

SEABASS AND SEABREAM MARKET SITUATION AND POTENTIAL IN MEDITERRANEAN MAGHREB COUNTRIES

D.G. Lacroix

IFREMER DRV/RA Centre de Nantes. B.P. 1105; 44311 Nantes cedex 03. FRANCE

Abstract

The five mediterranean Maghreb countries (Morocco, Algeria, Tunisia, Libya, Egypt) present similar natural characteristics which explain numerous observations about seabass (*Dicentrarchus labrax*) and seabream (*Sparus aurata*) production and market. From the Atlantic coast to the Suez canal, if the coastline is not favourable to aquaculture, as safe moorings in sheltered bays are limited, several lagoons (300 000 ha) and brackishwater lakes (400 000 ha) are available. Traditionally, local consumption of seafood is low (4-8 kg/capita/year) and tourism industry, when active, doesn't ask for such high quality fish. Consequently, export to European Union, and mainly to Italy, is the first target of all seabass and seabream producers. Production technologies range from semi-extensive systems (Egypt) to intensive farms using cages or ponds (Morocco and Tunisia).

After a peak of about 11% of the total mediterranean seabass and seabream production in 1993, the Maghreb production is decreasing: it totalizes in 1995 about 7% (1 500 T) of seabass production and 8% (1 820 T) of seabream production in all mediterranean countries. This evolution can be explained by the scarcity of sites, the increase of investment cost for inshore installation and the steady reduction of profitability for those productions which is mainly due to the recent evolution of the international market prices for the two species. Generally speaking, the ending of the pioneer phase is combined with the reduction of the specific comparative assets of Maghreb for this type of culture: decrease of the part of labor cost in the production cost and increase of the cost of technology which has to be imported in order to secure the reliability of production and the quality of export product. Thanks to the Red Sea advantages (good offshore sites, favourable temperatures all year round), and a very cheap labor cost, Egypt only keeps a good potential of development for seabass and seabream.

However, the real potential for cultured fish production and market in the Maghreb countries and moreover in the Mediterranean seems to be more in the development of biotechnologies for other families of fast-growing species: tunas, groupers, pompanos, dolfinfish, etc. Indeed, such species show undeniable assets: bigger maximum sizes, easy filletting, lower production costs, attractive image. Those new products should broaden the potential of seafood consumers and consequently could stimulate the traditional market of seabass and seabream by dragging along effect.

Keywords : seabass, seabream, Mediterranean, Maghreb, market

Résumé

Les cinq pays du Maghreb méditerranéen (Maroc, Algérie, Tunisie, Libye, Egypte *Dicentrarchus*) présentent des caractéristiques naturelles similaires qui expliquent certaines observations communes que l'on peut faire en matière d'élevage et de commercialisation du loup (*Dicentrarchus labrax*) et de la daurade (*Sparus aurata*). De la côte atlantique au canal de Suez, le littoral n'est guère favorable à l'aquaculture de poissons en raison de la rareté de baies profondes et bien abritées; en revanche on trouve de nombreux lagons, totalisant environ 300 000 ha, et de vastes lacs saumâtres, représentant plus de 400 000 ha. Dans le Maghreb, la consommation traditionnelle de produits de la mer est faible (4 à 8 kg/habitant/an) et l'industrie touristique, quand elle existe, recherche en consommation de masse des poissons moins luxueux que le loup ou la daurade. En conséquence, l'exportation vers l'Europe et principalement vers l'Italie, constitue l'objectif de tous les producteurs de cette région pour ces deux espèces. Les systèmes d'élevage vont du semi-extensif (en Egypte) au système intensif classique utilisant des cages ou des bassins à terre (Maroc et Tunisie).

Après un pic de production représentant 11% de la production méditerranéenne en loup et daurade, la production du Maghreb est en diminution: Celle du loup ne représente plus que 7% du total méditerranéen en 1995 (1 500 T.) tandis que celle de la daurade n'atteint que 8% du total (1 820 T.). Cette évolution s'explique par la rareté relative des sites, l'augmentation des coûts d'investissement pour des installations à terre et la décroissance régulière de la rentabilité de ce type d'élevage liée à la chute des prix de ces deux espèces sur le marché international. D'une manière générale, la fin de cette phase pionnière coïncide avec la réduction des avantages comparatifs du Maghreb pour ce type d'élevage: diminution de la part du travail dans le coût de production et augmentation du coût de la technologie, celle-ci devant être importée pour garantir la fiabilité de la production et la qualité du produit final. En raison des atouts spécifiques de la Mer Rouge (bons sites au large, températures favorables toute l'année) et d'une main d'oeuvre particulièrement bon marché, l'Egypte présente encore un bon potentiel de développement pour ces deux espèces.

Cependant, le vrai potentiel du marché pour des poissons marins d'élevage dans le Maghreb et de manière plus générale dans toute la Méditerranée, semble plus du côté du développement des technologies d'élevage d'espèces à croissance rapide: thons, mérours, carangues, coryphènes, etc.. En effet, ces espèces présentent d'indéniables atouts: tailles maximum élevées, filetage facile, coûts de production plus bas, image attractive. L'émergence de nouveaux produits de ce type aurait un double avantage: élargir le marché de consommateurs potentiels et stimuler le marché traditionnel des consommateurs de loup et daurade par effet d'entraînement.

Mots-clef: Loup, daurade, Méditerranée, Maghreb, marché

1. Determining characteristics of Maghreb countries

The study of some important characteristics of the Maghreb countries (from West to East, Morocco, Algeria, Tunisia, Libya and Egypt) help significantly to the assessment of the market situation and potential for seabass and seabream production in this area.

First of all, the screening of the length and type of coastline from the western border of Morocco along the Atlantic ocean to the eastern borders of Egypt (with Gaza strip in the North and Erythrea in the South) totalizes 9 250 km which is quite limited compared to the straight overall length of the area (5 000 km) or to the coastline of Greece (15 000 km). Table I shows that 62% of the coast is sedimentary (Le plan bleu, 1989). Those two characteristics explain the lack of favourable sites for fishfarming in offshore cages as deepwater sheltered bays are scarce. In return, open lagoons and brackishwater lakes are large and numerous in most Maghreb countries as minimal estimations give about 300 000 ha for lagoons and 400 000 ha for salty lakes (see table I).

Table I : Main characteristics of coastline and marine or brackishwater lagoons and lakes in the Maghreb area from Morocco to Egypt

Parameter	Morocco	Algeria	Tunisia	Libya	Egypt	Total
coastline (km)	2 900	1 280	1 300	1 770	2 000	9 250
rocky coast (%)	50	50	20	5	50	38
sedimentary coast (%)	50	50	80	95	50	62
open lagoons (ha)	70 000	40 000	90 000		100 000	300 000
brackish water lakes (ha)		20 000	15 000	15 000	350 000	400 000

Sources : MAP, SIFR national report

The second important element is related to the consumption habits about seafood. Although the total Maghreb population reaches about 134 millions people (Conjoncture 97), which majority is living at less than 50 km from the sea, the traditional consumption of seafood is very low: between 4 and 8 kg/capita/year. Those consumptions are far below the average value for seafood consumption in the Mediterranean: 13 kg/capita/year. Tourism industry totalizes about 10 millions visitors but most of them are low price packages and they are not potential consumers of seabass and seabream as those fishes are very expensive locally.

The third element that share the five north african countries is the lack of means to secure a reliable production, from research to export. Indeed, those countries are merging from an economy based on the primary sector (agriculture, oil, phosphates) to the modern industrial economy as shown on table II. Except in Libya and in Tunisia (9% of total Maghreb population), half of the population is still working in agriculture. Governments and investors are trying to develop secondary and tertiary activities including scientific research and technical training but those programmes have medium or long term effect. Fecondity is decreasing but still high. Except in Libya, the low level of average income per capita doesn't

allow people to buy much fish. This explain why there is no national market for seabass and seabream in Maghreb.

Table II : Main parameters of demography, economy, fisheries and aquaculture in Maghreb countries (Data in 1995)

Parameter	Unit	Morocco	Algeria	Tunisia	Libya	Egypt -
Demography						
Population	<i>million</i>	26	27	8.9	5.2	59
Fecondity	<i>child/w.</i>	3.6	3.8	3.1	6.4	4.1
Urban pop.	%	48	52	60	70	47
Economy						
Gr. nat. Prod	<i>Billion \$</i>	28	42	16	25	57.4
GNP/ cap.	\$	1070	1786	1800	4253	720
Growth aver.	<i>%/year</i>	2.8	0.8	5.3	-2	2.6
90-95						
1st import item		Equipment	Equipment	Textile	Equipment	Equipment
2 nd import item		Agric.Prod.	Agric. Prod.	Equipment	Agric. Prod.	Agri. Prod.
1st export item		Consum. Goods	Oil	Textile	Oil	Oil
2nd export item		Food		Oil		Fruits
Fisheries / Aquaculture						
Fisheries	<i>1000 T</i>	750	135	86	8	305
Aquac.	<i>1000 T</i>	1.37	.38	.99		61.8
Cons./cap	<i>kg/cap./y</i>	6.5	4	7.5		7.8-

Sources : Conjonture 97, ISPM Maroc, ANDP Algeria, INSTM Tunisia, MBRC Libya, GAFRD Egypt.

Considering the aquaculture sector, table III presents the recent evolution of seabass and seabream productions in Maghreb countries (detailed data is given in annex 1). The study of this table allows three remarks: first, after a peak in 1994, seabass production is declining in 1995; second, seabream production growth is slowing down; third, after a peak of about 11% of the total mediterranean seabass and seabream production in 1993, the Maghreb production is decreasing: it totalizes in 1995 about 7% (1 500 T) of seabass production and 8% (1 820 T) of seabream production in all mediterranean countries

Table III : Seabass and seabream productions in Maghreb area from 1992 to 1995 compared to productions of same species in the Mediterranean countries

	1992	1993	1994	1995	-
Seabass production (tonnes)	490	1 460	1 680	1 500	
<i>share of Maghreb seabass in the Mediterranean (in %)</i>	6	10,7	9,4	7	
Seabream production (tonnes)	770	1 350	1 550	1 820	
<i>share of Maghreb seabream in the Mediterranean (in %)</i>	8,6	11,1	9,6	7,9	

Sources : FAO, SIPAM.

This evolution can be explained by the scarcity of sites, the increase of investment cost for inshore installation and the steady reduction of profitability for those productions which is mainly due to the recent evolution of the international market prices for the two species (Harache and Paquotte, 1996). Generally speaking, the ending of the pioneer phase is combined with the reduction of the specific comparative assets of Maghreb for this type of culture: decrease of the part of labor cost in the production cost and increase of the cost of technology which has to be imported in order to secure the reliability of production and the quality of export product.

2. Market situation and potential for seabass and seabream production in each Maghreb country

2.1. Morocco

Considering aquaculture, Morocco benefits of several assets: 2 400 km of atlantic coast and 500 km of coast in the Mediterranean, more than 0,6 million tonnes of fish catches per year thanks to an atlantic upwelling and the vicinity of Spain as a gate to Europe. Seabream production started in 1989 in a public pilot farm located in Nador lagoon on the Mediterranean side (Lacroix, 1995). After regular progress up to 730 tonnes in 1994, production decreased to 590 tonnes in 1995. Two farms are exporting to Spain and Italy for a total value of 4.5 millions \$. Seabass production started later (1991) to reach 533 tonnes in 1994 for export market (4 millions \$).

The technology uses intensive systems in hatchery and in grow-out as well (nets under table in lagoon and earth pond inshore with Archimedean screw for water renewal).

Future projects seem to be still interesting for seabass and seabream but Morocco administration wants to mark time through two actions: first, as the relevant Ministries are often sollicitated by investors for new aquaculture projects, the administration is planning a complete study of the potential of development of the country not only for existing species but also for new species which would be selected by the market demand (Berraho, pers. comm.); second, Morocco is experimenting tuna farming with the cooperation of Japan in order to prepare a real diversification of production and moderate the risk of disturbance in the sensitive lagoons.

2.2. Algeria

Algeria does not benefits of favourable elements neither from a geographic nor from a socio-economic point of view. Seabass and seabream farming had been successfully experimented in the early nineties, but the lack of institutional frame, the problems generated by a long political and social crisis have discouraged investors and scientists. This situation is all the more unfortunate that a study on the potential of aquaculture in this country (FA-SEPIA, 1981) revealed important possibilities notably through valliculture applied to numerous marshes and coastal shallow lakes.

2.3. Tunisia

Thanks to natural favourable conditions and an excellent socio-economic environment, seabass and seabream farming started early in Tunisia (1985). Three farms, using french

(with cages) and Italian (with raceways) technologies, produced up to 650 tonnes in 1994. However, those productions had to face several problems: water quality, notably in the shallow gulf of Gabès, technology, with expensive adaptations of imported technologies to local conditions, drop in prices on the export market, reducing the profitability of farms. This crisis led the Tunisian administration to defer the authorization of settlement of new farms and to achieve a global development plan for aquaculture including special subsidies for basic equipment (pumping station, inlet and outlet canals...) in order to facilitate the start up of new seabass and seabream farms in few selected sites.

2.4. Libya

The potential of aquaculture of Libya is limited due to the lack of sites, the weakness of scientific and technical background and the absence of resolute investors although first trials of seabass and seabream rearing in cages close to Tobrouk in 1992 had been successful (MEDRAP 1991).

2.5. Egypt

Egypt has a long tradition of aquaculture especially in the Nile delta where numerous and large brackishwater lakes and lagoons allow extensive farming of several species: mainly mullets, seabass and many species of sparids. Indeed this country benefits of several assets for aquaculture, including a dense hydrographic network, an important population (59 millions people) accustomed to water management and fish polyculture. The rapid growth of population, the high demand for all kind of fish, and the stagnation of fish catch led the Egyptian authorities to develop aquaculture since the early 80 's and notably seabass and seabream productions for export to Italy (Sadek, 1989).

After the failure of huge pilot farms (Raswa, Maryut), small investors developed extensive farming of seabass and seabream in the northern part of the large brackishwater lakes of the low delta. But the pressure for freshwater irrigation and large scale drainage for agriculture is now so high that producers are progressively shifting to offshore cages in the Red Sea, which implies the management of hatcheries and a necessary intensification of production process.

Undoubtedly, a great potential of development for those two species remains with the specific assets of this region: low cost labor, abundance of sites especially along the Sinai peninsula, well known technology and for hatchery and grow out. The main constraints are the lack of reliable management and quality control in order to secure a regular export flow to European countries.

3. Evolution of seabass and seabream market : main trends and constraints

3.1. The seabass and seabream production is marking time

As soon as mass production of seabass and seabream fry had been obtained in the early 80's, several investors thought they were able to conquer the extremely profitable market of those two species notably in the "spot country", i.e., Italy. Fifteen years after, it is clear that Maghreb countries did not have the means to face successfully such a rapid evolution of the culture of those two species. This can be explain mainly by the absence of European

incentives, the lack of scientific and technical support to update technology, the scarcity of well trained people and the taxes to enter European market. The outstanding success of greek marine fish farming entailed a regular decrease of prices and an important reduction of profitability. This key element, combined with the relative scarcity of sites in Maghreb and the impossibility to start horizontal or vertical concentration obliges most of new investors to suspend projects for seabass and seabream farming in this area.

3.2. Constraints are numerous but remediable

The main constraints are similar for the five countries:

- a) Competition between aquaculture and other activities
- b) Industrial and urban pollution less controlled
- c) No by-products for prospective feed industry except Morocco (trash fish, fish meal)
- d) No support from R and D institutions. Outdated research except in Morocco
- e) Specific regulations and taxation system unadapted or vague
- f) Lack of experienced personnel as several scientists educated and trained in foreign countries shift to more profitable jobs when they are back

It is noticeable that all those constraints are remediable. Indeed, stimulated by the recent development of international cooperation in the field of mediterranean aquaculture, all Maghreb countries are trying to establish favourable conditions for a specific development of aquaculture.

3.3. The background is evolving favourably

Maghreb countries have understood that the development of aquaculture sector may be not only a significant source of profit for investors and state but also a excellent mean for seashore management and development planning. For instance, Tunisia had conducted ifrom 1993 to 1995 a complete study on aquaculture constraints and potential resulting in a detailed developmen plan for this sector. Morocco and Libya are about to start similar studies. The exemplary tunisian study conducted administration to foresee financial support to multi-farms estate and special tax relief for aquaculture production (Plan directeur de l'aquaculture en Tunisie, DGPA 1995).

A second important trend in seabass and seabream production in Maghreb is the improvement of quality of product in order to meet european requirements. This results in a better control of quality parameters all along the production chain.

The third element which importance is determining for future is the quite recent development of information systems and regional cooperation. The objective of a regional cooperation in aquaculture in Mediterranean started since 1981 with MEDRAP I project (MEDiterranean Regional Aquaculture Project) and was extended to MEDRAP II until 1995. A considerable work of mutual information and technical and scientific updating resulted in the launching of four specialized networks (information, socio-economics, environment, technology) and an aquaculture committee inside the GFCM institution. Those new tools will contribute to a better information between all actors of development including national administrations, banks, investors, suppliers, experts and producers.

Conclusion

Maghreb countries have suspended seabass and seabream development because the initial background for this production is now outdated compared to the rapid recent evolution of this sector in the northern Mediterranean countries. Several efforts are engaged by both public institutions and private producers to come back to the market. This implies to take in account three major parameters : first, the quality of site, with long term security which obliges producers to integrate environmental aspects since the beginning; second, the permanent updating of technology as genetics, closed systems extended to higher sizes, pathology free rearing systems, more efficient feeds, etc, become key-elements for profitability; third, a special care adapted processing and presentation in close relation with the market demand.

However, as the economic cycle of seabass and seabream seems to enter the stabilized mature phase, the real potential for cultured fish production and market in the Maghreb countries and moreover in the Mediterranean seems to be more in the development of biotechnologies for other families of fast-growing species: tunas, groupers, pompanos, dolfinfish, etc. In Australia, tuna rearing in cages seems to be successful with an astonishing growth up to 5 kg/animal/month and 3 000 Tonnes expected this year (SFJO flash, 1996). Indeed, such species show undeniable assets: bigger maximum sizes, easy filletting, lower production costs, attractive image. Those new products should broaden the potential of seafood consumers and consequently could stimulate the traditional market of seabass and seabream by dragging along effect.

References

Conjoncture 97, 1997: Le nouveau bilan économique, politique et social du monde; sous la direction de Claude Albagli. Editions Bréal-Cedimes-Les Echos. 1022 p.

Harache Y. And Paquette P. 1996: Status of marine fish culture in Europe in 1996. Paper presented to World Aquaculture conference of Bangkok 29/1/96 to 2/2/96 14 p.

DGPA, 1985 : Plan directeur de l'aquaculture en Tunisie. Ministère tunisien de l'Agriculture Direction Générale de la Pêche et de l'Aquaculture .Edité par PNUD-DGPA. 186 p.

Lacroix D. 1995 : La recherche et le développement en Afrique du Nord. Etude FAO-CEA. Edite par Medrap Technical paper n° 37; 85 p.

FAO 1994 : Annuaire des pêches 1988-1994. Edité par FAO. Rome . 216 p.

Medrap 1991: Inventaire et potentiel de l'aquaculture en Libye .FAO; Tunis 24 p.

SFJO 1996: Bulletin n° 64 de Septembre 1996 de la Société Franco-Japonaise d'Océanographie. 4 p.

Le Plan Bleu, 1989. Avenirs du bassin méditerranéen. Sous la direction de M. Grenon et M. Batisse; Editions Economica. 442 p.

Sadek C. 1989: Aquaculture development in Egypt. Journal of Tropical Aquaculture n° 4; p. 165-188

FA-SEPIA 1981: Les potentialités de l'aquaculture en Algérie; Etude pour le Secrétariat d'Etat à la Pêche. 345 p.

Country (Source)	MOROCCO (ISPM)				ALGERIA (ANDP)				TUNISIA (DGPA)				LIBYA (MBRC)		EGYPT (GAFRD)				TOTAL SPECIES (per year)			
	92	93	94	95	92	93	94	95	92	93	94	95	92	93	92	93	94	95	92	93	94	95
Year																						
Seabass	0.12	0.19	0.33	0.53					0.09	0.42	0.61	0.23	0.01		0.27	0.85	0.73	0.73	8.14	13.61	17.81	21
Seabream	0.25	0.58	0.73	0.59					0.1	0.05	0.04	0.16	0.01		0.41	0.72	0.78	1.07	8.92	12.14	16.16	23
Mullet									0.04	0.17	0.2	0.17			9.7	7	9.85	14.52	13.59	11.20	14.01	
Trout	0.15	0.07	0.08																105.44	116.60	131.61	
Carp									0.03	0.04	0.05	0.08	0.08	0.1	24.4	22	19.7	21.5	40.33	47.84	42.33	
Tilapia															19	19.9	21	21.9	23.5	24.50	26.6	
Salmon																			2.17	2.29	1.89	
Eel	0.07	0.07	0.08	0.06								0.20							4.92	4.81	4.56	
Turbot																			1.82	1.98	2.45	
Other fishes	0.02								0.13	0.18	0.2	0.20			6.2	3.54	0.94	2	16.98	11.6	9.52	
Total Fishes	0.59	0.93	1.22	1.18	0.12	0.26	0.31	0.36	0.39	0.86	1.1	0.86	0.1	0.1	60	54	53	61.8	225.89	246.67	266.94	
Mussel					0.02		0.01		0.14	0.13	0.04	0.12							300.83	264.05	324.04	
Oyster	0.12	0.24	0.24	0.16								0.01							136.95	137.44	149.6	
Clam				0.01			0.02	0.02											32.98	33.02	34.36	
Other				0.02															0.72	0.7	3.57	
Total molluscs	0.12	0.24	0.24	0.19	0.02		0.03	0.02	0.14	0.15	0.04	0.13							470.84	431.05	511.57	
Crustacean		0.03	0.01																0.15	0.22	1.05	
Algae																			5	5	5.1	
TOTAL COUNTRY	0.71	1.2	1.47	1.37	0.14	0.26	0.34	0.38	0.53	1.01	1.14	0.99	0.1	0.1	60	54	53	61.8	701.84	682.89	784.66	
(last data coll. date)	1996				11/06/1996				26/04/1996				1994		26/03/1996							