



# Performance of Amur Common carp Breed in East Siang District of Arunachal Pradesh

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## ABSTRACT

Multilocal trials to study the growth performance of Amur common carp, *Cyprinus carpio* in East Siang District of Arunachal Pradesh were conducted for a period of 12 month. Amur common carp showed 20 per cent faster growth than the existing stock of common carp in polyculture system with three Indian major carps viz., Rohu (*Labeo rohita*), Catla (*Catla catla*), Mrigala (*Cirrhinus mrigala*) and two Chinese carps viz., Grass Carp (*Ctenopharyngodon idella*) and Silver carp (*Hypophthalmichthys molitrix*). Supplementary feeding of oil cake and rice bran with a mixing ratio of 1:1 was done. The pooled up average growth of the Amur common carp and locally available common carp from the experimental locations were recorded as 543.3g and 451.6g, respectively. Moreover 5.2 per cent higher slaughter value was observed in Amur carp as compared to locally available stock.

**Key Words:** Amur carp, Common carp, East Siang district, Growth, Polyculture.

## INTRODUCTION

Aquaculture has emerged as an integral part in farming sector for improving the income generation as well as nutritional security of farmers in many developing countries including India. In inland aquaculture system composite fish farming with a combination of three Indian major carps (Rohu, Catla and Mrigal) and three exotic carp (Silver carp, Common carp and Grass carp) is a well adopted technology. Among these six species cultured in the composite fish farming system common carp (*Cyprinus carpio*) is an important species, contributing to enhanced Inland Fish production especially for the North Eastern Hill states of India as the species has got high adaptability and tolerance towards high range of temperature and dissolved oxygen fluctuation. The species is introduced to India in 1937 as the Prussian strain and in 1957 as the Bangkok strain. Due to their high food value, the framers of the state has been cultivating the fish in rice fields in monoculture or along with other species especially in Apatani valley of Ziro area

achieving an average weight 75g to 110g (Hussain *et al*, 2018). In locally available strains of common carp the female gets very early maturity due to which somatic growth is reduced and leads to reduction of pond productivity. The local existing stock of common carp in India has several demerits as the fish attains maturity within six months and breeds naturally in the pond (Jhingran, 1982). Major problems of available local strain are early sexual maturation, spawning well before attaining marketable size, recruitment and overpopulation, low growth and yield, in-breeding, ganado somatic index is more in harvested weight, competition for food and space etc.

Presently, several strains of common carp (races, landraces, strains, breeds and stocks) have been developed through geographical isolation, adaptation, mutation and selection processes (natural as well as human intervention). Scientist from Karnataka Veterinary, Animal and Fisheries Science University (KVAFSU), Karnataka has developed a superior common carp breed named

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**Table 1. Final average weight (g) of fishes during the study period.**

Fish spp. Pasighat		Villages under study			Average
		Tabi	Mangnang		
Silver carp	Control	831.5	753.8	804.3	796.5
	With Amur carp	827.4	763.2	798.5	796.4
Catla	Control	828.8	732.8	818.7	793.4
	With Amur carp	830.5	734.5	806.6	790.5
Mrigal	Control	486.7	454.5	496.9	479.4
	With Amur carp	480.5	432.7	450.6	454.6
Grass carp	Control	678.6	710.5	685.7	691.6
	With Amur carp	702.4	695.7	697.5	698.5
Rohu	Control	348.5	324.4	404.5	359.1
	With Amur carp	325.5	378.5	396.5	366.8
Common carp	Locally available	450.8	425.6	478.5	451.6
	Amur carp	527.5	510.9	591.4	543.3

as Amur which has been reported that percentage increase in weight attained over local was 29.62 in different trail conducted by the University. Amur common carp (*Cyprinus carpio*) is an improved strain of wild common carp of Hungarian origin (Basavaraju *et al*, 2003). Basavaraju *et al*, 2013 also opined that Amur strain of common carp has greater potential in low-input aquaculture systems due to its better growth than the existing strain. To address the prevailing problem of locally availing strain of common carp KVK East Siang with technical support from Fisheries Division, ICAR Research Complex for NEH Region, Barapani, Meghalaya conducted multilocational trials to study the growth performance of Amur common carp in East Siang District of Arunachal Pradesh.

## MATERIALS AND METHOD

The study was carried out at farmers' field in Pasighat, Tabi and Mangnang village of East Siang district of Arunachal Pradesh. The fingerlings of Amur carp were transported from Fisheries Division, ICAR Research Complex for NEH Region, Barapani and were stocked in the ponds after proper acclimatization with the water temperature. The fingerlings were stocked with Rohu (*Labeo rohita*), Catla (*Catla catla*), Mrigala (*Cirrhinus mrigala*),

Grass Carp (*Ctenopharyngodon idella*), and Silver carp (*Hypophthalmichthys molitrix*) in a ratio of 2 Catla: 2 Rohu: 1.5 Mrigal: 2 Silver carp: 1 Grass carp: 1.5 Amur carp @ 10,000 fingerlings/ha. Water qualities of the ponds were managed by using lime as well as organic and inorganic fertilizers for a culture period of 10 m. Supplementary feeding of oil cake and rice bran with a mixing ratio of 1:1 was done initially @ 5 per cent of body weight of fishes by evenly distributing feeds in the pond water surface and later bag feeding method was done. In bag feeding method cleaned cement bag was filled with feed ingredients oil cake and rice bran with a mixing ratio of 1:1 and fixed in the pond water.

## RESULTS AND DISCUSSION

The present field level study revealed that better growth, slaughter value and consumer preference of Amur carp as compared to the locally available common carp in East Siang district of Arunachal Pradesh. The average growth recorded for Amur carp is 543.3g, which was 20 per cent faster growth than the existing stock attaining 451.6g during the culture period (Table 1 & 2). Similar types of observation with a stocking density ranging between 6,000 to 8,000 number/ha resulted in average 26 to 28 per cent better growth in Amur common carp

## Performance of Amur Common carp

**Table 2. Growth performance of Amur & locally available common carp during the study period.**

Location	Species	Weight (g)			Length (cm)		
		Initial	Final	Net gain	Initial	Final	Net gain
Pasighat	Local Common carp	5.0 ±0.7	450.8±52	445.8	5.8±0.4	27.2±1.6	21.4
	Amur carp	4.8 ±0.5	527.5±48	522.7	5.3±0.4	31.4±1.4	26.1
Tabi	Local Common carp	5.5 ±0.8	425.6±51	420.1	5.7±0.4	26.7±1.7	21.0
	Amur carp	4.8 ±0.5	510.9±40	506.1	4.2±0.4	30.2±1.5	26.0
Mangnang	Local Common carp	4.9 ±0.7	478.5±52	473.6	4.3±0.4	26.4±1.8	22.1
	Amur carp	4.8 ±0.5	591.4	586.6	5.1±0.4	30.7±1.6	25.6

than the local common carp was reported by Das (2017). In all the locations, intra species growth difference was not observed (Table 1).

The average productivity of fishes from different experimental location for composite fish farming with existing common carp stock and Amur common carp was recorded as 20.9q and 21.2q, respectively (Table 3).

Silver carp and catla has showed comparatively better growth performance. Das (2017) also opined that among all the cultured species; silver

carp (*Hypophthalmichthys molitrix*), grass carp (*Ctenopharyngodon idella*) and common carp (*Cyprinus carpio*) performed better in composite culture system in the mid altitude conditions. In the level of preference study 37 per cent respondent highly preferred Amur carp (Table 4).

The consumers always prefer less spine and high slaughter value fishes. In this study 5.2 per cent higher slaughter value was observed in Amur carp (Table 5).

**Table 3. Average yield (q/ha) of fishes in the study period.**

System		Pasighat	Tabi	Mangnang	Average
Polyculture of Fishes by Composite Fish Farming	With existing common carp	22.2	19.9	20.8	20.9
	With Amur common carp	22.4	20.2	21.1	21.2

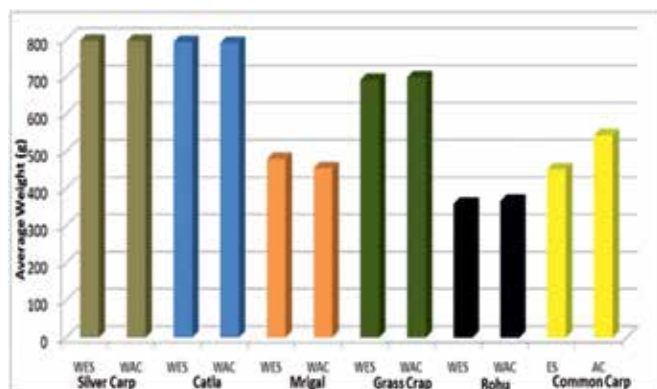
**Table 4. Distribution of respondents based on level of preference.**

Level of consumer preference (Score)	Locally available common carp		Amur carp	
	Frequency	Percentage	Frequency	Percentage
Highly preferred (5)	6	20	11	37
Moderately preferred (4)	7	23	9	30
Equally Preferable (3)	5	17	5	17
Less preferred (2)	7	23	3	10
Not preferred (1)	5	17	2	06

(Number of respondent n =30)

**Table 5 . Comparison of performance of Amur common carp with locally available common carp during the study period.**

Parameter	Local common carp	Amur carp
Average weight (g)	451.6	543.3
Average length (cm)	27.5	31.2
Slaughter value (%)	61.2	66.4
Consumer preference Score	88	114



WES: Poly culture of fishes by composite fish farming system With Existing Stock.

WAC: Poly culture of fishes by composite fish farming system With Amur Carp.

ES: Existing Stock.

AC: Amur Carp.

**Fig 1. Average weight (g) of fishes during the study period.**

### CONCLUSION

In Arunachal Pradesh the Amur is not yet popularized looking at the potential characteristics of the breed it is felt very necessary to study the performance of the species in the hill state by conducting multilocational trials and demonstrations. If the species performed well in the state it could be a boon for farming community struggling for better productivity and low growth rate of fishes due to prevalence of quite long winter season in the State.

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