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Growth of *Puntazzo puntazzo* in cages in Selonda bay, Corinthos, Greece

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SUMMARY - In February 1992, 32,822 *Puntazzo puntazzo* fry of 0.55g mean weight were stocked initially into a cage in Selonda Bay, Corinthos, Greece. This batch reached a mean weight of 377 grams in 29 months to produce 8753.5 tonnes with a mortality of 17.8% and FCR of 1:3. In February 1993 a further two batches of 65,854 & 81,620 *Puntazzo* fry produced from the Selonda hatchery were stocked at 1.6g and 1 gram mean weight respectively, into cages in Selonda Bay and in April 1994 a further batch of 34,580 was stocked at 4.5 grams. The growth, mortality, FCR, pathology and husbandry of this commercial pilot production of *Puntazzo puntazzo* is described.

Key words: *Puntazzo puntazzo*, Greece, growth in cages.

RESUME - "Croissance de Puntazzo puntazzo en cages dans la Baie de Selonda, Corinthe, Grèce". En février 1992, 32.822 alevins de *Puntazzo puntazzo* d'un poids moyen de 0,55g ont été placés initialement dans des cages dans la Baie de Selonda, Corinthe, Grèce. Cet lot a atteint un poids moyen de 377g en 29 mois, produisant ainsi 8753,5 tonnes avec une mortalité de 17,8% et un Indice de Consommation de 1:3. En février 1993 deux autres lots de 65.854 et 81.620 alevins de *Puntazzo* produits dans les écloseries de Selonda ont été placés, à un poids moyen de 1,6g et 1g respectivement, dans des cages dans la Baie de Selonda et en avril 1994 un autre lot de 34.580 individus a été chargé à 4,5g. Dans cet article sont décrits croissance, mortalité, Indice de Consommation, pathologie et élevage de cette production pilote commercial de *Puntazzo puntazzo*.

Mots-clés : Puntazzo puntazzo, Grèce. élevage en cages.

INTRODUCTION

It is becoming increasingly important that the Mediterranean fin fish farming industry develops new species to farm. Ever increasing volumes of seabass and gilthead bream are entering European markets which is causing downward pressures on prices. On way to increase the market for marine farmed fish is to provide greater market mix with a variety of species. It was with this in mind that the Selonda group started trials with *Puntazzo puntazzo.*

METHODS

Eggs were stocked in the Selonda Bay hatchery over 1992, 1993 & 1994 to provide fry for ongrowing trials in cages in Selonda Bay. Batch X1 was stocked in 120 cu.m with 32822 fry at a mean weight of 0.55g in February 1992, batch X2 was stocked in two 120 cu.m cages with 65485 fry at a mean weight of 1.6g and batch X3 was stocked in three 120 cu.m cages with 81620 fry at 1 gram. In April 1994 a further batch (X4) of 34580 fry was stocked in one cage at a mean weight of 4.5 grams. When all the fish reached a mean weight of 15g they were moved into cages of 240 cu.m, at 30g into cages of 500 cu.m, at 70g into cages of 1000 cu.m and at a weight of 250g into 2000 cu.m cages. This has been the current husbandry and stocking practice at Selonda for growing *Sparus aurata* and *Puntazzo* was treated the same.

Fish Weight	Cage Size
0.5 - 15 g	120 cu.m volume
15 - 30 g	240 cu.m
30 - 70 g	500 cu.m
70 - 250 g	1000 cu.m
250 + g	2000 cu.m

Every month mean weight samples of 200 fish were randomly taken from the cage after raising the net an crowding the fish. All these batches of fish were fed the following feed.

Feed Type		Fish Weight
Aqualim	Alevinage No 2	0.5 - 1g
	Alevinage No 3	1 - 3g
	Alevinage No 4	3 - 8g
	Seabream No 1	8 - 15g
	Seabream No 2	15 - 35g
	Seabream No 3	35 - 100g
	Seabream No 4	100 - 350g

All feeding rates were as recommended by the Aqualim tables as for *Sparus aurata*

RESULTS & DISCUSSION.

Batch X1 reached a mean weight of 377 grams in 29 months with a mortality of 17.8 %. Batch X2 reached a mean weight of 318 grams at 26 months with a mortality of 24.12 % and batch X3 reached a mean weight of 345 grams in 26 months before harvesting with a mortality of 19.12 %.

Table 1 **SUMMARY OF GROWTH DATA**

BATCH	ST. FRY	FI. BIOMASS	MONTHS	MEAN WT.	MORTS	FEED	FCR
Batch X1	32822	8753.5	29	377	17.8	26525	3
Batch X2	65485	16532.8	26	318	24.12	35502	2.2
Batch X3	81620	19932	26	345	29.49	53703	2.7

Batch X4 reached a mean weight of 88 grams when sampled on 30th April 95. In figures 2 & 3 we can see that growth is slow from October to April. This is more marked in the larger fish and possibly caused because of gonadal maturation during October and November. This is followed by low temperatures in the winter months which result in the fish not growing for 6 months.

Figure 1.

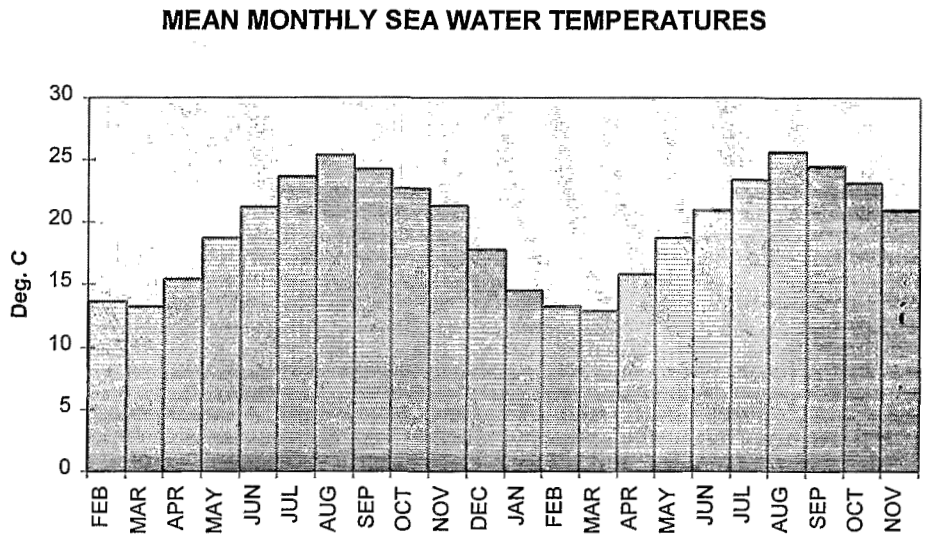
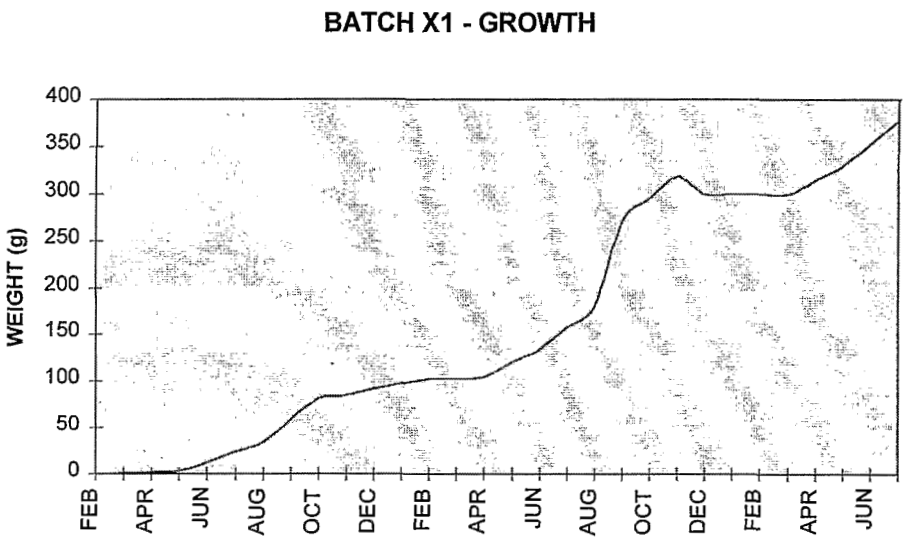


Figure 2.



From Table 1 we see that mortality for batch X1 was 17.8 %, batch X2 was 24.12 % and for batch X3 19.12 %. In Figures 4 & 5 we can see most of the mortality occurred when sea temperatures were high and water circulation low. These peaks correspond with outbreaks of *Ciliophoris spp.* (Trichodina) and *Gyrodactylus spp.* (Monogenea). In some cases a secondary infection caused by *Vibrio spp.* In the surrounding cages *Sparus aurata* and *Dicentrachus labrax* showed no corresponding mortality.

Monitoring of the dissolved oxygen concentration by an Oxyguard Ocean II indicated that most of the parasite outbreaks occurred during periods of lower oxygen concentration. During these periods of low oxygen the concentration dropped to 4 mg per litre with the lowest a 3.7 mg/l. It is possible that *Puntazzo* is more sensitive to low oxygen than *Sparus aurata*.

It was noticed that *Puntazzo* do not chew and make holes in the net like *Sparus aurata* although they appear to graze on the net which results in less marine fouling of the net.

Figure 3.

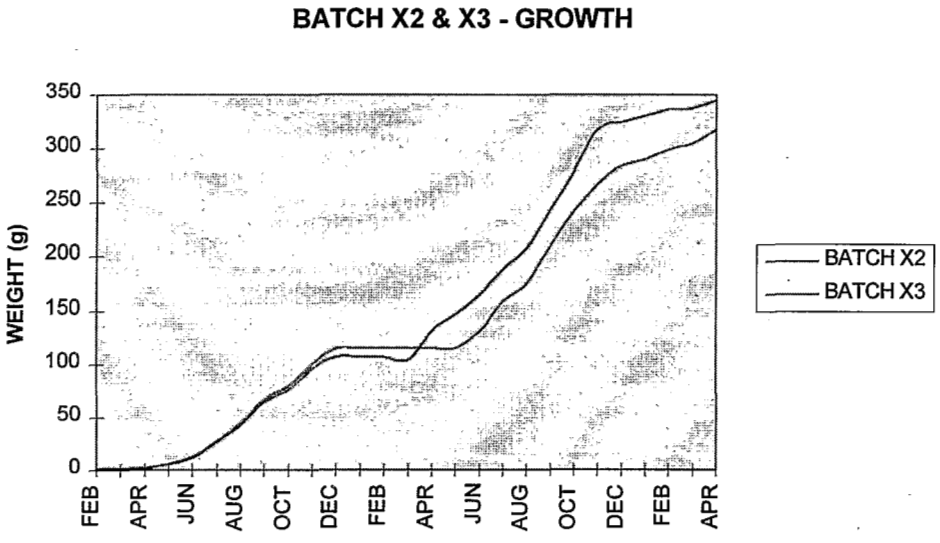


Figure 4.

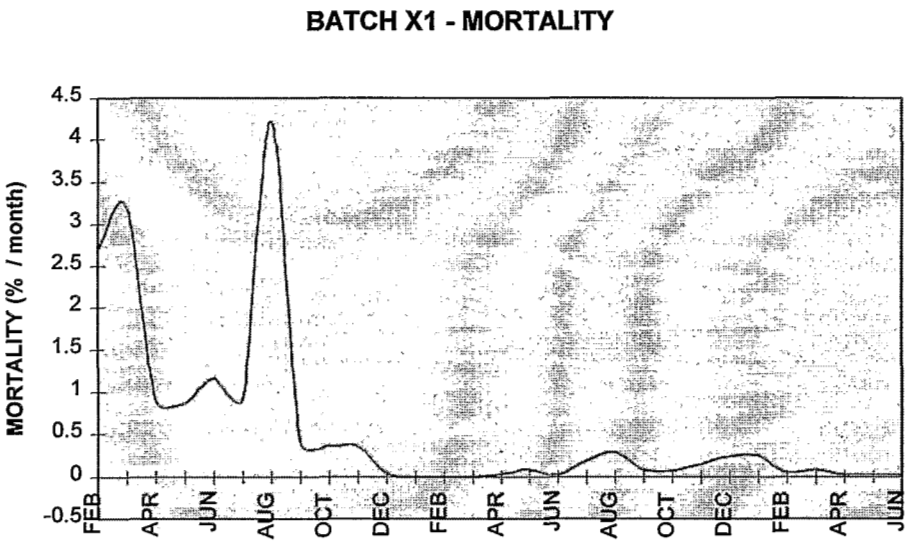


Figure 5.

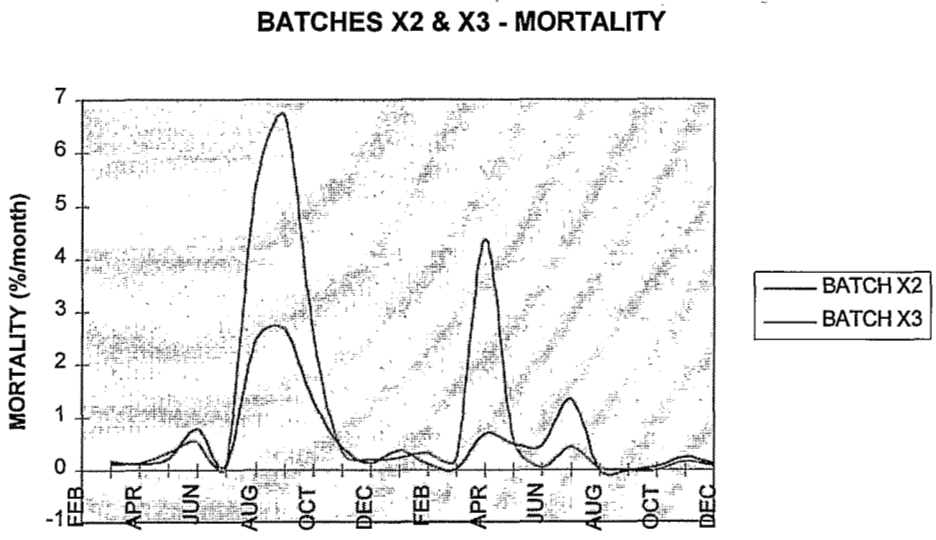


Table 2. **POSSIBLE COSTS (USD)**

	FRY	FEED	OP. COST	TOTAL/KG ($)			
Batch X1	1.93	2.67	2.30	6.90		FRY PRICE $	0.52
Batch X2	2.06	1.86	2.30	6.22		FEED PRICE $	0.88
Batch X3	1.86	2.07	2.30	6.23		OP. COST $	2.30

If we use some typical production costs such as $0.52 USD for the fry, $0.88 USD / kg for the feed and an overall operating cost of $ 2.30 USD / kg we can see that with the results so far profitability is marginal at a sales price of $6.50 USD / kg. The sales price is likely however to be lower than $6.50 USD therefore improvements in the feed cost, growth and survival must be made.