GROWTH RATE OF KOI FISH BY USING DIFFERENT NATURAL FEED [APPLE, POTATO, EARTHWORM)

Dr.J.R.Kavitha*
Lecturer, Department of Botany, Mother Teresa Women's University College, Kodaikanal.

Abstract : Koi fish (A. testudineus) is traditionally a popular type of fish in this region. This fish is highly popular for its high nourishing quality and prolonged freshness. It is found in most of the fresh water bodies and is abundantly available from June to September. The investigation reported here had been carried out with the main objective to find the fish growth (A. testudineus) fed on formulated fish feeds reared in eight different tanks for a period of 60 days. Objective of the experiment also included to find the feed utilization by the experimental fish (A. testudineus). Optimum level of protein for the fish growths was also determined. Sabinco and three formulated fish feeds were used in the feeding and rearing trial of the fish (A. testudineus).Clean the tanks properly and take pure water at measured amount. Give a proper amount of oxygen to the fish tanks. The three tanks are clean at every three days ones and the water also change the every three days ones. Sometimes the fish tanks are kept under the sunlight to avoid some of the microorganism's growth. T1, T2, T3 are the feeding samples. They are T1 is apple, T2 is potato, T3 is earthworm. These samples are taken and feeding to the fish during to the 5 weeks ratio. Then the measured food samples are feeding the koi fish every day. The koi fish is measured at every week once. Initial growth rate T1-1.5, T2-1.5, T3-2.0.Week five growth rate 5.7, .1, 7.3.T3-7.3 is an earthworm it only give the maximum amount of fish growth. Then second and third T2 and T1 is a potato and apple gives the growth to the fish.

IndexTerms **– T-Test,MO-Micro organism, Vermicomposting**

I. INTRODUCTION

Koi carp are a very distinctive breed of large ornamental fish native to China and Japan. They have been selectively bred for centuries, to produce the many beautiful colour and pattern variations that can be seen today. While lots of people keep a few koi in a pond as pets, show quality koi of a mature age and with desirable markings and colours can command prices running into tens of thousands of pounds- so for some people, keeping koi is a serious business!

Koi shouldn't be hard or time intensive to keep if you go about things the right way, although keeping them is certainly more involved than other pond species such as goldfish. Here is a little information for the prospective owner on how to provide a healthy home for your prospective fish.

Maintaining the optimum water quality for your koi is vital to their health and wellbeing. You will need to change out at least 10% of the water in the pond on a monthly basis, to reduce the quantities of ammonia, nitrates and other toxins in the water. You should also buy a suitable test kit and monitor the water quality in the pond on a weekly basis to make sure that it is within acceptable limits. It's important not to overstock your pond, and as a general rule, there should be ten gallons of water for every inch of fish within it. To do this you will need to have a rough idea of the volume of water your pond contains, in order to calculate the amount of fish you can happily keep in it. Having a good quality water pump for circulation and a filter to remove mess and toxins are also essential to keeping healthy koi.

The koi were fed twiced (morning and evening) and the feeding schedules were maintained rigorously. Fish were offered a weighed amount of feed and if the feed particles were too large for the fish, the pellets were crumbled by hand. If the koi ate all of the feed (about 5 g in our tests) within 10 min, they were provided an additional 0.3 g of feed and the next meal was also increased by this amount. (If this was a morning feeding, the following morning 5.3 g would be offered). If 5-10 particles of feed remained in a tub at the end of the feeding period, the amount of feed in the next meal was the same.

II. Materials and Methods:

2,1 Fish tank preparation:

An experiment on culture of climbing perch (Anabas testudineus) in glass tanks using different protein level diets was conducted to find the appropriate feeding diets and their effects on the growth and survival of 15-days old koi (Anabas testudineus) fry in intensive culture of this fish. The experiment was carried out for duration of 60 days with 3 treatments in 4 glass tanks each of size 12×6×1.5 feet. Clean the tanks properly and take pure water at measured amount. Give a proper amount of oxygen to the fish tanks. The three tanks are clean at every three days ones and the water also change the every three days ones. Sometimes the fish tanks are kept under the sunlight to avoid some of the microorganism's growth.

2.2 Fish feed preparation:

Fruit feed (Apple)

- The samples are collected in kodaikanal.
- The samples are taken clean and grind nicely.
- After grinding the samples. The samples are shredded by direct sun light.
- After preparing the samples (food) are feeded to the fish.

Vegetable feed(potato)

- The samples are collected in kodaikanal.
- The samples are taken clean and grind nicely.
- After grinding the samples. The samples are shredded by direct sun light.
- After preparing the samples (food) are feeded to the fish.

Earthworm:

- The samples are collected in kodaikanal.
- The healthy earthworms are taken lively.
- Then the small healthy earthworms are feed to the fish.

Live foods:

Live fish food include earthworms, sludge worms, water fleas, bloodworms, and feeder fish. Food for larvae and young fish include infusorians (Protozoa and other microorganisms), newly hatched brine shrimp and micro worms. These are the most preferred type of food for fishes, but are difficult to get. However, freeze dried forms of earthworms, tubifex etc. are available now.

Ingredients of quality fish food

Fish food should ideally provide the fish with fat (for energy) and amino acids (building blocks of proteins) and the fish food (whether flake or pellet) must be speedily digested in order to prevent build up of intestinal gas, renal failure and infections (such as swim bladder problems and dropsy) and to avoid aquarium pollution due to excessive ammonia. Aquatic diets for carnivores must contain vegetable matter such as spiraling.

Building block ingredients of fish food:

- Amino acids are the basic components of proteins. An example of an aquatic diet that is a good source of amino acid is a crumbled hardboiled egg offered to small fry. Large amounts of DL-Methionine enhance the head growth of the Lion head goldfish.
- Fats that are broken down into fatty acids are the main source of energy in fish especially for the heart and skeletal muscles. Fats also assist in vitamin absorption. Vitamins A, D, E and K are fat-soluble or can only be digested, absorbed, and transported in conjunction with fats.
- Carbohydrates are molecular substances that include sugars, starches, gums and celluloses. Most of the carbohydrates that are incorporated into aquatic diets are of plant origin and are sources of the enzyme amylase. Carbohydrates, however, are not a superior energy source for fish over protein or fat but digestible carbohydrates do spare protein for tissue building. Unlike in mammals, glycogen is not a significant storage depot of energy in fish.

III. Result and Discussion

Live fish food include earthworms, sludge worms, water fleas, bloodworms, and feeder fish. Food for larvae and young fish include infusorians, newly hatched brine shrimp and earthworms. These are the most preferred type of food for fishes, but are difficult to get. However, freeze dried forms of earthworms, tubifex etc. are available now.

T1, T2, T3 are the feeding samples. They are T1 is apple, T2 is potato, T3 is earthworm. These samples are taken and feeding to the fish during to the 5 weeks ratio. Then the measured food samples are feeding the koi fish every day. The koi fish is measured at every week once.

T3 is an earthworm it only give the maximum amount of fish growth. Then second and third T2 and T1 is a potato and apple gives the growth to the fish.

Fish food should ideally provide the fish with fat (for energy) and amino acids (building blocks of proteins) and the fish food (whether flake or pellet) must be speedily digested in order to prevent build up of intestinal gas, renal failure and infections (such as swim bladder problems and dropsy) and to avoid aquarium pollution due to excessive ammonia. Aquatic diets for carnivores must contain vegetable matter such as spiraling.

Finally the result shows the maximum growth in feeding earthworm. And next potato and the apple show the very less amount of growth in fish so earthworm is the best to feed the fish.

Biological: In many soils, earthworms play a major role in the conversion of large pieces of organic matter into rich humus, thus improving soil fertility. This is achieved by the worm's actions of pulling below the surface, deposited organic matter such as leaf fall or manure, either for food or to plug its burrow. Once in the burrow, the worm will shred the leaf and partially digest it and mingle it with the earth. Worm casts (see below) can contain 40% more humus than the top 9" (23 cm) of soil in which the worm is living.

Earthworms accelerate nutrient cycling in the soil-plant system through fragmentation & mixing of plant debris - physical grinding & chemical digestion.[3] The earthworm's existence cannot be taken for granted. Dr. W. E. Shewell Cooper observed "tremendous numerical differences between adjacent gardens", and worm populations are affected by a host of environmental factors, many of which can be influenced by good management practices on the part of the gardener or farmer. Finally the result shows the maximum growth in feeding earthworm. And next potato and the apple show the very less amount of growth in fish so earthworm is the best to feed the fish.

DETERMINATION OF GROWTH RATE

The growth of koi fish using different natural feeds. There are three types of different natural feeds.

Table No: 1

CULTIVATE PERIODS OF KOI FISH

Fish	Sample	Source	Periods(days)
Koi Fish (T1)	Dried Apple Feed	Water	30 to 45 Days
Koi Fish (T2)	Dried Potato Feed	Water	30 to 45 Days
Koi Fish (T3)	Earthworm Feed	Water	30 to 45 Days

Table No:2

THE LENGTH OF KOI FISH WITH THREE DIFFERENT FISH FEED

FISH	INITIAL	WEEK1	WEEKII	WEEK III	WEEK IV	WEEK V
T1	**1.5**	**2.5**	**3.2**	**3.8**	**4.4**	**5.7**
T2	**1.5**	**2.7**	**3.7**	**4.2**	**5.6**	**6.1**
T3	**2.0**	**3.5**	**4.8**	**5.3**	**5.9**	**7.3**

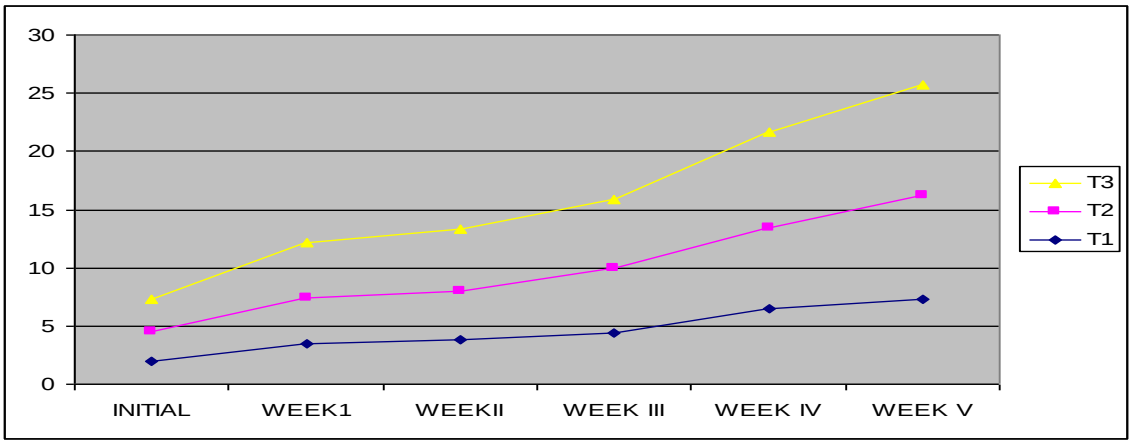
T1 –Feeding the Apple

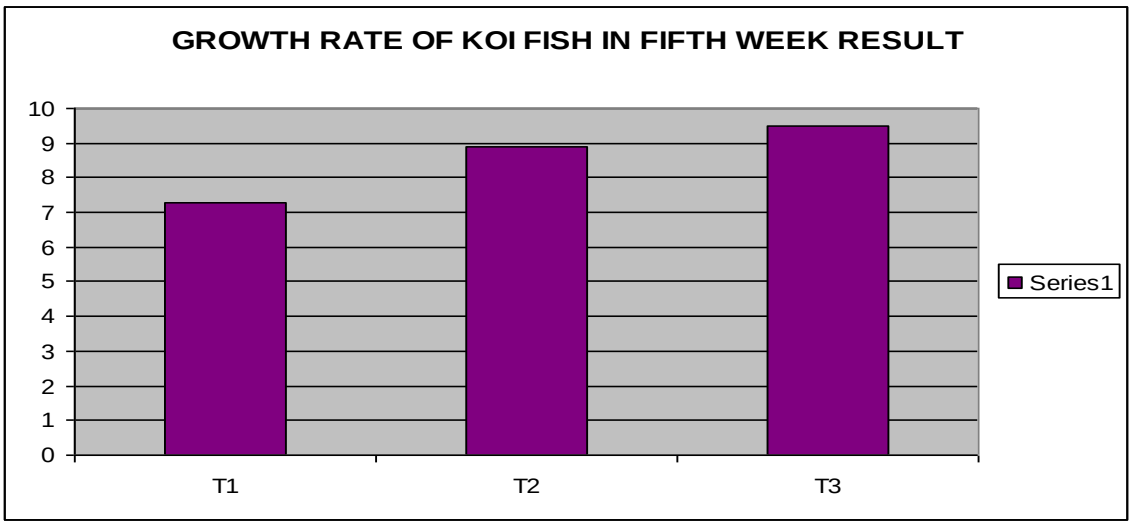
T2 – Feeding the Potato

T3 - Feeding the Earthworm.

Figure no: 5

GRWOTH RATE OF KOI FISH





T1 –Feeding the Apple

T2 – Feeding the Potato

T3 - Feeding the Earthworm.

IV. CONCLUSION

The koi fish is comparable to other fresh water fishes as a source of compound.The arterial feed are found to be effective for the better growth and culture of the experimental koi fish (A. testudineus).The fish feed containing the best feed for better growth.T1,T2,T3 are the feeding samples. They are T1 is apple, T2 is potato, T3 is earthworm. This samplea are taken and feeding to the fish during to the 5 weeks ratio. Then the measured food samples are feedin the koi fish every day. The koi fish is measured at every weeks once.T3 is a earthworm it only give the maximum amound of fish growth. Then second and third T2 and T1 is a potato and apple gives the growth to the fish. Condition factor, SGR% of the koi fish at the of other worked scientists both at home and abroad.FCR and feed efficiency of the rearing koi fish during the study period showed results in favour of the use of prepared feed.Finally the result shows the maximum growth in feeding earthworm. And next potato and the apple show the very less amount of growth in fish so earthworm is the best to feed the fish.

REFERENCES

[1]. Anderson, R. O. 1959. The influence of season and temperature on growth of the blue gill, Lepomis macrochirus (Rafinesque). Ph.D. Thesis.

[2]. Andrews, J. W. and Stickney R. R. 1972. Interactions of feeding rates and environmental temperature on growth, food conversion and body composition of channel catfish. Trans. Am. Fish Soc. 101; 94-99

[3]. Banerji, S.R. and D. Prasad 1974, Observations on reproduction and survival of Anabas testudineus (Bloch) in Bibar Region. J. Inland Fish. Soc. India, 6: 6-17

[4]. Besra, Suhasini. 1997. Growth and bioenergetics of Anabas testudineus (Bloch). Published by Freshwater Biological Association of India. Department of zoology,T. M. Bhagalpur university, Bhagalpur- 812007, India.

[5]. Brown, M. E. 1946c. The growth of brown trout, Salmo trutta (Lirm). The effect of temperature on growth of two year old trout. J. exp. Biol. 21:130-142.

[6]. Brown, M. E. 1957. Experimental studies on growth. In: M. E. Brown (ed.). The physiology of fishes. Academic press, New York, pp. 361-400.

[7]. Das, M. and Dewan S. 1989. The lengthweight relationship and condition of some small fishes in fish pond. Bangladesh J. Agric. Sci., 16(2): 261-264.

[8]. Davenport, J. and A.K.M. Abdul Matin. 1990. Terrestrial locomotion in the climbing perch Anabas testudineus (Bloch) (Anabantidea, Pisces). Journal of Fish Biology 37:175-184.

[9]. Dehadrai, P.V. and S.R. Banarji 1973, Feeding capacity of Anabas J. Inland Fish. Soc. India, 5: 137- 40 Delong, D. C., Halver, J. E. and Mertz, E. T. 1958. Nutrition of salmonid fishes. VI. Protein requirements of Chinook salmon at two-water temperatures. J. Nutr. 65:589. Dewan, S., Wahiab, M. A., Beveridge, M. C. M., Raiiman, M. H. and Sarker B. K. 1991. Matsha Pakkah Shankalon. 1998.

[10]. Directorate of Fisheries, Bangladesh, 101 pp. Report and Opinion 2010;2(2) 26.

[11]. Doolgiindachabaporn, S. 1988. Breeding of climbing Perch, Anabas testudineus (Bloch). Master Degree Thesis. Kasetsart University. Bangkok, Thailand. 64 pp. (in Thai).

[12]. Doolgindachabaporn, S. 1994. Development of optimal rearing and culturing system for Climbing perch, Anabas testudineus (Bloch). Doctoral Thesis, University of Manitoba, Canada. 189pp.

[13]. Jeje, C. Y. 1988.Split-plot ANOVA interactions between fertilizer application, ecological conditions, plankton dynamics and fish yield in tropical fish ponds. In: Aquaculture system in research in Africa. Proceedings of a workshop held in Bouake, Cote d'Ivoire, 14 - 17 November 1988. P. 267 - 293.

[14]. Katule, A. M. and Mwarigulumba, E. I. 2002. Multiple regression analysis on growth of Oreochromis niloticus Fish as affected by pond inputs and water qualities. Sokine University of agriculture, Morogoro, Tanznia. pp 1.

[15]. Khan, M. S.H. 1996. Culture of Genetically Improved Farmed Tilapia (GIFT) in cages. M. S. Thesis. Deptt. of Aquaculture and Management, BAU, Mymensingh,pp.28-52.

[16]. Kiohinoor, A. H. M., Modak, P. C. and Hussain, M. G. 1999. Growth and production performance of Red tilapia and Nile tilapia (O. niloticus) under low input culture system. Bangladesh J. Fish. Res., 3(1): 11-17.