

## THE GENERAL PROFILE AND PROBLEMS OF CAGE CULTURE FARMS IN TURKEY

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The first aquaculture production in Turkey had begun in 1968 with freshwater fishponds.

Trout (*Oncorhynchus mykiss*) and carp (*Cyprinus carpio*) culture farms spread through the Anatolia and Thrace widely. While aquaculture was solely based on culture trout and carp till the 1980's, the feeding of sea fish as gilthead sea bream and sea bass in the Aegean and salmon and trout in the Black Sea simultaneously have also been carried out since the 1980's. With recently established cage aquaculture farms in the Aegean Region, the total number of aquaculture companies reached 616 in Turkey. Also the number of marine fish culture farms increased to 183. According to the regional dispersion of the marine fish culture farms, 84% were located in the Aegean Region, 8% in the Black Sea Region, 7% in the Mediterranean Region and finally 0.5% in the Marmara Region.

### THE GENERAL PROFILE OF CAGE CULTURE FARMS IN TURKEY

Generally, aquaculture farms were constructed on safe bays which were 0-20 km far from the residential areas. Most of the farm buildings were made of wooden material and constructed on piles mainly inside the sea and partly on the shores.

The net cages were simply constructed without any

### ABSTRACT

This study was based on the results of a 1996 research about net cage enterprises located in the South Aegean Region of Turkey. The data from similar studies were also utilized.

In the last 10 years the production by aquaculture has increased by 9 times. 9% of a total production of 500,000 tonnes in the year 1997 was obtained through aquaculture. Furthermore, the number of aquaculture farms increased to 616 in the same year. This rapid increase brought along some problems to the sector. Especially, the number of marine fish culture farms has increased to 183 since 1990. 84% of them were located in the Aegean Region, 0.5% in the Marmara Region, 8% in the Black Sea Region and 7% in the Mediterranean Region. Except for the farms located in the Black Sea Region that farm salmon (*Salmo salar*), all the others are farming both sea bream (*Sparus aurata*) and sea bass (*Dicentrarchus labrax*).

68% of the aquaculture production was being marketed to foreign countries, especially to EU countries.

### RÉSUMÉ

Cette étude est basée sur les résultats d'une recherche menée en 1996 sur les fermes aquacoles avec enclos en filet situées dans la région égéenne méridionale de la Turquie. On a fait aussi référence à des données d'études similaires.

Ces 10 dernières années, la production de l'aquaculture a enregistré une augmentation de 9 fois, 9% de la production totale de 500.000 tonnes l'année 1997 a été réalisé par l'aquaculture. En outre, le nombre de fermes d'aquaculture a augmenté à 616 la même année. Cette augmentation rapide a engendré des problèmes pour le secteur. Notamment, le nombre d'entreprises pratiquant l'aquaculture marine a augmenté à 183 depuis 1990. 84% de ces entreprises est situé dans la région égéenne, 0,5% dans la région de Marmara, 8% dans la Région de la Mer Noire et 7% dans la Région Méditerranéenne. Sauf les entreprises situées dans la région de la Mer Noire qui élèvent le saumon (*Salmo salar*), toutes les autres pratiquent tant la daurade vraie (*Sparus aurata*) que le bar commun (*Dicentrarchus labrax*).

68% de la production d'aquaculture a été commercialisée vers les pays étrangers, surtout les pays de l'Union Européenne.

walk path and handrail. They were also wooden. Moreover, usage of modern net cages and modern farm buildings has also been noted recently. Until recent years 60% of aquaculture companies were in the form of combined enterprises, but today this proportion has decreased to 50%. More specialization on this sector should be expected in the future.

In the previous years, the education level of 80% of managers and employees was quiet low.

But today, not only the number of expert managers and qualified employees is higher, but the frequency and quality group educational workshops, symposiums and seminars about aquaculture have also increased in the sector.

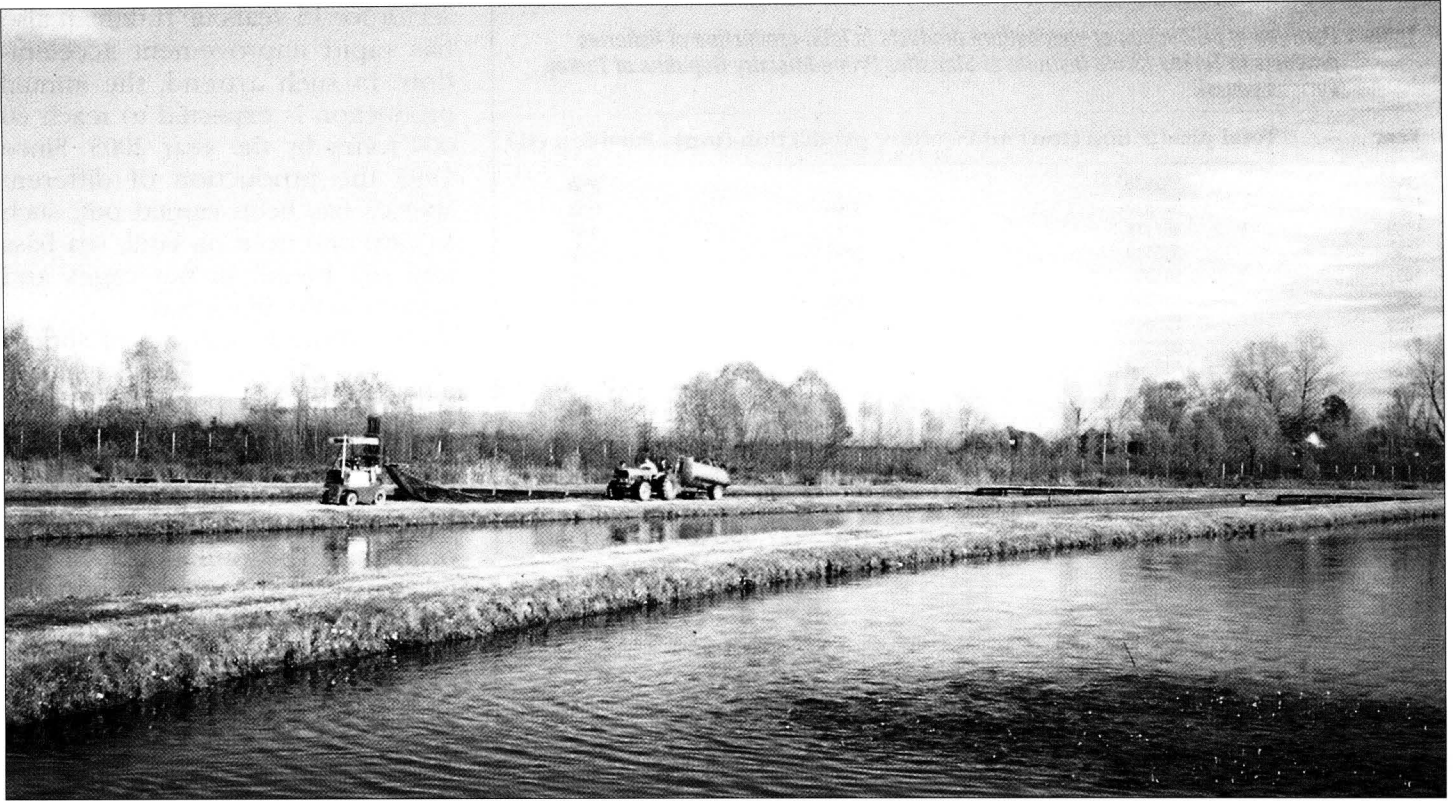
The important inputs in net cage aquaculture farms are fry and feed. Fry are usually catch from natural environments with nets and fishing tackles. But in recent years the catches from the nature

over increased with the number of newly formed aquaculture farms. In order to prevent the decrease of fry in the nature, government has been providing support funds to hatcheries. Thus, the number of modern fish hatcheries is increasing. There are no problem in obtaining feed materials but the high prices of such material usually affects the farms inversely.

The need for organization in net cage aquaculture companies emerged in 1980's. In 1985 some aquaculture associations were formed, but cooperative organization was found to be more suitable for this sector. Unfortunately, cooperatives have been unable to be fully active due to the fact that they were formed in recent years.

The aquaculture production is increasing continuously

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with the growing number and capacity of net cage aquaculture farms. According to the aquaculture production figures in the last decade was increased 9 times recorded.

The ratio of culture production in total seafood product yield, was 9.09% in 1997. According to development trend of aquaculture production, the annual production is expected to reach 60000 tonnes by the year 2005 (**figure 1, table 1**).

68% of sea production was being exported to the foreign countries such as Italy, Switzerland, France, Greece, Germany and United Kingdom.

Recently, there have been reports in the Turkish press on the fact that EU is applying a special statute to Turkey and restricting exports of aquatic products from this country. The Turkish Government and some public organizations have started initiations with EU and the problem is expected to be resolved shortly.

#### PROBLEMS AND SUGGESTIONS

The rapid increase of net cage aquaculture farms brings about various problems. Especially, the farms were established in inconvenient places due to the lack of necessary technical and legal investigations in selected areas. There are some disagreement between the Ministry of Agriculture and other public institutions on the implementation of relevant rules and laws.

The fact that farm areas are rented for periods of 15-30 years, and the leases expire at the most productive pe-

riod of these establishment, and turning these areas over to the tourism sector have all been discouraging for large initiators.

Some shores are kept out of rental status by public institutions and some of them are national parks and under strict protection. Therefore, the aquaculture companies have to construct their farm buildings in the sea in such areas and this situation causes certain economic losses.

It is usually difficult to employ experts in the farms due to the lack of transportation between farms and residential areas, away from cultural and social activities. Qualified staff do not usually work in such places for a long time and unqualified workers are employed in these farms. This situation is highly affecting the productivity of farms. Unqualified staff is generally unable to follow the technological improvements and can not record input-output data properly for economic management. In order to overcome such problems, owners of the companies have been improving social and cultural status of the farms and offering a partnership to the aquaculture and fisheries engineers to involving them in their companies.

The slow development of cooperatives affects the farmers inversely. 84% of the farmers believes in the effectiveness and necessity of cooperatives. Farmers are fully aware that cooperatives are influential on input-output markets, and give them advantages in obtaining loans and overcoming bureaucratic difficulties.

**Table 1 Partition of production of aquaculture products in total production of fisheries products in Turkey (State Institute of Statistics Prime Ministry Republic of Turkey, various years).**

Year	Total production (ton)	Aquaculture production (ton)	Partition (%)
1986	582920	3075	0.53
1987	627913	3300	0.53
1989	457116	4347	0.95
1990	385114	5782	1.52
1991	364661	7835	2.15
1992	454346	9210	2.02
1993	556044	12438	2.24
1994	601104	15998	2.66
1995	649200	21607	3.33
1996	549646	33201	6.04
1997	500260	45450	9.09

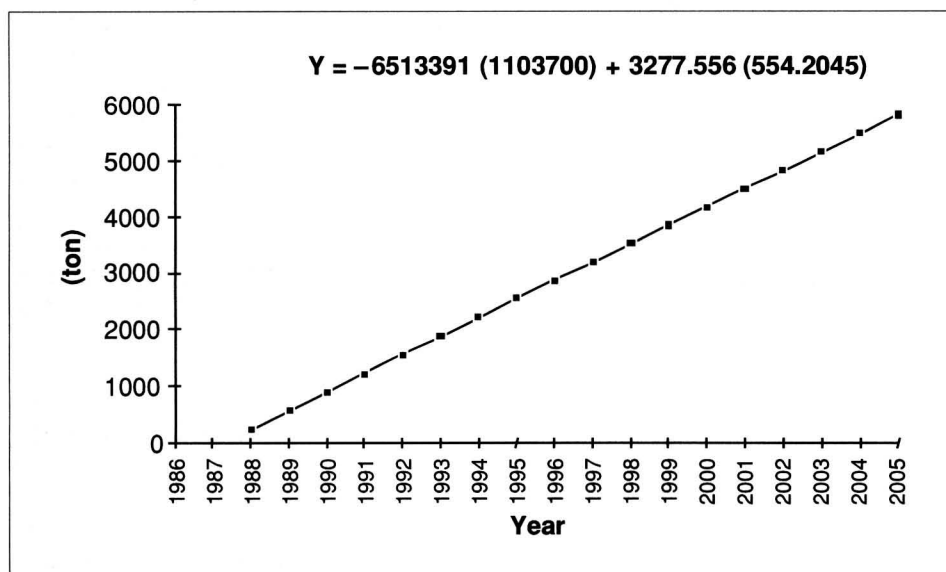


Figure 1 - Development trend of aquaculture production (ton).

The Bank of Agriculture provides loans for this sector. However, the funds allocated by the bank as loans for the sector are not being fully utilized due to bureaucratic difficulties as well as high interest rates and letters of credit.

Thus, the interest and deposit amounts should be lowered for the farmers to make aquaculture credits more effective and attractive.

Feed, fry and labour expenses are the most effective factors on costs.

Especially the rapid increase in feed prices is raising the cost further. This, naturally, affects both producers and consumers inversely.

In order to prevent such problems the aquaculture has to be included in the financial subvention program of the government just like the other branches of animal breeding.

#### CONCLUSIONS

In summary, net cage aquaculture has emerged as a sub

sector for 15 years in Turkey. It also has rapid improvement acceleration. In such a trend, the annual production is expected to reach 60 000 tones by the year 2005. Since 1995 the production of different species has been carried out, such as carp and trout on land, sea bass and sea bream in net cages and salmon in the Black Sea.

Thus, culture production of shrimp (*Penaeus* sp.), sole (*Solea vulgaris*), two banded sea bream (*Diplodus vulgaris*), turbot (*Scophthalmus maximus*), etc. started.

Naturally, this rapid improvement in aquaculture brought along some problems. The pollution factor of net cages in the Aegean and the Mediterranean was discussed in the media.

Most of the companies were in marginal status and not very well organized. The organization failed to reach target levels. The cooperative organization is at an initial level at the moment.

On the foreign market, export possibilities, are being investigated to Middle Eastern, Far Eastern, and Turkish Countries in addition to EU Countries.

The sector is expected to be able to continue its improvement trend in an efficient way by resolving the

above-mentioned problems. ●

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