A Review on the role of organic manures in the growth and development of different Aquaculture species

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Abstract

The Aim of this paper is to know about the sustainable farming of different aquatic species to meet the environmental and social challenges. Fisheries and aquaculture remain important sources of food nutrition, income and livelihoods of millions of people around the world. Aquaculture is solely a matter of proving a product but it is also a part of rural development, generation of income and employment. The price of organic fertilizers is less when compared with chemical fertilizers. Sustainable aquaculture is achieved only by the utilization of renewable resources by organic aquaculture .We can avoid the use of synthetic fertilizers, pesticides,growth regulators ,feed additives and antibiotics. Hence the present study has been under taken in order to understand the effect of different organic manures on the growth and biochemical parameters of the fishes and prawns .

Key words: Fishes, Prawns, Panchagavya, Gomutra, Organic manure,vermicompost

Introduction

Aquacultures contribute more effectively to nutritional well being, poverty reduction and economic development by producing 85 million tones of aquatic food by 2020 to 2030. India fish production has touched 8.67 million tones, aquaculture contributing to nearly 50% increased. It is probably the fastest growing food producing sector and now accounts for 50% of the worlds fish that is used for food (Pauly,D & Zeller.D,2017). Aquaculture production has to be achieved through sustainable development without degrading the environment. Organic manure utilization in aquaculture is a well established and economically sound practices .This practice gives attractive economic returns (Bardach *et.al*,1972).The use of manure represents a savings for fish farmer and there is lower capital investment by the usage of organic manures. Several researchers have explained the importance of cow urine from different breeds.(Pathak and kumar,2003,Krishnamurthi,Dutta,Devi and Chakrabarti,2009,Chauhan,Singh and Singhal,2001,Jaiswal.k*et al*,2019). Effect of pig dung on growth and reproductive potential of Cyprinus carpio was explained by Dhawan and Kaur 2002.

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compared with chemical fertilizers. Sustainable aquaculture is achieved only by the utilization of renewable resources by organic aquaculture. Organically produced fish will have higher demand of all consumers. Fisheries and aquaculture remain important sources of food nutrition, income, and livelihoods of millions of people around the world.

Organic fish farming is a method of sustainable aquaculture based on long term ecologically and environmentally sound practices (Suresh, A. V,2007) .By organic fish and prawn farming we can optimize the health and productivity of the interdependent communities of water, soil, plant and animal life. Ecological harmony is maintained by using the practice of organic aquaculture. Cattle dung enhances zooplankton. Organic aquaculture practices helps to get sustainable and pollution free ecosystem. We can avoid the use of synthetic fertilizers, pesticides, growth regulators, feed additives and antibiotics. Organic manure is widely practiced in carp culture system to ensure sustained supply of essential nutrients for augmenting natural pond productivity to obtain increased fish production at cheaper rates. It has been proved that growth rate depends on the type of manure used (Padmapriya, S. S., & Venkatalakshmi, S. (2014).

In integrated farming technology animal manures particularly farmyard manure,poultry dropping ,cow dung ,biogasslurry etc.,are suitable as substitutes for costly feed and fertilizers (Dhawan, A., & Kaur, S. 2002).It has been proved that growth rate depends on the type of manure used . There are different types of organic manures which can be used in aquaculture.

Vermicomposting technology can be particularly useful for the management of waste from agriculture livestock and industrial organic wastes etc. (Neuhauser, E. F., Hartenstein, R., & Kaplan, D. L. 1980,Rand ,1995).The biomass generated as a byproduct of vermicomposting has been found to be a good source of protein for fish (Tacon *et.al*,1983, Singh, P., Vaish, B., Srivastava, V., & Singh, R. P, 2020. joshi and aga 2009).Raw animal dung when directly applied to aquatic pond increased BOD and also increase the risk of pathogen formation. Vermin wash can serve as a excellent direct application of feed for juvenile fish growth and survival rate of fish were higher in the vermin wash applied aquarium because of the presence of several micronutrients, metabolites, vitamins and also some free amino acids (Sharpley, A. N., Syers, J. K., & Springett, J. A. (1979). Vermicomposting provides the use of a holistic farming system based on partnership with nature (Gupta *et.al* 2007).

Panchagavya is another organic manure which promotes growth 75% and boost immunity 25% ,increases the growth of phytoplankton and zooplankton which improves the fish feed availability and thus increased fish growth.Panchagavya is useful for .03% higher zooplankton production (Kuldeep jaiswal *et.al*,2019)this liquid organic manure improves the fertilization of aqua culture species.

Gomuthra has been recorded for its high prophylactic and therapeutic values since vedic times in India .Cow urine is one of the ingredients in panchagavya is believed to have the

therapeutic value, cow urine is useful to cure several diseases and have several medicinal applications several studies show that organic manure enhances natural pond productivity. (Padmapriya, S. S., & Venkatalakshmi, S. (2014).

Conclusion:

Organic aquaculture improves soil fertility minimize input costs it is an eco friendly process ,by this we can produce safer products. Naturally fish food like plankton dependent on the pond nutrient dynamics this ultimately effect the growing of fish stock the present study has been undertaken ,in order to evaluate the effect of organic manures. Long term use of chemical fertilizers can contaminate soil and water, many organic culture issues still need to be resolved. Hence the present study has been undertaken.

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