

Original Research Article

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## Seed Conversion of *Channa punctata* (Bloch, 1793)-(Murrel)

Dharavath Ram Kumar <sup>\*</sup>, Bhukya Sai Kumar , Bhukya Chakravarthy and  
T. Jagadeeshwarachari

Government Degree & PG College (Autonomous), Siddipet (CRL-Central Research Lab)

*\*Corresponding author*

### ABSTRACT

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Seed conversion refers to the process of converting murrel fish larvae into fingerlings for further growth and development. This process plays a crucial role in the aquaculture industry as it ensures a sustainable and continuous supply of murrel fish. Proper seed conversion techniques are essential to achieve high survival rates and profitable murrel fish farming. Seed conversion allows for the mass production of murrel fish fingerlings, which are in high demand in the market. It helps in maintaining the genetic diversity of murrel fish populations and prevents overfishing in natural habitats. Efficient seed conversion techniques contribute to increased productivity and profitability in murrel fish farming. We have to grade them based on their size due to its cannabolic nature. Infected murrel must be isolated separately. Efficient seed conversion techniques contribute to increased productivity and profitability in murrel fish farming.

### Introduction

The experiment was performed on the murrel species (*Channa punctata*) *Channa punctata*, the spotted snakehead, is a species of snakehead. It is found in the Indian Subcontinent and nearby areas, ranging across Afghanistan, Pakistan, India, Sri Lanka, Nepal, Bangladesh, Myanmar and Tibet. Its natural habitats are swamps, ponds and brackish water systems. The *Channa punctatus* is a member of the freshwater perciform fish family Channidae, native to parts of Africa and Asia. These elongated, predatory fish are distinguished by their long dorsal fins, large mouths, and shiny teeth. They breathe air with gills, which allows them to migrate short distances over land. They have suprabranchial organs, which are primitive forms of labyrinth organs that develop when they grow older (Chaudhry *et al.*, 2019).

The spotted snakehead is listed s Least Concern in IUCN. They are valuable as a food source and have become notorious as an intentionally released invasive species (Jayaram, 2010; Adamson, *et al.*, 2019).

### Materials and Methods

Seeds, Feed, Weighing machine, Conical flask, Water parameter devices, Medicines (Enrofloxacin, Tetracycline), Distilled water, Potassium permanganate, Net (small to large size), Mineral powder, Pots, Aerator, Electric switch board, wires, Sample collector, water bottles. Before ordering the seeds, the cement tanks get cleaned by the process of salting and liming. The water parameters such as pH, carbonates and bicarbonates have been tested by laboratory titration method. Due to the more basic of water nature (8 to 9) the water is treated

with Alum. Healthy local 4500-5000 murrel fish with an average size i.e., (2cms) are transported through open system (with the plastic pots) Supplied from thirumalagiri (village), janagon (district) of Telangana state, seeds are collected at 9:00pm transported by motorcycle, seeds get introduced into the tank at 2:00am on 18<sup>th</sup> July 2023. Before transporting the seeds they are not being fed. Both the experimental and control of murrels were acclimated to the laboratory conditions for about 4-5 days before they were used for experimentation. Dechlorinated ground water was used during acclimation and experimental period. The water acclimation tanks were frequently oxygenated with electrical aerators. On the first day the seeds get fed by 30 gms (Bhuiyan, *et al.*, 2006; Hamilton, 1822).

The mortality seeds are collected in a small transparent jar for microscopic examination

To overcome mortality 70% of water gets changed, the water and feed gets treated with enrofloxacin and nutrient powder.

Some murrels exhibits cannibalism, so they gets separated by the help of hand net and grown separately till they attain advanced fingerling stage.

### To maintain the physico chemical parameter of water such as (ph, Alkalinity, DO, Ammonia, Turbidity)

Regular changing of water.  
Adding of lime and alum based on the nature of water.  
Fixation of aerator.

### Results and Discussion

Efficient seed conversion techniques contribute to increased productivity and profitability in murrel fish farming. We get double income by rearing them from fry to fingerling stage. By grading them depend on their size we can decrease the rate of cannibalism. Regular monitoring of dissolved oxygen levels, pH, temperature, and ammonia levels is necessary.

Proper aeration, water exchange, and use of natural or artificial filtration systems can help maintain water

quality. Proper feeding management is crucial for the growth and development of murrel fish in grow-out ponds. With this we conclude that wild varieties of Murrel type (*Channa marulius*) shown high resistance, low mortality & High growth rate, by culturing of these varieties there is high-rate chances to get a better crop rate for better production (Ram Kumar *et al.*, 2023)

Due to feeding and natural environment these murrel shown high growth rate attained 14-17 cms within a month.

### Economic Benefits of Feed Conversion in Murrels

#### Amount required for feed conversion

Each seed cost is Rs 2.4/-)2.4 x 5000=12000/-	
Transportation	800/-
Feed	2000/-
Electric devices (aerator, switchboard)	1500/-
Medicines, flasks	1500/-
	-----
	17,800/-
	-----

Profits gets after feed conversion  $4500 \times 10=45,000/-$

Proper feeding management is crucial for the growth and development of murrel fish in grow-out ponds. Nutritionally balanced diets, including both natural and artificial feeds, should be provided in appropriate quantities. Monitoring of feed conversion ratios, growth rates, and regular health checks are necessary to optimize productivity.

Fingerlings should be monitored closely for any signs of stress or disease during the acclimatization period. Seed conversion allows for the mass production of murrel fish fingerlings, which are in high demand in the market. It helps in maintaining the genetic diversity of murrel fish populations and prevents overfishing in natural habitats. Efficient seed conversion techniques contribute to increased productivity and profitability in murrel fish farming.

**Table.1** Date and Amount of feed

Sl. No	Date	Amount of feed	Rate of mortality	Remarks
01	18/07/2023	30,25 gms	03	Mortality rate due to transport
02	19/07/2023	25 gms	25	Mortality due to sudden change in feed
03	20/07/2023	25 gms	27	Feed,aerator gets fixed.
04	21/07/2023	20 gms	30	Due to water parameters, Water is basic so the water is treated with alum
05	22/07/2023	15 gms	15	70% of water gets changed
06	23/07/2023	15 gms	21	Feed is added with Enrolfloxacin & Nutritional powder
07	24/07/2023	15 gms	10	Collection of water and fish samples
08	25/07/2023	15 gms	04	Feed added with nutritional powder
09	26/07/2023	15 gms	NILL	Water treated with Tetracycline
10	27/07/2023	15 gms	“	Cannibalism seen those fishes gets separated from the pond.
11	28/07/2023	15 gms	“	Seeds grown upto5-6 cms
12	29/07/2023	15 gms	02	50% of water changed
13	30/07/2023	15 gms	NILL	Feed added with minerals
14	31/07/2023	15 gms	“	Feed added with enrolfloxacin
15	01/08/2023	15 gms	“	---
16	02/08/2023	15 gms	“	---
17	03/08/2023	15 gms	“	---
18	04/08/2023	15 gms	01	---
19	05/08/2023	15 gms	NILL	60% of water changed
20	06/08/2023	15 gms	“	---
21	07/08/2023	15 gms	“	Seeds grown upto 10-12 cms
22	08/08/2023	15 gms	“	---
23	09/08/2023	15 gms	“	---
24	10/08/2023	15 gms	“	---
25	11/08/2023	15 gms	“	Water treated with enrolfloxacin
26	12/08/2023	15 gms	“	---
27	28/08/2023	15 gms	“	---
28	07/09/2023	15 gms	“	---
29	15/09/2023	15 gms	“	Feed added with minerals
30	25/09/2023	15 gms	“	---
31	01/10/2023	20 gms	“	70% of water changed
32	10/10/2023	20 gms	“	---
33	19/10/2023	20 gms	“	Seed size attained upto15-20 cms

The feed is given twice a day i.e., morning 9:00 am and evening 4:00 pm

**Table.2** Parameters Required for Seed Conversion

S.No	Factors	Requirements	Measuring device
01	Visibility	Less than 20cms	Sacchi disc
02	Temperature	20-25	Thermometer
03	Oxygen	5mg /lit	D.O meter
04	Co2	Less than 5ml/lit	Digital co2 meter
05	Salinity	Less than 0.02ppt	Salinity meter
06	pH	Needed 7-8	pH paper
07	B.O.D	5 mg/lit	Titration method
08	Nitrogen	Should be 4 ppm	Nitrate and Nitrite test strips

**Figure.1** Samples



**Figure.2** Samples



**Figure.3** Collection of sample



**Figure.4** Microscopic study

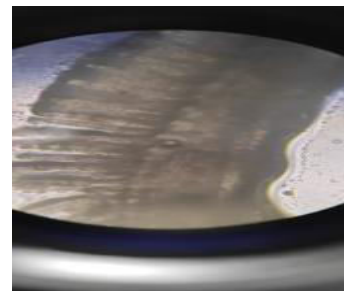




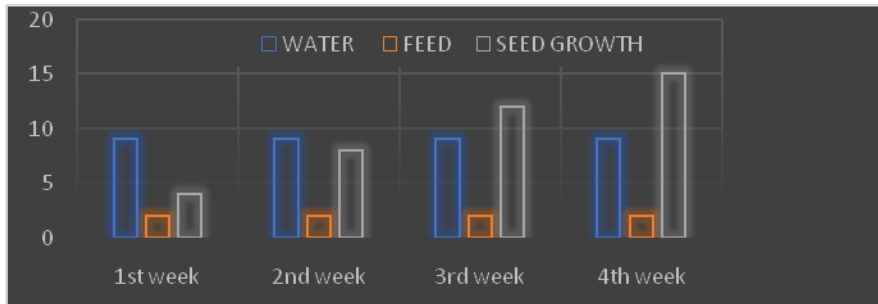
Figure.5



Figure.6 To reduce the cannibalism rate by grading



Figure.7 Growth Rate



Seed (2 cms)

1<sup>st</sup> week (4 cms)

3<sup>rd</sup> week(12-14 cms)

4<sup>th</sup> week (14-17 cms)



Figure.8 Cycle

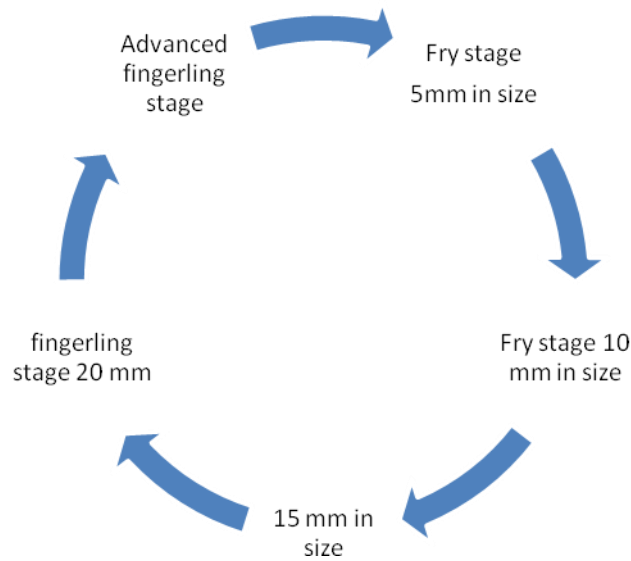
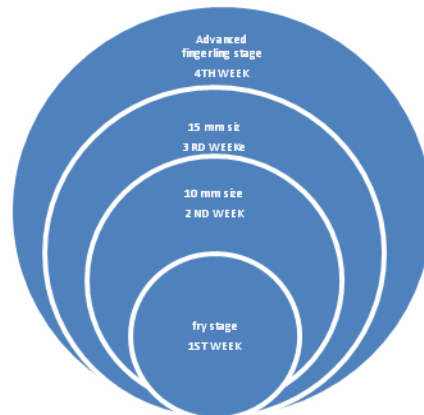


Figure.9 Developmental stages per week to week



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ammonia levels is necessary. Proper aeration, water exchange, and use of natural or artificial filtration systems can help maintain water quality.

### Author Contribution

Dharavath Ram Kumar: Investigation, formal analysis, writing—original draft. Bhukya Sai Kumar: Validation, methodology, writing—reviewing. Bhukya Chakravarthy:—Formal analysis, writing—review and editing. T. Jagadeeshwarachari: Investigation, writing—reviewing.

## Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

**Research Funding:** Not applicable

**Ethical Approval:** Not applicable.

**Consent to Participate:** Not applicable.

**Consent to Publish:** Not applicable.

**Conflict of Interest:** The authors declare no competing interests.

## References

Adamson, Eleanor A. S.; Britz, Ralf (July 29, 2019). "The Mae Khlong Basin as the potential origin of Florida's feral bullseye snakehead fish (Pisces: Channidae)" (PDF). *Raffles Bulletin of Zoology*.

67: 403– 411 – via ZooBank.  
<https://doi.org/10.26107/RBZ-2019-0032>

Bhuiyan, A S., S Afroz, T Zaman (2006). "Bhuiyan, A.S., Afroz, S. and Zaman, T., 2006. Food and feeding habit of the juvenile and adult snake head, *Channa punctatus* (Bloch)". *J. Life Earth Sci.* 1 (2): 53–54.

Chaudhry, S.; de Alwis Goonatilake, S.; Fernando, M.; Kotagama, O. (2019). "Channa punctata". *IUCN Red List of Threatened Species*. 2019:e.T166437A60584432.

<https://doi.org/10.2305/IUCN.UK.2019-3.RLTS.T166437A60584432.en>.

Hamilton, F., 1822 - Edinburgh & London: *i-vii + 1-405, Pls. 1-39 An account of the fishes found in the river Ganges and its branches.*  
<https://doi.org/10.5962/bhl.title.6897>

Jayaram, K.C. (2010) The Freshwater Fishes of the Indian Region. 2nd Edition, Narendra Publishing House, Delhi, 616 p.

Ram kumar, D. *et al.*, 2023. Collection Of Channa Maru Lius Seed From Mohi Tummeda Vagu Of Siddipet Telangana. *International Journal of Creative Research Thoughts (IJCRT)*. 11(9): 306-310.

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