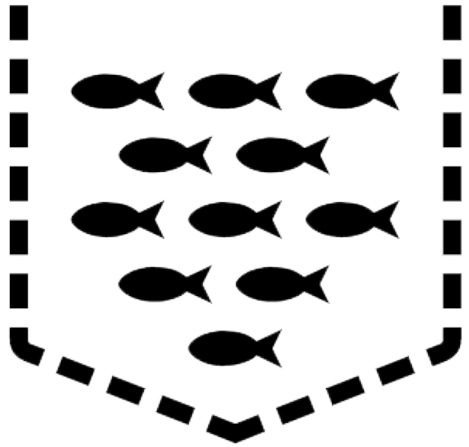
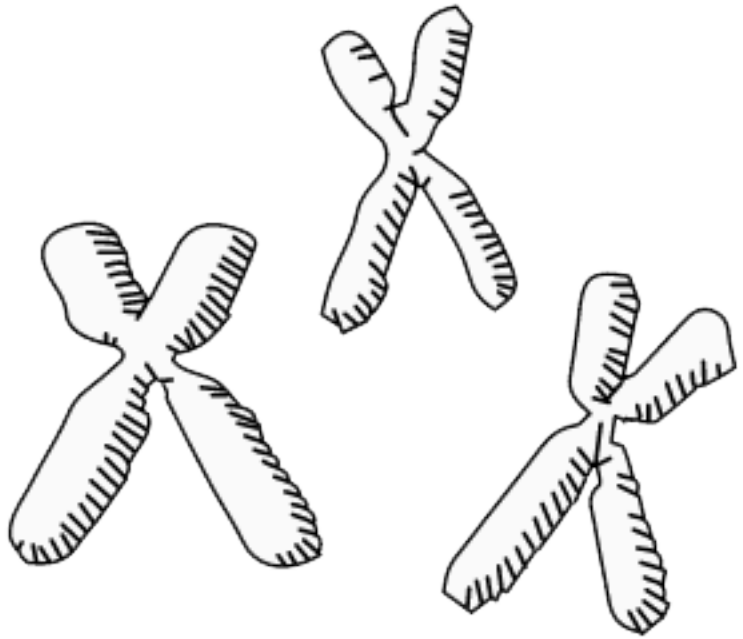
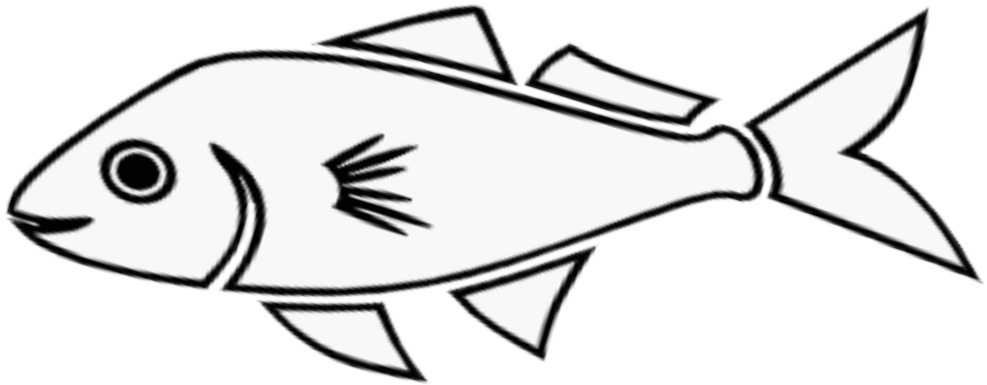


AQS 224 Fish Breeding

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

14. Week

Economic Evaluation of Fish Farming

- Cost of Broodstock Production
- Cost of Running a Breeding Program
- Economic Benefit of Breeding Programs
- Relative Contribution of Selection and Feed Regimes to Performance
- Who Benefits from Genetic Improvements? The Animal or The Farmer?
- Ownership of Genetically Improved Material

Table 16.1 Production time in months of Atlantic salmon to reach body weight of 4 kg

	During 1970s	During 2000s
Freshwater	16	8
Seawater	24	12
Total	40	20

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

Table 16.2 Relative cost of feed consumed by female broodstock for different species, expressed as a percentage of total feed costs

Beef cattle	Sheep	Pigs	Poultry	Salmonids	Reference
52	72	33	10		Large (1976)
58	67	36	12		Dickerson (1978)
				1–5	Kinghorn (1983)

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

Table 16.3 Estimated distribution of the total economic value of the Norwegian production of Atlantic salmon in 2004

Component	Economic value (million NOK)
Total value	9,710
Nucleus breeding	40
Egg production	70
Smolt production	1,200
Grow-out production	8,400

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

Table 16.4 Growth rate of broiler strains from 1957 and 2001 fed typical diets from 1957 and 1991 by period of 84 days

	Typical feed from	
Strain from	1957	1991
1957	1.43	1.61
1991	4.48	5.52

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

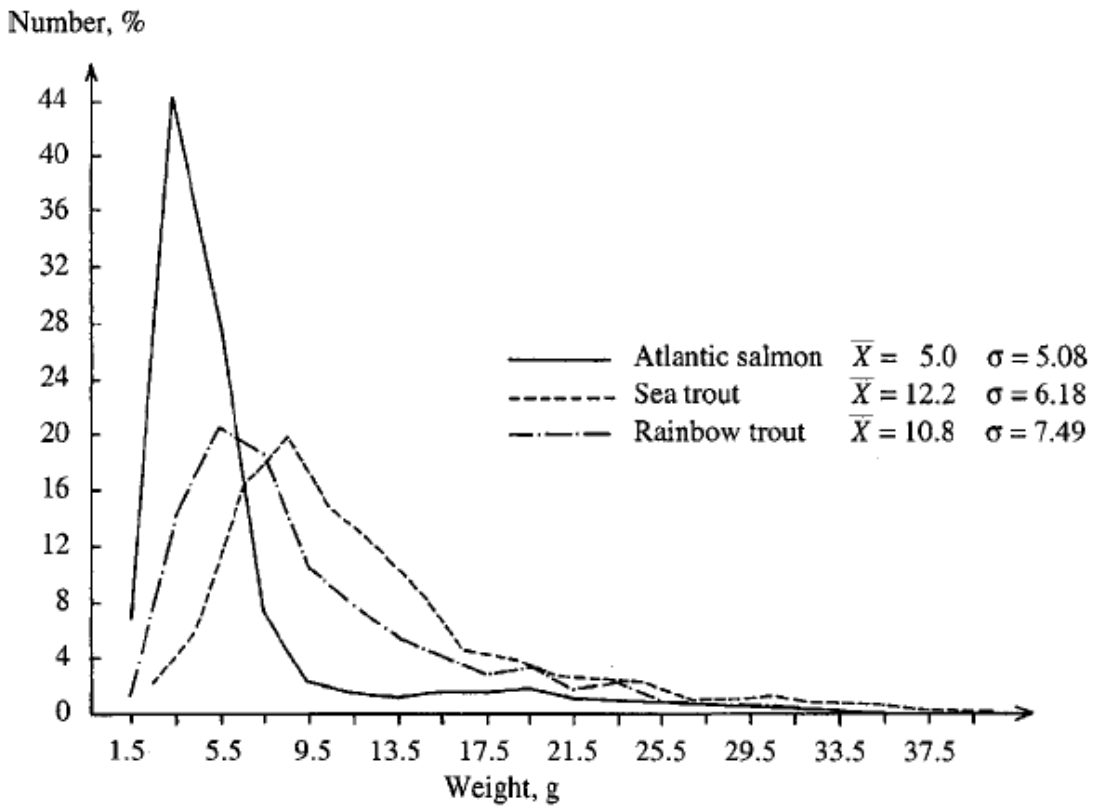

Fig. 16.1 Body weight distribution of fingerlings of different salmonid species (Gjedrem 2005)

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

Table 16.5. Average body weight (x) and coefficient of variation (CV) in four populations of Atlantic salmon parr for four generations of selection for body weight after two years in sea cages

Generation of selection	Year-class	Population							
		1		2		3		4	
		$\overline{X}$	CV	$\overline{X}$	CV	$\overline{X}$	CV	$\overline{X}$	CV
0	72–75	6.1	78	17.7	75	5.5	84	7.8	75
1	76–79	8.8	67	3.7	55	4.3	74	5.5	59
2	80–83	4.8	59	6.8	48	6.4	58	6.3	64
3	84–87	6.4	50	5.2	40	5.7	51	8.2	56
4	88–91	5.6	43	5.8	47	8.3	43	12.5	42

Reproduced from Gjedrem and Fjalestad (1997) by permission of AKVAFORSK.

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

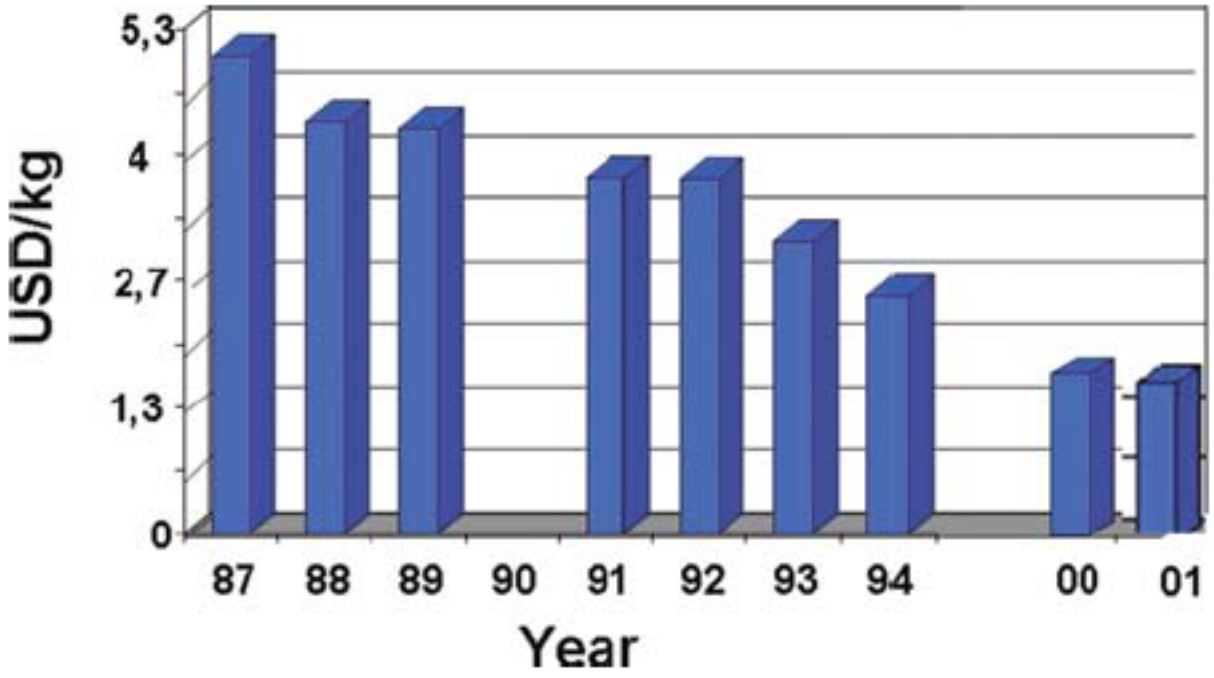

Fig. 16.2 Production cost of Atlantic salmon in Norway (Torbjørn Åsgård pers. comm.)

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

Reference

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