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Fish Amino

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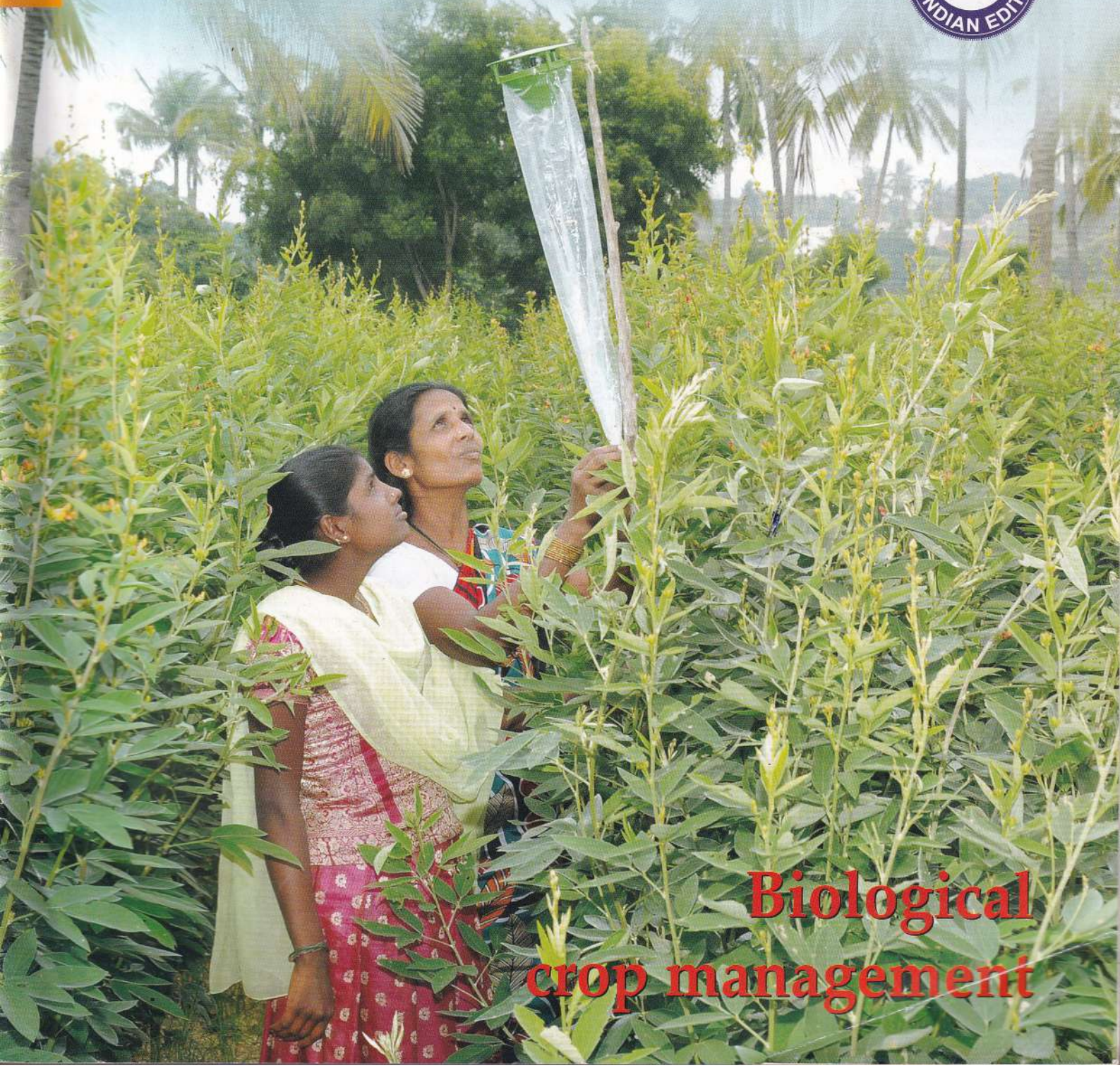

Biological crop management

Fish Amino

A useful biological option

S Premalatha

Farmer groups in Tamil Nadu found a successful solution in Fish Amino for enhancing the soil fertility. Rich in nitrogen, Fish Amino not only reduced the requirement of nitrogen fertilizer, but also served as a growth promoter enhancing yields. Being produced from wastes which hitherto resulted in health problems, fish amino also served as a means to reduce pollution in the region.

Enhancing farm productivity by chemical inputs like fertilizer, pesticides succeeded in increasing overall productivity and helped in achieving food security. Prolonged application of the chemical inputs gradually hijacked the natural systems. Several species of soil micro and macro flora and fauna like blue green algae and azolla which were abundant and were an integral part of the farming system are being replaced with exotic weeds like Salvinia, making the water bodies almost biologically dead. Indiscriminate use of chemicals and pesticides not only killed pests, but also the predators leading to a resurgence of pesticide resistant strains. These chemicals also deteriorated the health and longevity of livestock and humans, causing a variety of new generation diseases like cancer.

Like animals, plants also need amino acids. They cannot be synthesised or may not be synthesised in sufficient quantities in plants. This is also the case with amines and organic ring compounds like indole and pyrrol compounds etc., which are very vital for vegetative growth, flowering and productivity. These compounds, which are required in very small quantities, often become a limiting factor for the growth and the productivity of important crops. These compounds produced out of enzyme activity and fermentation from fish and meat waste can be given as a foliar spray.

"Waste from one system should form the food for other systems"

VK Nardep

Fish Amino, rich in nitrogen serves as a fertiliser

During the post monsoon season, huge quantity of fish waste and non-edible fish related waste is generated. The fish processing units too generate a lot of waste. With no proper disposal systems, it often results in environmental pollution and epidemics. If this waste is properly processed in time, besides solving the problem of pollution, it will also serve as a wonderful growth booster. This growth booster is much

Thommai Innasi raises her vegetable garden using fish amino

Pramela, a retired teacher grows vegetables, greens, flowers, fruits on the terrace. She attended Fish amino training in the month of Feb 2016 at Vivekananda Kendra, Kanyakumari. Afterwards, she prepared fish amino and sprayed the plants once in 15 days. *"Controlling mealy bugs was a challenge. I tried other methods but failed. After spraying fish amino, this problem is completely solved"*, says Pramela.

better than the synthetic amino based plant boosters, that are commercially available in the market.

VK-Nardep, an NGO has been developing technologies for recycling biowastes and value addition. The philosophy is based on "waste from one system should form the food for other systems", thus making the system more energy efficient. This holistic model will conserve nature, protect biodiversity, save fossil fuel, reduce emission enhance CO_2 sequestration, prevent poisoning of food and the environment, ultimately saving human beings from a number of new generation degenerative diseases.

Recycling fish wastes

The fish waste contains rich proteins. But it cannot be kept beyond 24 hours, as it attracts microbes, flies etc. Microbial degradation with aerobes will putrefy it emanating foul smell. A scientific and controlled fermentation can minimize foul smell and produce desirable products which can be handled and packed for future use, as a plant growth promoter.

Fish Amino is prepared in the following way. Collect the fish/ meat waste and store it in a plastic can with lid. Add half the quantity of water. Then add 0.05 gm to 0.1 gm of Papaya latex, per kilogram of fish waste. This papaya juice, which is collected after making a small injury on the surface of mature papaya fruit, is a very powerful plant enzyme, capable of converting any animal protein into peptones and amino acid, within no time. Mix the material well with papain (Papaya latex) and keep it for 5 – 8 hrs. Keep the vessels closed with periodical stirring. After 5 – 8 hrs, add jaggery solution, made from 200gm jaggery dissolved in half litre of water, for one kilogram fish waste. Jaggery helps in preventing the growth of sulphur group of bacteria, which is mainly responsible for the breakdown of the sulphur containing protein and evolution of foul smelling gases like hydrogen sulphide. Moreover, jaggery promotes the growth of micro-fungi like *saccharomycetes*, which break down protein into amino acids and carbohydrate into alcohol and ketones. In this process, the bones also get digested and get degraded into phosphate and calcium compounds.

Proper fermentation by a consortium of micro fungi and bacteria will complete the fermentation within 15 – 20 days. The extract can be prepared by adding 2 – 5 times water to the final product and filtered. The solution can be applied to plants, preferably as a foliar spray. The undigested part, if any, can be used for soil application as manure.

Production cost comes to about Rs.30/- per litre while the farmer can easily sell it for Rs.50/- per litre.

Spread of the technology

Vivekananda Kendra - Nardep is training farmers and self-help group members in preparing fish amino. Farmers have started accepting the technology. Pramela, a retired teacher attended Fish Amino training in the month of Feb 2016. She started preparing and using fish amino on the vegetables she grows and is now happy to get 15 to 20% more yield. (see Box)

Presently, Department of Science and Technology, New Delhi, as well as NABARD, are also promoting this technology through their popular programme, Capacity Adaption of Technology (CAT).

Fish Amino helps not only in making wealth from waste, but also helps in reducing the pollution and works as a growth promoter. Results in the fields are highly encouraging. Production increases by 15 to 20% and at the same time reduces the requirement of nitrogen fertilizer. Moreover, farmers dependance on the market is reduced. ◆

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Women learn to use pheromone traps during a FFS session

trap crop yielded 80-100 kgs; sorghum as border crop yielded 10-25 kgs. Farmers could harvest around 500 kgs of sorghum stems which served as livestock fodder. Sequential crop like horsegram which was grown to make use of residual moisture was another source of food for farmers. In 2014-15, farmers could benefit with an overall horsegram yield of 300-350 kgs/acre, of which around 100-150 kgs was kept for family consumption and remaining 200kgs was sold.

Adoption of alternative practices reduced the expenditures on chemical fertilisers and pesticides, thereby the costs of production. With adoption of soil fertility enhancement measures, farmers applied less fertilisers. Use of IPM measures, especially the yellow sticky traps reduced the number of pesticide sprays and thereby the water use. The cost of cultivation decreased by 24% in groundnut, 20% in ragi and 3% in samai. With reduced costs of cultivation, huge gain was observed in net incomes. The net income increase was to the extent of 82% in groundnut, 42% in ragi and 71% in samai.

Conclusion

A holistic approach to crop management is necessary to make farming more remunerative while conserving and enhancing the quality of natural resources. A season-long approach like the Farmer Field Schools provides a great opportunity for the farmers to assess, discover and learn on the farm, understanding the ecosystem and the biological science of farming.

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