
وضعیت تولید جهانی ماهیان سردآبی

World fisheries production and utilization

	1998	1999	2000	2001	2002	2003 ¹
<i>(million tonnes)</i>						
PRODUCTION						
INLAND						
Capture	8.1	8.5	8.7	8.7	8.7	9.0
Aquaculture	18.5	20.2	21.3	22.5	23.9	25.2
Total inland	26.6	28.7	30.0	31.2	32.6	34.2
MARINE						
Capture	79.6	85.2	86.8	84.2	84.5	81.3
Aquaculture	12.0	13.3	14.2	15.2	15.9	16.7
Total marine	91.6	98.5	101.0	99.4	100.4	98.0
TOTAL CAPTURE	87.7	93.8	95.5	92.9	93.2	90.3
TOTAL AQUACULTURE	30.6	33.4	35.5	37.8	39.8	41.9
TOTAL WORLD FISHERIES	118.2	127.2	131.0	130.7	133.0	132.2
UTILIZATION						
Human consumption	93.6	95.4	96.8	99.5	100.7	103.0
Non-food uses	24.6	31.8	34.2	31.1	32.2	29.2
Population (<i>billions</i>)	5.9	6.0	6.1	6.1	6.2	6.3
Per capita food fish supply (<i>kg</i>)	15.8	15.9	15.9	16.2	16.2	16.3

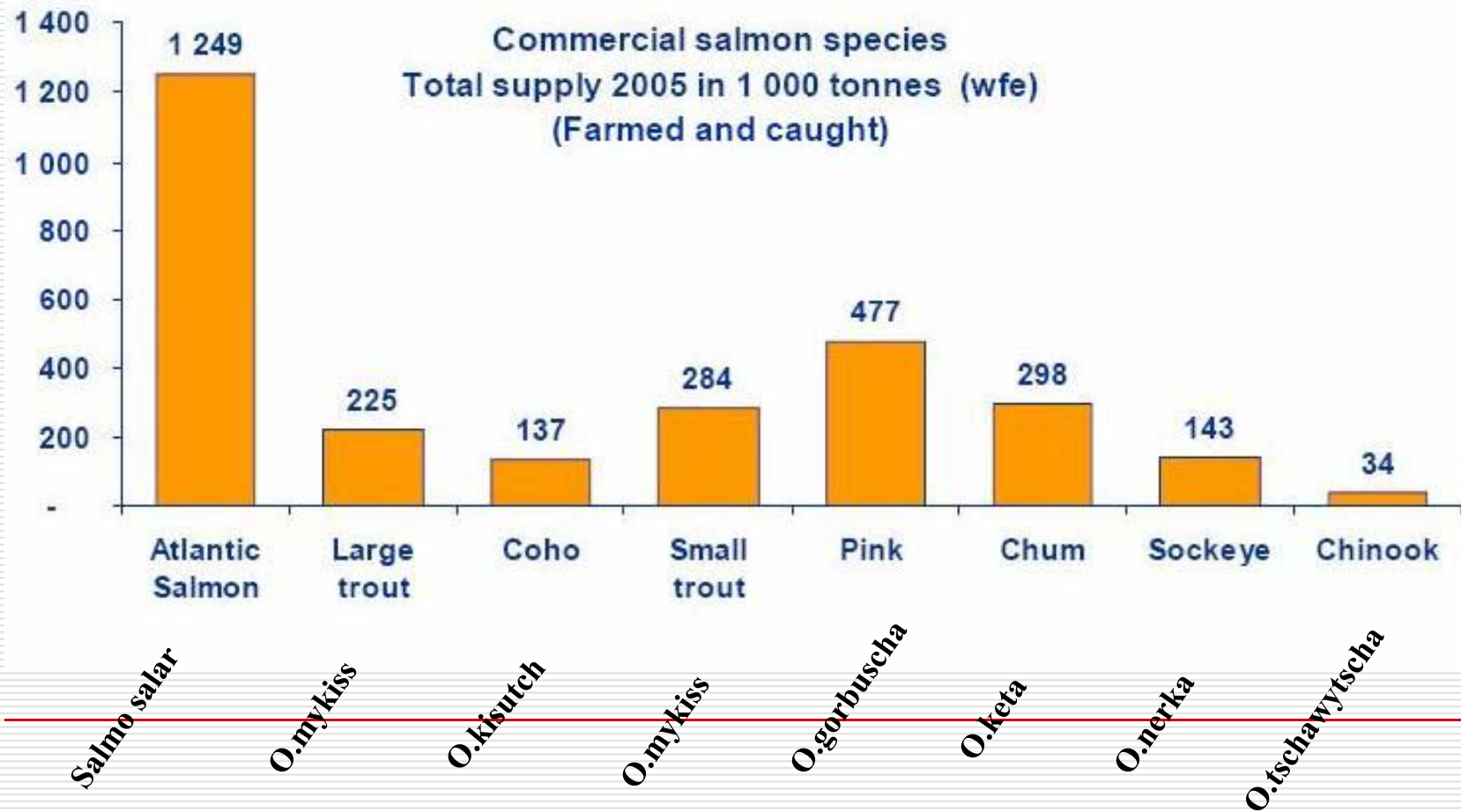
Note: Excluding aquatic plants.

¹ Preliminary estimate.

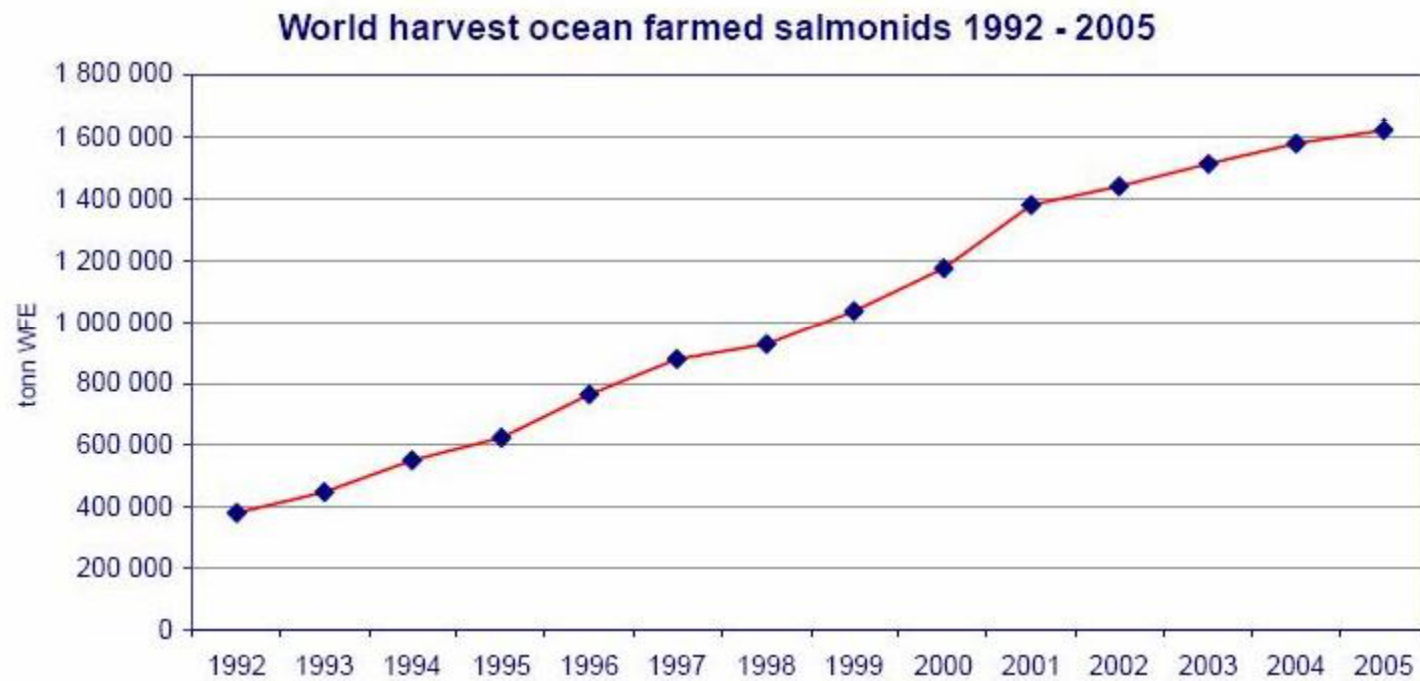
Top ten species groups in aquaculture production: quantity and growth

Species group	2000	2002	Share of 2002 total	APR
	<i>(tonnes)</i>		<i>(percent)</i>	
Top ten species groups in terms of quantity				
Carp and other cyprinids	15 451 646	16 692 147	41.9	3.9
Oysters	3 997 394	4 317 380	10.8	3.9
Miscellaneous marine molluscs	2 864 199	3 739 702	9.4	14.3
Clams, cockles, arkshells	2 633 441	3 430 820	8.6	14.1
<u>Salmons, trouts, smelts</u>	1 545 149	<u>1 799 383</u>	4.5	7.9
Tilapias and other cichlids	1 274 389	1 505 804	3.8	8.7
Mussels	1 370 953	1 444 734	3.6	2.7
Miscellaneous marine molluscs	1 591 813	1 348 327	3.4	-8.0
Shrimps, prawns	1 143 774	1 292 476	3.2	6.3
Scallops, pectens	1 154 470	1 226 568	3.1	3.1

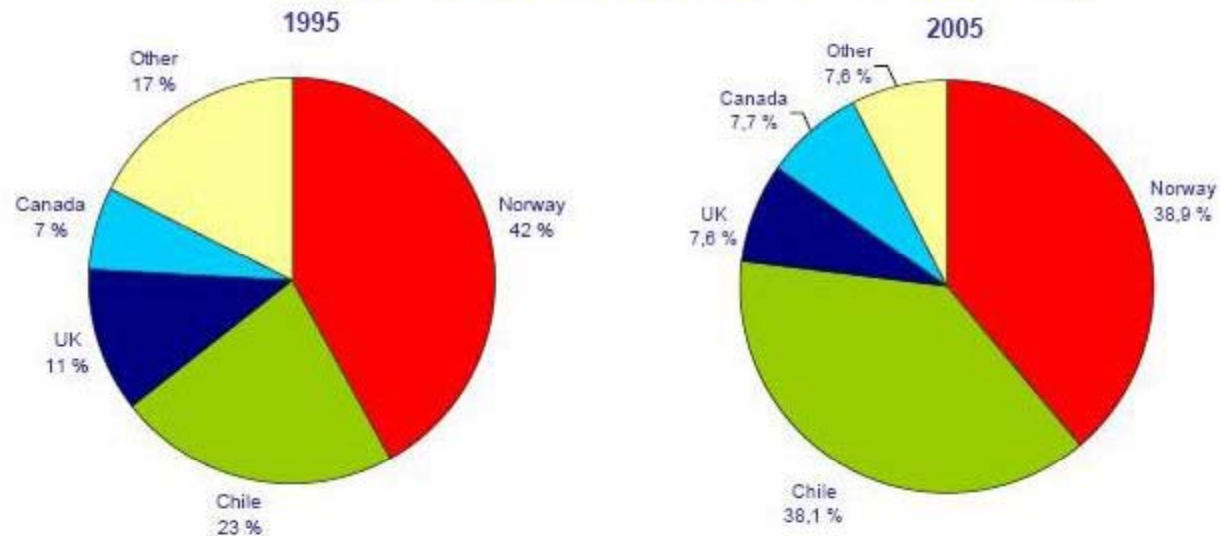
Total harvest / catch salmonids 2005



Salmonids have become the winner among cold water species

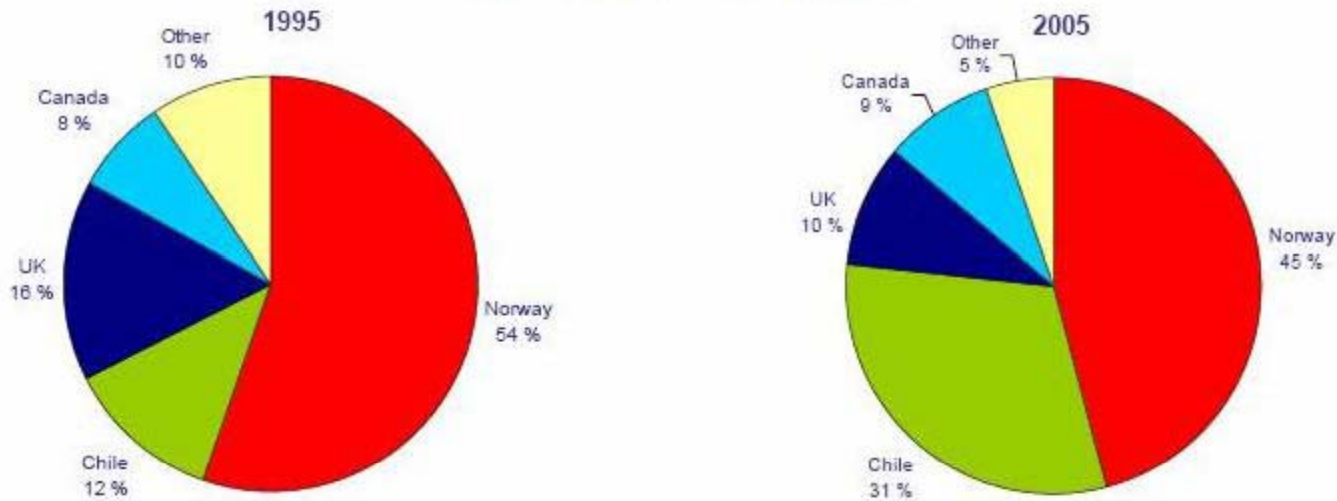


The producing countries All salmonids (ocean farmed)



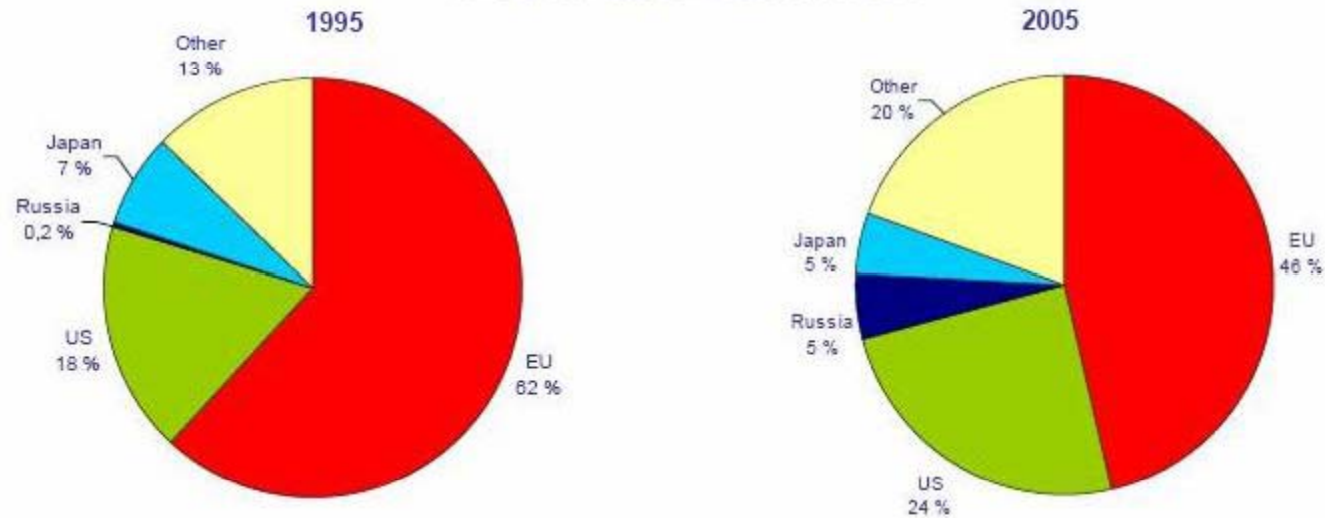
	1995	Market share %	2005	Market share %	Annual growth rate
Norway	262 900	42 %	631 700	39 %	9,2 %
Chile	141 400	23 %	617 500	38 %	15,9 %
UK	70 000	11 %	123 450	8 %	5,8 %
Canada	43 000	7 %	125 650	8 %	11,3 %
Other	109 000	17 %	123 900	8 %	1,3 %
Total	626 300	100 %	1 622 200	100 %	10,0 %

The producing countries Atlantic salmon



	1995	Market share %	2005	Market share %	Annual growth rate
Norway	249 000	55 %	572 300	46 %	8,7 %
Chile	54 300	12 %	385 200	31 %	21,6 %
UK	70 000	16 %	119 700	10 %	5,5 %
Canada	34 000	8 %	107 500	9 %	12,2 %
Other	42 900	10 %	64 300	5 %	4,1 %
Total	450 200	100 %	1 249 000	100 %	10,7 %

The markets Atlantic salmon



	1995	Market shares %	2005	Market shares %	Annual growth rate
EU	276 300	62 %	583 600	46 %	7,8 %
US	79 300	18 %	306 700	24 %	14,5 %
Russia	800	0 %	63 100	5 %	54,8 %
Japan	33 000	7 %	59 900	5 %	6,1 %
Other	56 500	13 %	246 000	20 %	15,8 %
Total	445 900	100 %	1 259 300	100 %	10,9 %

But what about the other cold water species; Cod - (2006)

Gadus morhua

Estimated harvest 2006
tonnes WFE

Norway	10 000 – 12 000 tonnes
Island	800 “
UK	500 “
Canada	500 “
Total	<u>12 000 – 14 000 tonnes</u>

Still some challenges

- Production: early maturation, deceases escapes, cannibalism
- Market image: farmed vs. wild

Halibut

Hyppoglossus hyppoglossus

Estimated harvest 2005
tonnes WFE

Norway

1 150 tonnes

UK

250 tonnes

Halibut challenges

- Production; High investment costs, slow growth
- Market image; a fish for the niche market

وضعیت تولید ماهیان سردآبی در ایران

□ قزل آلای رنگین کمان عمده ترین گونه پرورشی در ایران است

تولید جهانی قزل آلای رنگین کمان (2003)

آبهای دریایی 195000 تن

آب شیرین 285000 تن

آب لب شور 11000 تن

جمع 491000 تن

سهم ایران از تولید 2003 معادل 2300 تن (رتبه هشتم جهانی)

□ ماهی آزاد دریای خزر به منظور بازسازی ذخایر این گونه تکثیر و رهاسازی می‌گردد

مشخصات ماهی قزل آلی رنگین کمان



مروری بر فرآیند تولید ماهی قزل آلی رنگین کمان

پنج کار اصلی برای موفقیت در کار پرورش ماهی قزل آلی رنگین کمان

- بیان تعریف مشخصی از تولید
 - تعیین توانایی مزرعه در تولید محصول تعریف شده
 - بسط یک طرح تولید
 - اجرا و نظارت طرح تولید
 - بازاریابی محصول
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فاکتورهای تاثیرگذار در تولید

(1) ماهی

(2) آب

(3) استخر

(4) غذا

(5) روشهای مدیریت

Table 1
FACTORS AFFECTING THE PRODUCTION OF FARM-RAISED RAINBOW TROUT

A. Fish-Associated

- | | |
|--|---|
| <ol style="list-style-type: none">1. Ammonia2. Behavior3. Nutritional requirements4. Environmental requirements<ol style="list-style-type: none">a. Physicalb. Chemical5. Product definition6. Growth-rate potential | <ol style="list-style-type: none">7. Disease history8. Condition factor9. Cannibalism10. Oxygen uptake11. Oxygen demand12. Fecal solids13. CO₂14. Stress response |
|--|---|

B. Water-Associated

- | | |
|--|--|
| <ol style="list-style-type: none">1. Dissolved oxygen2. Nitrite3. Alkalinity4. pH5. Inflow rate6. Suspended solids7. Settleable solids8. Temperature9. Carrying capacity10. Agricultural contaminants11. Industrial contaminants | <ol style="list-style-type: none">12. Municipal contaminants13. Natural contaminants<ol style="list-style-type: none">a. N₂b. CO₂c. H₂Sd. Fe14. Utilization15. Salinity16. Hardness (Ca⁺⁺)17. B.O.D.18. Viscosity |
|--|--|

C. Container-Associated

- | | |
|--|--|
| <ol style="list-style-type: none">1. Water volume2. Water velocity3. Composition4. Water-flow pattern | <ol style="list-style-type: none">5. Water replacement time6. Outfall design7. Shape |
|--|--|

D. Nutrition-Associated

- | | |
|--|---|
| <ol style="list-style-type: none">1. Feeding rate2. Feed efficiency3. Feed style | <ol style="list-style-type: none">4. Nutritional quality<ol style="list-style-type: none">a. Proximate analysisb. Energy content5. Feed storage |
|--|---|

E. Management-Associated

- | | |
|---|--|
| <ol style="list-style-type: none">1. Fish sampling techniques2. Feeding frequency3. Feeding techniques4. Record keeping5. Pond cleaning | <ol style="list-style-type: none">6. Fish-size grading7. Management planning8. Management objectives9. Production economics |
|---|--|

the simple expedient of increasing the feeding rate, i.e., the Kg. of feed per 45 Kg. of fish, a seemingly innocuous act sets into motion a series of quantitative changes within the system, which may or may not result in achieving the desired result of having the fish grow faster.

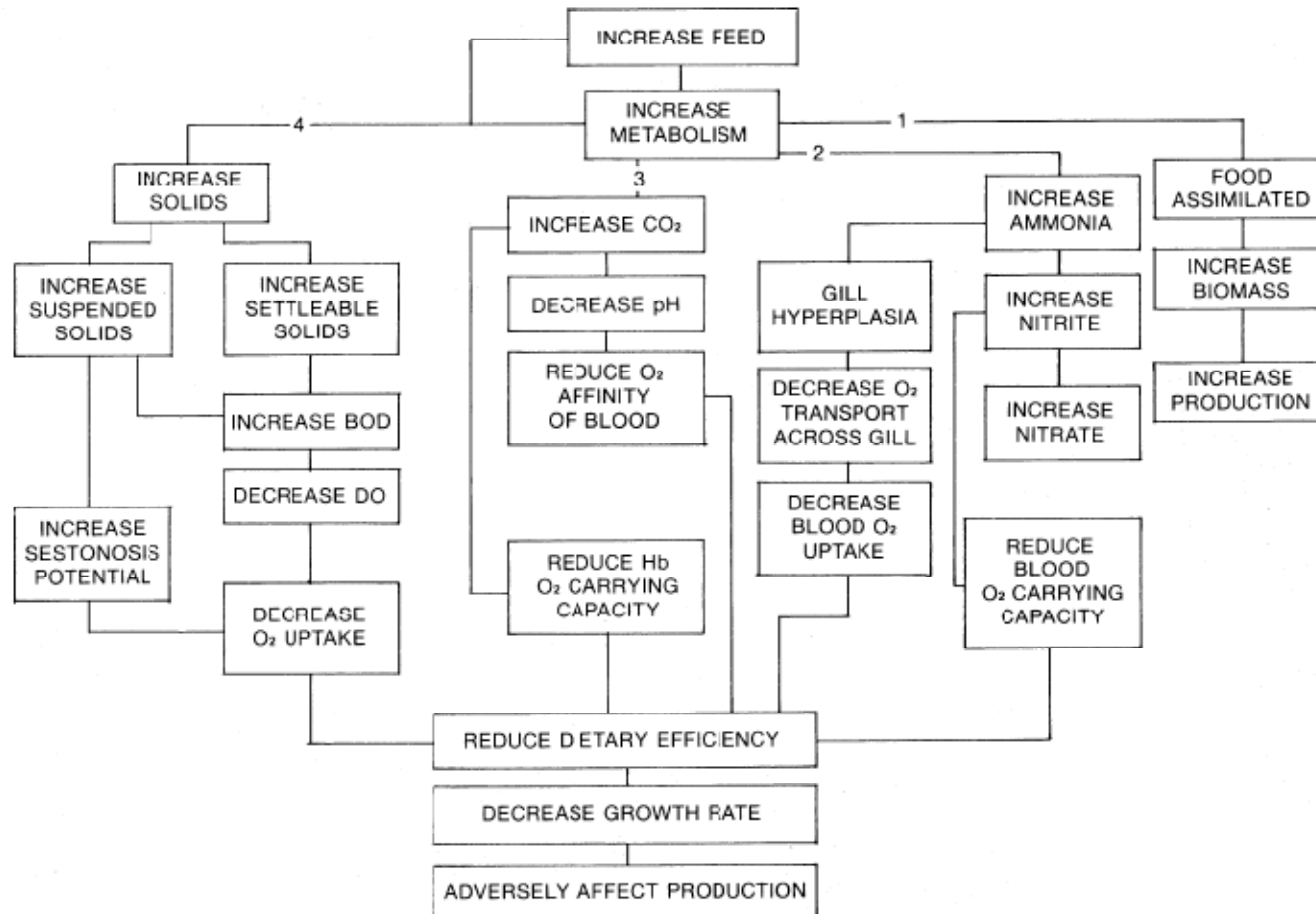


Figure 2

The effects of increasing the feeding rate to a group of rainbow trout (Source: Klontz, et al, 1989)

In another example, the increase of water temperature from 9°C (48°F) to 15°C (59°F) generates the following changes in the environment of a 100 gram rainbow trout:

A. Fish-associated changes

1. A 67.5% increase in metabolic rate (oxygen demand)
2. A 97.8% increase in daily length-gain potential
3. A 66.7% increase in daily weight-gain potential
4. A 98.6% increase in ammonia-generation potential
5. A 33.1% decrease in oxygen-carrying capacity

B. Water-associated changes

1. A 12.8% decrease in oxygen concentration
 2. A 58.8% increase in environmental unionized ammonia
 3. A 67.5% decrease in dissolved oxygen in the outfall water
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1. The oxygen-based carrying capacity of the pond is increased
 2. The water velocity is increased
 3. The swimming energy expenditure of the fish is increased
 4. The oxygen demand of the fish is increased
 5. The oxygen-based carrying capacity of the pond is decreased
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