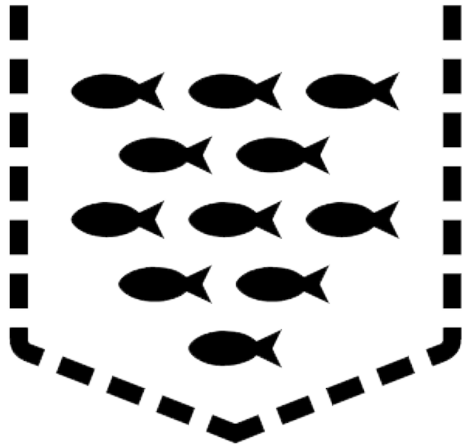
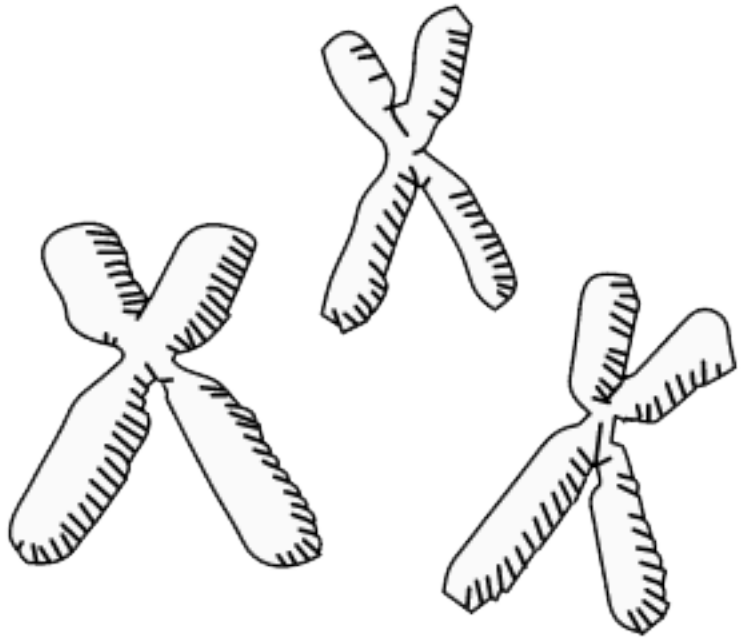
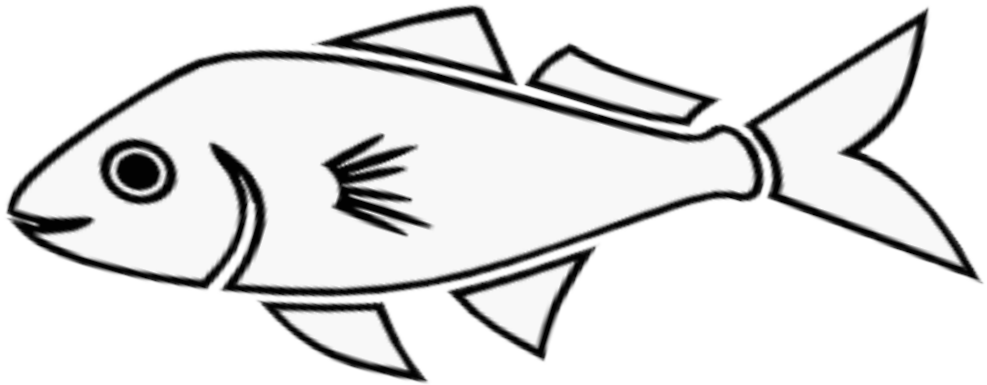


AQS 224 Fish Breeding

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

8. Week

Genotype and Environment Interaction

- Estimates of Genotype–Environment Interactions

- Environmental conditions for aquaculture production vary considerably from country to country and from one climatic zone to another. This means that stocks that are better adapted to local environmental conditions tend to perform better, resulting in a wide variety of different species being farmed across the world.

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

Table 10.1 Genotype–environment interaction as a percentage of the total phenotypic variation for Atlantic salmon and rainbow trout

Species	Source of variation	Year class			
		1972	1973	1974	1975
Atlantic salmon	Between strains	7.0	6.7	8.6	
	Interaction strain-farm	3.7	1.5	1.4	
Rainbow trout	Between sires	22.6	4.7	7.3	12.2
	Interaction strain-farm	2.3	5.5	3.8	1.2

Reproduced respectively from Gunnes and Gjedrem (1978) and Gunnes and Gjedrem (1981) by permission of Elsevier

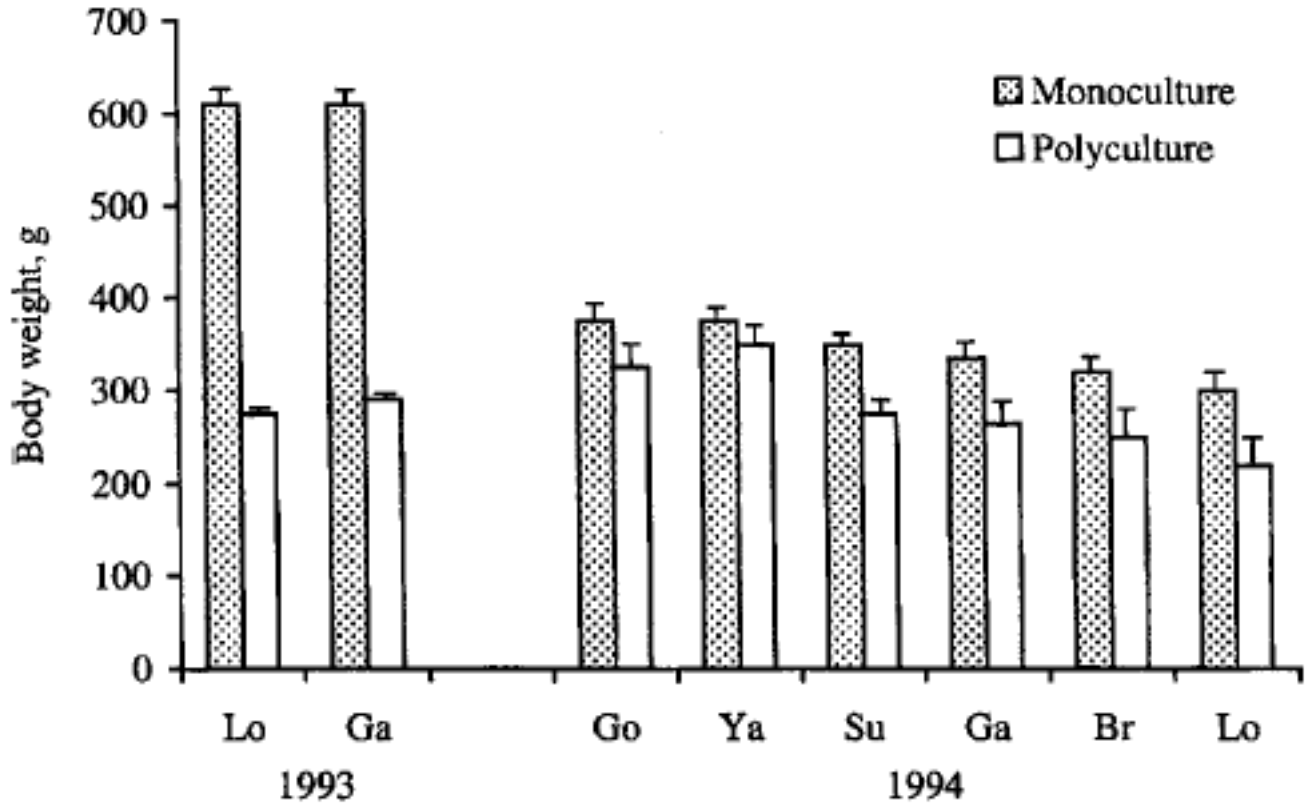
Gjedrem, T., & Baranski, M. (2010)

Table 10.2 Genetic correlations between harvest weights in different farming environments

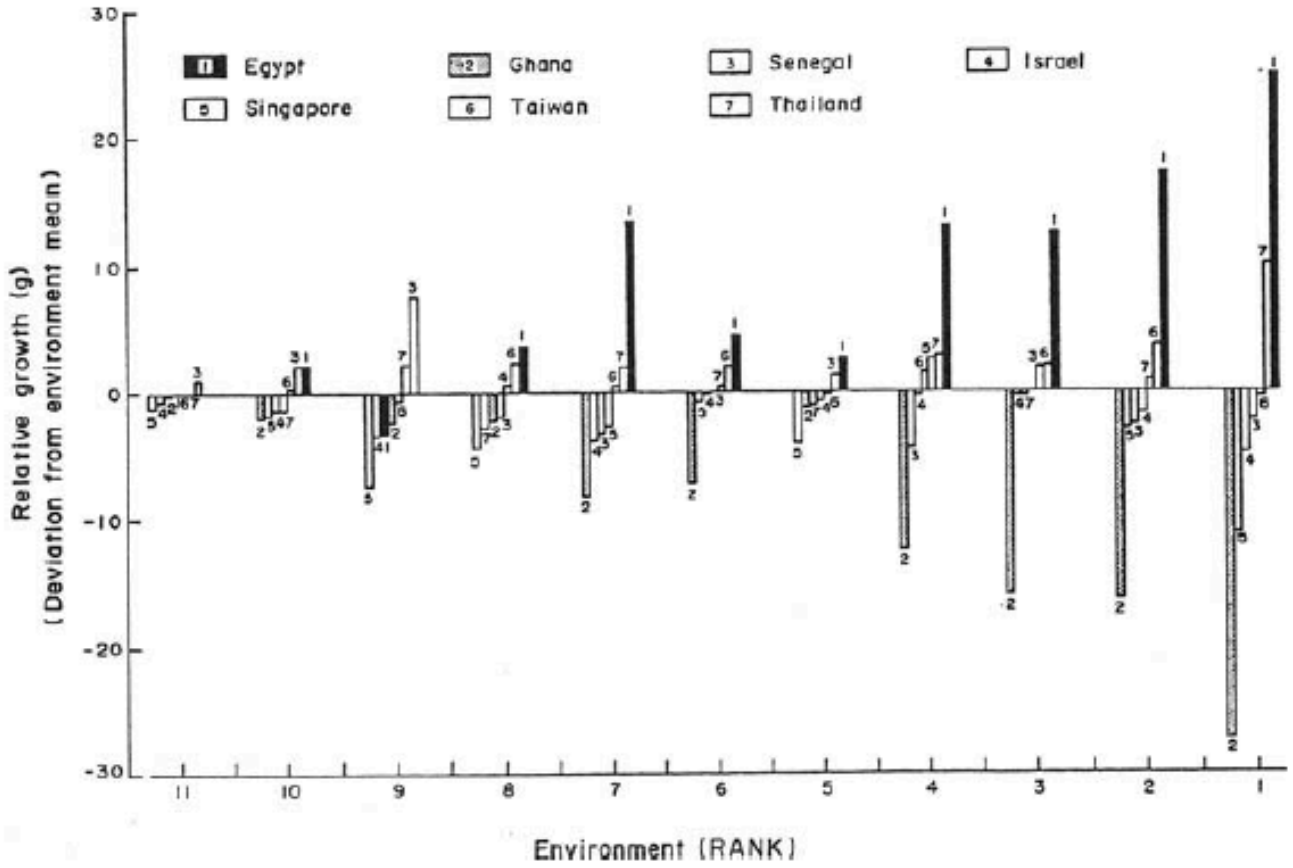
Species	Environment[1]	Year class	Genetic correlation	Reference
Atlantic salmon	A – T	1978	0.89	McKay and Gjerde (1986)
	A – T	1980	0.79	Standal and Gjerde (1987)
	A – T	1981	0.84	Standal and Gjerde (1987)
	A – T	1982	0.52	Standal and Gjerde (1987)
Rainbow trout	A – T1	1984	0.82	Sylven et al. (1991)
	A – T2	1984	0.79	Sylven et al. (1991)
	T1 – T2	1984	0.86	Sylven et al. (1991)
	A+T – B	1984	0.86	Sylven et al. (1991)
	A + T – C	1984	0.72	Sylven et al. (1991)
	B – C	1984	0.58	Sylven et al. (1991)

[1]A = AKVAFORSK's research station at Averøy, salinity < 30‰; T = AKVAFORSK's test stations (private farms), salinity < 30‰; B = Fish farm in Sweden, salinity zero; C = Fish farm in Sweden, salinity 4–8 ‰

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



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



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

- A broad breeding goal may be a means to develop robust animals with high tolerance to variable environmental conditions. However, it should be kept in mind that increasing the number of traits in the breeding goal will reduce the amount of genetic gain that can be obtained from each individual trait.

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

- To find the best balance between these factors is a challenging task and requires expertise and experience by the breeders.

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

Reference

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