Production of Fingerlings and Marketable Size African Catfish (*Clarias gariepinus*) in Ponds in Northern Cameroon

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Introduction

Culture of African catfish (*Clarias gariepinus*) has been advocated since the early 1970s (e.g., De Kimpe and Micha 1974; Huisman 1986; Haylor 1992). At present, thirteen intensive catfish recirculation systems are operated in Holland, producing 880 tonnes in 1992 (Verreth and Eding 1993).

Catfish fingerling production is often perceived as a bottleneck in tropical countries. The technically sound methods described by Viveen et al. (1985) are not necessarily feasible under local socioeconomic conditions. Synthetic hormones or common carp pituitaries are often difficult to come by in Africa, but running catfish females have been used successfully as pituitary donors (Alegbeleye et al. 1991). Large numbers of small catfish can sometimes be obtained locally from the wild at the end of the rainy season but supplies remain erratic and vary greatly from year to year.

Natural Catfish Reproduction

Catfish fingerling production in ponds has become routine at the Lagdo Fisheries Station, located in an irrigation scheme near Garoua (North Province). A simple running-water method is practised, which in Asia works well with common carp (*Cyprinus carpio*). First, an earthen 250-m^2 pond is sundried for 1-2 weeks. While clear water is being let into the pond, eight large females and 5-6 males are selected from the growout ponds. Ripe females can be found throughout the year, except maybe for the cold spell between December and February.

The water is flushed continuously through the pond for 4-7 days. About 500 g of cottonseed cake, rich in P and N, are applied daily to stimulate natural feed production. Half of the pond surface is covered with cut long grass, which further enhances natural feed for the catfish fry and provides shade for the breeders.

After 1-2 weeks, the pond is slowly drained for the breeders to recuperate and in order to prevent cannibalism. It is then immediately refilled. Draining the pond to catch the breeders is quicker and less harmful to the fry than repeated netting which muddies the water. Generally only 2-3 females actually spawned.

Catfish fingerlings are harvested about 2-3 months after stocking the breeders. Our mean yield was five fingerlings per m^2 (Table 1), similar to the results of De Graaf (in press) in the Congo, where artificially reproduced fry were stocked in ponds and were not protected against mating frogs. In our ponds, tadpoles were sometimes found but never in large quantities, and they were preyed upon by the catfish larvae.

*The author holding a ripe female African catfish (*Clarias gariepinus*).*

Table 1. Examples of catfish (*Clarias gariepinus*) fingerling production in 250-m^2 ponds in northern Cameroon.

Stocking date (t=0)	Females No.	Females Average wt. (g)	Males No.	Males Average wt. (g)	Recuperation time[1] (days)	Harvest time[2] (days)	Fingerling harvest No.	Fingerling harvest Average wt. (g)	Fingerling harvest Density (no./m^2)	Growth (g/day)	FCR[3]	Feed[4]
Mar 91	8	1,400	6	1,970	30	235	1,292	121	5.2	0.52	-	CSC+RB
Jul 91	8	440	6	550	13	92	2,149	9	8.6	0.10	1.8	CSC
Sep 91	5	500	7	540	13	116	836	41	3.3	0.35	2.2	CSC
Apr 92	8	900	4	1,050	10	51	1,071	14	4.3	0.27	0.8	CSC+grass

[1]Recuperation time = Pond drained for recuperation of breeders (days since stocking).
[2]Harvest time = Draining pond for fingerling harvest (days since stocking).
[3]FCR = Feed conversion ratio.
[4]CSC = Cottonseed cake; RB = Rice bran.

larvae.

Although both the number of fingerlings and their mean weight vary widely between reproduction cycles, catfish fingerling availability is easily secured by starting regularly new reproduction cycles.

Catfish Growout

In Lagdo, catfish are usually stocked at low densities (0.04-0.20 catfish/m²) in tilapia (*Oreochromis niloticus*) production ponds, where they reached average daily growth rates of 2.5 to 7.0 g/day. Cottonseed cake is fed six days per week, twice a day. In monoculture, fingerlings stocked at 1/m² grew from 39 to 200 in 119 days (Table 2).

This kind of catfish monoculture can certainly be improved upon, if a market can be developed. Better catfish marketing prospects would stimulate the production of compound diets, based on agricultural by-products. For instance, adding fresh cattle blood to cottonseed cake enhances the appetite of catfish. Haylor (1992) estimated that a properly managed grow-out operation of 15 ponds of 1,000 m² each could yield up to 100 t/year of catfish.

Business Opportunities for Rearing Catfish

In northern Cameroon, the economics of tilapia culture with 10% catfish added are presently more favorable than catfish monoculture. However, in the south around Yaounde and Douala, catfish are sought, even for small catfish (>80 g) which still get a good price. In the north, large catfish (>750 g) are preferred and market prices are only 400 FCFA/kg, just one-third of prices in the south (US$1 = FCFA300).

Catfish grow much better in the hot northern Soudanian climatic zone than in the cool forest zone of the south. Moreover, catfish fingerlings for stocking are always in short supply in the south. So, at least in theory, a good possibility exists for shipments of large catfish from north to south. There is a daily flight from Garoua. Catfish easily survive 10 hours or more out of water, kept moist in a crate, provided there is not a draught which dehydrates the fish.

Of course such development would require a medium-sized type of business with sufficient cash-flow and an extensive network of local contacts. It may be possible to interest donor agencies to provide technical assistance to local investors in order to launch catfish rearing, with the objective of creating non-government employment in the less-favored northern parts of the country.

Table 2. Catfish (*Clarias gariepinus*)-tilapia (*Oreochromis niloticus*) polyculture compared to catfish monoculture in northern Cameroon. Cottonseed cake was fed in both trials. Means of two ponds per treatment.

Treatment		Polyculture		Monoculture
		Tilapia	Catfish	Catfish
Feeding rate	(%BW/day)		3	4
Rearing time	(days)		125	119
Pond size	(m²)		525	250
Stocking density	(n)	555	20	250
Stocking weight	(g)	90	63	39
Harvest weight	(g)	303	901	200
Growth rate	(g/day)	1.7	6.8	1.4
Net fish production	(kg)	102	13	38
Net fish production	(t/ha/year)	5.7	0.7	4.7
Fingerling yield	(kg)	21	-	-
Relative FCR			2.7	2.8

The workforce of the Lagdo Fisheries Station, Cameroon.

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