identical for both sexes, even if the animals selected are to be used in the same population. The way in which replacement is recruited influences the relative importance of the various traits to be considered within the same sex as well as the differences in appropriate breeding objectives for the two sexes. Certain consequences of discounting the economic expressions of different traits are also mentioned.

THE ECONOMIC VALUES OF VARIOUS TRAITS IN PIG BREEDING

R. KARLSSON

Dpt of Animal Breeding, Agricultural College, S. 75007 Uppsala, Sweden

An investigation concerning the economic influence on the production cost of various traits in pig breeding has been carried out. The terms " economic influence " or " economic value " of a trait in this work have been used to indicate the effect on the production cost per kg lean

meat. To compute the production cost an equation was constructed, where the traits were included as variables. Using this equation the production cost per kg lean meat can be computed at different levels of the variables. To obtain the proper mathematical expression of the financial effect of changes in the variables, the partial derivative of the equation was computed for each of the traits referred to. These expressions directly show the financial value of each trait per unit of change at different levels of the variables. The stability of the economic weights has been investigated. The frequence and points of time of the monetary returns from breeding as well as the influence on the genetic gain of different or incorrect economic weights have been discussed.

Estimation of economic values of performance characters in pig and sheep breeding

R. SILER, Z. PODEBRADSKY, V. JAKUBEC

Research Institute of Animal Production, Praha 10-Uhríneves, Czechoslovakia

Hybridisation programmes are mostly realized by means of three levels of herds where breeding animals used in elite herds are deciding. In the consequence of the high reproduction rate in the pig it is possible to produce 700-800 final hybrids per sow and year in elite herds. In Czechoslovak conditions 73 p. 100 of the total cost is expended on the own fattening, 21 p. 100 on sow breeding in commercial herds (i.e. 94 p. 100 on the third level of final hybrids production), 5 p. 100 on multiplier herds and 1 p. 100 only on elite herds. It is therefore possible to evaluate the effectiveness of the hybridisation programme on the basis of results achieved in the last production level.

In the sheep with much lower reproduction rate is the situation qualitatively different. In a specialized large scale unit for lamb production within the closed system of breeding about 20 p. 100 of the total cost is expended on the breeding of pure lines, 45 p. 100 on the breeding of F_1 females and 35 p. 100 on the own fattening. The calculation of a profit function is here therefore much more complicated. An example of the construction of a multifactorial function is presented. It includes four groups of basic production parameters and five categories of animals only compared with the practical situation where 22 categories are necessary.

The use of production systems analysis in developing selection goals and methods

J. W. WILTON

Department of Animal and Poultry Science, University of Guelph, Guelph, Ontario, Canada

Production systems analysis is described, its present applications are discussed and its uses in determining selection goals and methods are discussed. The key features of systems analysis are the statement of a well-defined objective, the accurate representative of real-life production programs and the use of alternative procedures by decision makers. Measurements that have been suggested to describe selection goals are discussed and compared with the objectives specified in systems analysis. Selection procedures that have been used for these various measurements are also discussed and compared with methods that could be used in systems analysis.

Procédures de définition des objectifs de sélection

J. MALLARD

Chaire de Génétique, E.N.S.A. de Rennes, 65, rue de St-Brieuc, 35000 Rennes

L'objectif d'une sélection est un ensemble complexe de nombreuses exigences exprimées sous forme soit de pondérations liant les caractères, soit de gains génétiques à réaliser pour certains caractères ou ensembles de caractères. Un index doit représenter le meilleur compromis possible entre ces informations.