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SUMMARY - Industrial or large scale aquaculture production in Egypt began in 1964 with the pilot activities of some government and private fish farms. During these early years aquaculture production per unit area was very modest, since fish were reared mainly within extensive pond farming systems and received no supplementary feed inputs; fish growth being entirely dependent upon the natural productivity of the water body in which the fish were reared. As a result of the low fish yields observed, the government (GAFRD) decided to improve its farms' production by establishing aquafeed manufacturing facilities. The first government feed mill was established at Barsik fish farm in 1990 with an aquafeed production capacity of 2 metric tons (mt)/hour. In 1994 a new government aquafeed mill was set up with the assistance of an Italian grant at El-Manzala fish farm with an aquafeed production capacity of 4 mt/hour. At present about 75% of the total aquafeed production from these two feed mills is used on government fish farms, with the remainder sold to private fish farmers. The strategy and target of GAFRD is to increase total aquaculture production in Egypt to 128,000 mt by the year 2002 and to 364,000 mt by the year 2012. It follows therefore that to achieve this level of aquaculture production, the manufacture and production of compound aquafeeds must also be significantly increased and improved so as to meet the required demand.

Key words: Aquaculture, production, feed manufacturing, Egypt, aquafeed.

RESUME - *"Aquaculture et fabrication d'aliment aquacole en Egypte". La production aquacole industrielle ou à grande échelle en Egypte a commencé en 1964 avec les activités pilotes de certaines fermes piscicoles gouvernementales ou privées. Pendant ces premières années la production aquacole par unité de surface a été très modeste, car les poissons étaient élevés principalement dans des systèmes d'étangs en extensif et ne recevaient pas de supplémentation ; la croissance des poissons dépendait entièrement de la productivité naturelle de l'étendue d'eau où les poissons étaient cultivés. Comme résultat des faibles rendements obtenus, le gouvernement (GAFRD) a décidé d'améliorer la production dans ses fermes en implantant des fabriques d'aliment aquacole. La première usine gouvernementale a été établie à l'exploitation piscicole de Barsik en 1990 avec une capacité de production d'aliment aquacole de 2 tonnes métriques (tm)/heure. En 1994 une nouvelle usine gouvernementale d'aliment aquacole a été implantée avec une subvention de l'Italie à la ferme piscicole de El-Manzala avec une capacité de production de 4 tm/heure. Actuellement 75% environ de la production totale d'aliment aquacole de ces deux usines sont utilisés dans les exploitations piscicoles du gouvernement, et le reste est vendu à des fermes piscicoles privées. La stratégie et l'objectif du GAFRD consistent à augmenter la production totale de l'aquaculture en Egypte à 128 000 tm pour l'année 2002 et à 364 000 tm pour l'année 2012. Il s'ensuit que pour atteindre ce niveau de production aquacole, la fabrication et production d'aliment composé pour aquaculture doit également être augmenté et amélioré significativement afin de faire face à la demande prévue.*

Mots-clés : *Aquaculture, production, fabrication d'aliment, Egypte, aliment aquacole.*

Introduction

Total aquaculture production in Egypt in 1996 was 75,837 metric tons (mt) and represented 17.6% of total fisheries landings (GAFRD, 1997; Table 1).

By species, Tilapia was the most cultivated species in 1996 (i.e., 37% of total aquaculture production), followed by carp (31%) and then mullet (27%; Table 2). By contrast, the lowest percentage of total aquaculture production was represented by marine carnivorous fish species such as the Gilthead seabreasm and European seabass.

Table 1. Total fisheries production (mt) in Egypt in 1996

Aquaculture	Catch	Total
75,837 (mt)	355,806 (mt)	431,643 (mt)
17.6 (%)	82.4 (%)	100 (%)

Table 2. Total aquaculture production (mt) in Egypt by species group in 1996

Species	Rice culture	Cage culture	Private farms and pens	Government farms and pens	Total	%
Tilapia	0	1,720	25,133	1,001	27,854	37
Carp	21,264	0	0	2,175	23,439	31
Mullet	0	0	16,738	3,363	20,101	27
Catfish	0	0	1,580	429	2,009	3
Seabream	0	0	1,342	115	1,457	2
Seabass	0	0	905	72	977	1
Total	21,264	1,720	45,698	7,155	75,837	100

Government aquaculture production strategy

As mentioned previously, the strategy of GAFRD is to increase total aquaculture production to 128,000 mt by the year 2002 and to 364,000 mt by the year 2012.

In particular, GAFRD plans to assist marine aquaculture development in Egypt by encouraging investment in this sector. For example, North of the Sinai the government has allocated 55,000 fedans specifically for marine aquaculture. One of the most important aquaculture development projects in this region including a joint venture between investors from Egypt and Ecuador, which entails the construction of a shrimp farm and hatchery, and the establishment a large aquafeed mill to serve the needs of farmers within the region.

Similarly, in the south of the Egypt, there is another new aquaculture community around the Toshki canal, the so–called new valley, where the government is encouraging aquaculture development, by offering the following services: (i) assisting with the selection of suitable sites; (ii) providing water quality analysis, and chemical and mechanical soil analysis; (iii) digging the main irrigation and drainage canals for the projects (basic construction); (iv) extending land rent contracts for up to 10 years and thereafter becoming farm owners; and (v) offering extension services through short training programmes, including training in aquafeed manufacture and use.

Although within the Demitte governate there are about 33,000 feddans of marine/brackishwater fish farms (i.e., mainly for mullet, seabream, and seabass), fish production is generally very low due to the use of poor quality supplementary feed inputs. Moreover, there is also an absence of published information concerning the dietary nutrient requirements of the locally farmed marine fish species. However, it is hoped that fish production within the region will be improved in the near future with the establishment of a new aquafeed mill; the latter financed through a loan from the Multi Sector Support Programme (MSSP) to an Egyptian investor (i.e., a European Commission aquaculture development project).

Problems faced by the aquafeed manufacturing sector

There are a number of problems facing the aquafeed manufacturing sector in Egypt, which in turn have resulted in excessive aquafeed prices and a non-active/stagnant aquafeed market, and these may be summarized as follows:

(i) The dependence of the aquafeed sector upon the importation of key ingredient sources such as fishmeal, meat meal, and maize, and the shortage of locally available raw materials due to increasing competition between the aquafeed manufacturing sector and the much larger terrestrial animal feed manufacturing sector.

(ii) The lack of information concerning the dietary nutrients requirements of farmed marine species, and in particular concerning seabass, seabream and shrimp.

(iii) The lack of cooperation between aquaculture research institutes and government fish farms.

(iv) The lack of extrusion pelleting technology within most of the country's established aquafeed mills.

Suggested actions

From the authors point of view, it is felt that the solution to the above mentioned problems could be achieved through the following actions:

(i) The need to utilize non-traditional feed ingredient sources within aquafeeds so as to reduce feed and feeding costs.

(ii) The need to improve dietary fish feed formulations and to produce individual feed lines for each of the major cultivated aquaculture species, including all marine fish species.

(iii) The need to modify/improve existing aquafeed mills and to seek further international cooperation and assistance in aquaculture feed technology.

References

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