CCARI/Success Story/2022-3

IFS TO IMPROVE LIVELIHOOD

LIVESTOCK-FISH-HORTICULTURE BASED INTEGRATED FARMING SYSTEM FOR IMPROVING THE LIVELIHOOD OF COASTAL FARMERS

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PROBLEMS/CONSTRAINTS

Farmers of the coastal region face a number of challenges in shrimp culture such as numerous disease outbreaks, high cost of cultivation, huge requirement of feed inputs and currently a fall in price due to Covid-19 pandemic. A progressive farm family from Bicholim, Mrs. Anita Mathew Vallikkappen and her husband, Mr. Mathew Vallikkappen had developed a sustainable integrated farming system (IFS) model (Blue Harvest farm-15.683133 N, 73.939157 E) at Salem, Goa in an area of 1.8 ha for higher production, income, resource cycling, and employment with technical inputs from scientists of ICAR-CCARI, Old Goa. The components of the system were fishery, piggery, poultry, fruit crops, vegetables, vermi-compost, and biogas. During the covid-19 pandemic, the institute guided the farmer in developing the IFS, which is more profitable, sustainable, and resource efficient.

INTERVENTIONS

ICAR scientist's technically guided the polyculture of highly valued coastal fish species; Asian seabass (*Lates calcarifer*) (4500 numbers) along with Mozambique tilapia (*Oreochromis mossambicus*) (15000 numbers), and striped catfish (Bhasa) (*Pangasionodon hypophthalmus*) (4000 numbers) in four freshwater ponds (each of 1500 m^2).

IMPACT

The Seabass attained an average weight of 1.5-2.5 kg, Bhasa: 1-1.2 kg and Tilapia: 300-400 g after ten months. The total fish production from Seabass, Tilapia and Bhasa amounted to 6000 kg, 8000 kg and 6000 kg respectively. The piggery (Hampshire, Large black, Crossbred, Agonda Goan, Large White Yorkshire, Land race, and Duroc) contributed significantly to the system with a production 2500 kg per month. In poultry, around 150 birds (Srinidhi, Vanaraja, and Gramapriya) were reared in one batch producing around 2 kg harvest weight per chicken and 120 eggs per bird.

Approximately, 150 quintal of Pineapple was harvested from an available area (0.36 ha) regularly, along with Banana, Papaya, and Passion fruit. The household requirements of vegetables (Tendli, Parval, Cucumber, Pumpkin, Red amaranthus, Tapioca and elephant foot yam) were met from the kitchen garden. The hotel wastes and chicken waste were fed to pigs and Bhasa and the remains were directed to compost. The waste and pig slurry applied in the biogas unit, which served as the energy source for cooking. The total production of compost from the farm was 40 tonnes, of which half of the produce was marketed and remaining was supplied as a fertiliser.

The IFS enhanced resource and organic waste recycling, created wealth from waste, and also reduced the on-farm and off-farm carbon footprint. The estimated annual cost (fixed and operational) was be Rs. 29.0 lakhs with a gross return of Rs. 75.4 lakhs i.e. a net profit of Rs. 46.4 lakhs. The benefit cost ratio for the farm was estimated to be 2.6. By adopting this IFS model, risk of crop loss was reduced due to diversified components (13 types) and the farm income has been doubled compared to the mono-crop practice. The initiative proved to be a real helping hand in doubling the farmers' income based upon the area under cultivation and management practices adopted. The success story would encourage the farmers and could act as a catalyst that inspire other farmers to undertake IFS for enhancing livelihood security and economic


Piggery


Poultry


Seabass


Pineapple


Bio-gas and Vermicompost

Multi enterprise agriculture at the farmers field