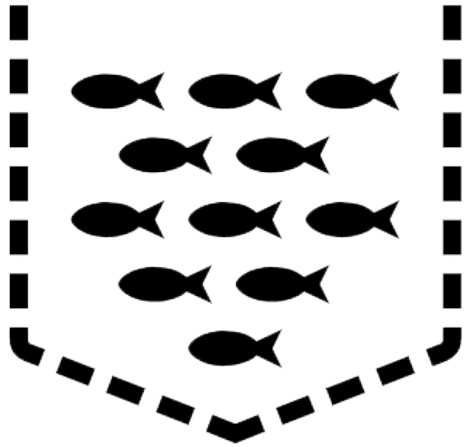
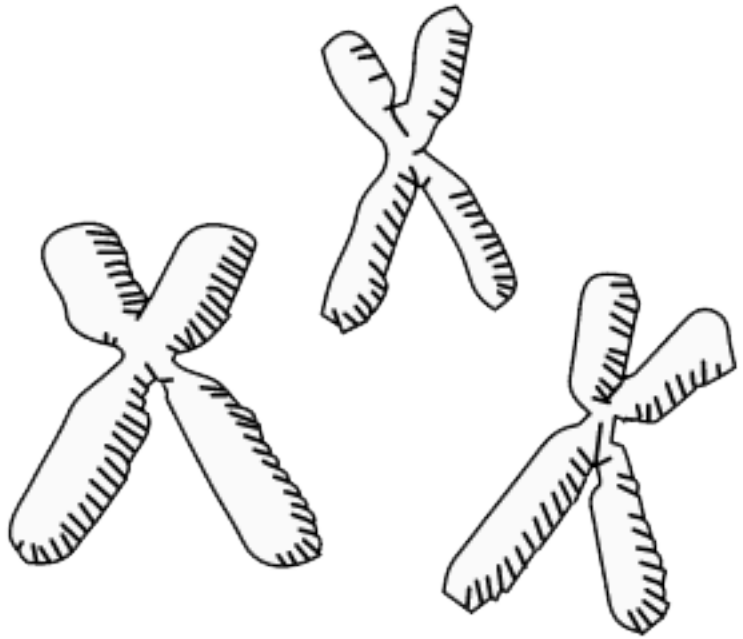
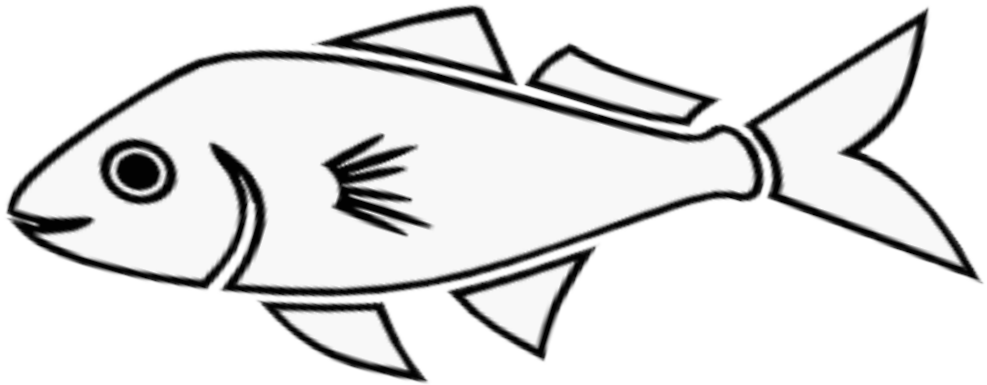


AQS 224 Fish Breeding

Dr. F. Sertel SEÇER





1. Week Domestication, Genetic Improvement Practices in Aquaculture

2. Week Selective breeding / production in seafood

3. Week Theoretical Foundations of Cultivation and Selection

4. Week Breeding Programs

5. Week Strategies for Breeding

6. Week Selection and Mating Design Methods

7. Week Estimation of Breeding Values

8. Week Genotype and Environment Interaction

9. Week Calculating the Selection Response

10. Week Side Effects in Fish Breeding Practices

11. Week Biotechnology in Fish Farming

12. Week Reproduction Techniques in Fish Breeding 1

13. Week Reproduction Techniques in Fish Breeding 2

14. Week Economic Evaluation of Fish Farming

7. Week

Estimation of Breeding Values

- Breeding Value of Individual Animals
- Breeding Value of Full-Sib Families
- Breeding Value of Half-Sib Families
- Breeding Values for Multiple Traits Using a Selection Index
- Scaling of Selection Indexes
- Best Linear Unbiased Prediction (BLUP)

- To efficiently apply selection, a measure of the gene alleles that are passed on from parents to progeny is required, since the true genotype of an individual cannot be measured.

Gjedrem, T., & Baranski, M. (2010)

- The purpose of a breeding program is to increase productivity of a population, which in real terms means the moving of the averages of economically important traits in a desired direction.

Gjedrem, T., & Baranski, M. (2010)

The breeding value, A_i, of an animal based on one trait (X) can be estimated as:

$$A_i = h^2(X_i - \bar{X}_i) \qquad (9.1)$$

Gjedrem, T., & Baranski, M. (2010)

The average genetic relationship, r_G, between full-sib family members is:

$$r_G = 0.5 \tag{9.2}$$

Gjedrem, T., & Baranski, M. (2010)

Breeding values (A_i) of full-sib families (FS) using averages of one record per member can be estimated as:

$$A_j = nh^2(X_{jn} - \bar{X}_{jn})/(2 + (n-1)(h^2 + 2c^2_{FS})) \qquad (9.3)$$

Gjedrem, T., & Baranski, M. (2010)

The breeding value (A_i) of a half-sib family (HS) with average records of n family members is:

$$A_j = nh^2(X_{jn} - \bar{X}_{jn})/(4 + (n-1)(h^2 + 4c^2_{HS})) \qquad (9.5)$$

Gjedrem, T., & Baranski, M. (2010)

A selection index may be expressed as:

$$I = b_1(X_1\bar{X}_1) + b_2(X_2 - \bar{X}_2) + +b_n(X_n - \bar{X}_n) \qquad (9.6)$$

Gjedrem, T., & Baranski, M. (2010)

Reference

- Gjedrem, T., & Baranski, M. (2010). *Selective breeding in aquaculture: an introduction* (Vol. 10). Springer Science & Business Media.