Session G10.24

email: hanne.nielsen@akvaforsk.no

An approach to derive economic weights in breeding objectives using partial profile choice experiments

H.M. Nielsen[1] and P.R. Amer[2]

[1]Department of Animal and Aquacultural Sciences, Norwegian University of Life Sciences
Current adress: AKVAFORSK, Ås, Norway
[2]AbacusBio Limited, Dunedin, New Zealand

Introduction

Increasing interest in consumer based preference methods because:

1) farm production and economic data in developing countries is poor
2) prices of products in future markets are unknown

Partial profile design:
only a subset of traits ➡ simplified choices

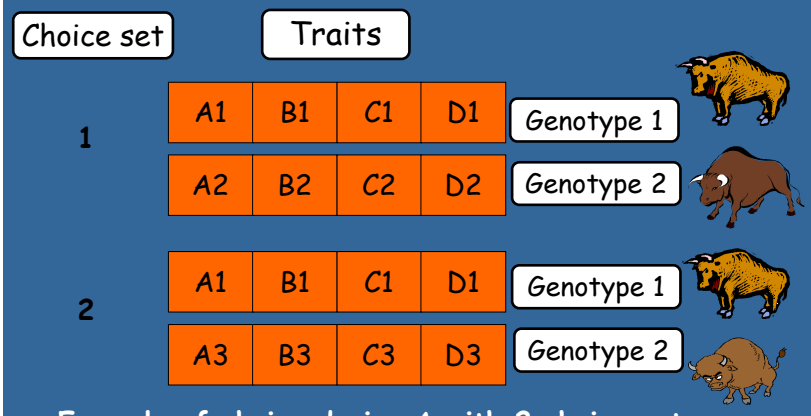
Aim: show how choice experiments can be used to derive economic weights in breeding objectives

Material and Methods

Choice designs:

3 different choice designs with 4 traits at 3 levels:
A) All 4 traits presented to respondents
B) Only 3 of the 4 traits presented in each choice set
C) Only 2 of the 4 traits presented in each choice set

Respondents chose between two genotypes (animals or products)



Example of choice design A with 2 choice sets

True trait preferences:

Trait A = 1 (utility of 1 unit increase in trait 1)

Trait B = -0.5, C = 0.5, D = 0.2 (utility relative to trait 1)

Simulations:

choice sets = 10,…,30

respondents = 10,…,100

200 replicates

Statistical model:

Random utility model to estimate trait preferences

Derivation of economic weights:

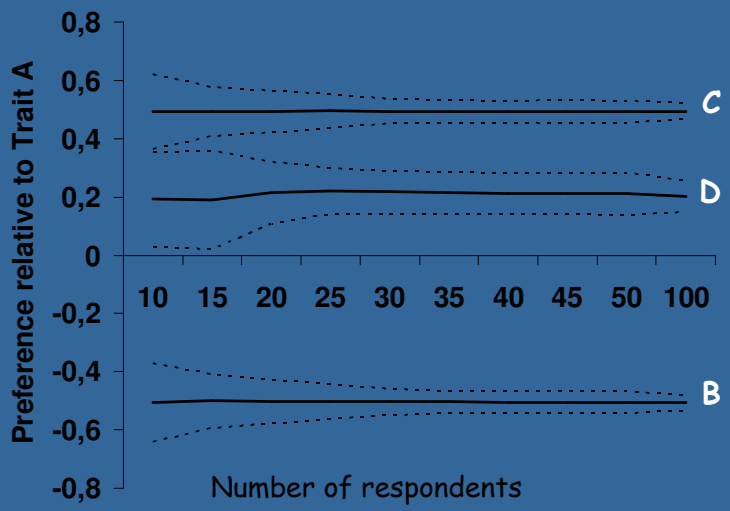
Expressed per unit change in trait i' relative to a unit change in trait i = 1:

$$\frac{(\beta_{i',j=3}-\beta_{i',j=1})/(\alpha_{i',j=3}-\alpha_{i',j=1})}{(\beta_{i=1,j=3}-\beta_{i=1,j=1})/(\alpha_{i=1,j=3}-\alpha_{i=1,j=1})}$$

βij = preference for trait i (i=1,..,4) and level j (j=1, 2, or 3).

αij = absolute level of trait i at level j (1,2, or 3)

Results



Estimated relative preferences with two traits per choice and 20 choice sets per respondent

Partial profile choice experiments can be used to derive economic weights !

Animal (in press)