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INTEGRATED FARMING SYSTEM APPROACH FOR DOUBLING INCOME OF FARMERS

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Background:

Indian economy is mainly agriculture oriented. Small and marginal farmers are the core of the Indian rural economy constituting 85% of the total farming community but possessing only 44% of the total operational land (GOI 2014). The average size of operational land holdings has reduced by half from 2.28 ha in 1970-71 to 1.16 ha in 2010-11. (NABARD 2014). It is projected that in our country population will touch 1370 million by 2030 and to 1600 million by 2050. To meet the demand, we have to produce 289 and 349 mt of food grains during the respective periods.

Doubling farmer's real income by 2022 is a goal established by the Honorable Prime Minister of India who is challenging the status of all involved stakeholders. To overcome obstacles and establish a direction for rural poverty in India, the members of NITI Aayog, ICAR and Scientists jointly hosted a meeting to brainstorm the idea of doubling farmers' income. Delegates from the Department of Agriculture, GOI, national research institutions, central/state agricultural universities, the private sector, international research centers, and NGOs were also convened to develop a strategy for meeting the PM's challenge (Wani and Singh 2017). However, experts are engaged in searching the options and strategies for achieving this enviable target. One of the options is to evaluate the potential of the IFS approaches to enhancing the income of farm families within a reasonable time period. Due to ever increasing population and decline in per capita availability of land in the country, practically there is no scope for horizontal expansion of land for agriculture. Only vertical expansion is possible by integrating farming components requiring lesser space and time and ensuring reasonable returns to farm families.

The Honourable Prime Minister of India gave a call to the nation of doubling farmers' incomes by 2022 by spelling out six point's strategy. The budget for the year 2017-18 allocated Rs 1,87,223/- crores for agriculture and rural development, which is 24 per cent higher than last year (Anonymous. 2017a). The doubling farmers' income would involve massive investments in agricultural research and development, irrigation, fertilizers, agricultural market infrastructure including development of Agricultural Produce Market Committee (APMC) and agriculture value chains, supported by adequate and timely availability of bank credit, implementation of a number of schemes for revival of agricultural growth and farmers' welfare (Jadhav, 2017).

Integrated farming system research network-

Indian institute of farming systems research was established by ICAR, at Modipuram, Meerut (Uttar Pradesh). Earlier, in 1968-69 it was named as Project Directorate for Cropping System Research and the project was operating as All India Coordinated Agronomic Research Project (AICARP). The aims of the integrated farming system can be achieved by:

- Efficient recycling of farm and animal wastes
- Minimizing the nutrient losses and maximizing the nutrient use efficiency
- Following efficient cropping systems and crop rotations and
- Complementary combination of farm enterprises

Goals of integrated farming system: The four primary goals of IFS are:

- Maximization of yield of all component enterprises to provide steady and stable income at higher levels
- Rejuvenation/amelioration of system's productivity and achieve agro-ecological equilibrium.
- Control the buildup of insect-pests, diseases and weed population through natural cropping system management and keep them at low level of intensity.
- Reducing the use of chemical fertilizers and other harmful agro-chemicals and pesticides to provide pollution free, healthy produce and environment to the society at large.

Importance of farming system-

- Increase Productivity
- Profitability
- Potentiality / sustainability
- Balanced food
- Pollution free environment
- Recycling-waste materials
- Money round the year
- Solve energy and fodder crisis
- Solve fuel and timber crisis and avoid degradation of forest
- Employment generation and improve literacy
- Provides opportunity for agri-oriented industries
- Increase use efficiency
- Improved the standard of living of farmers

Why IFS is needed?

For reducing the risks due to biotic and abiotic stresses-

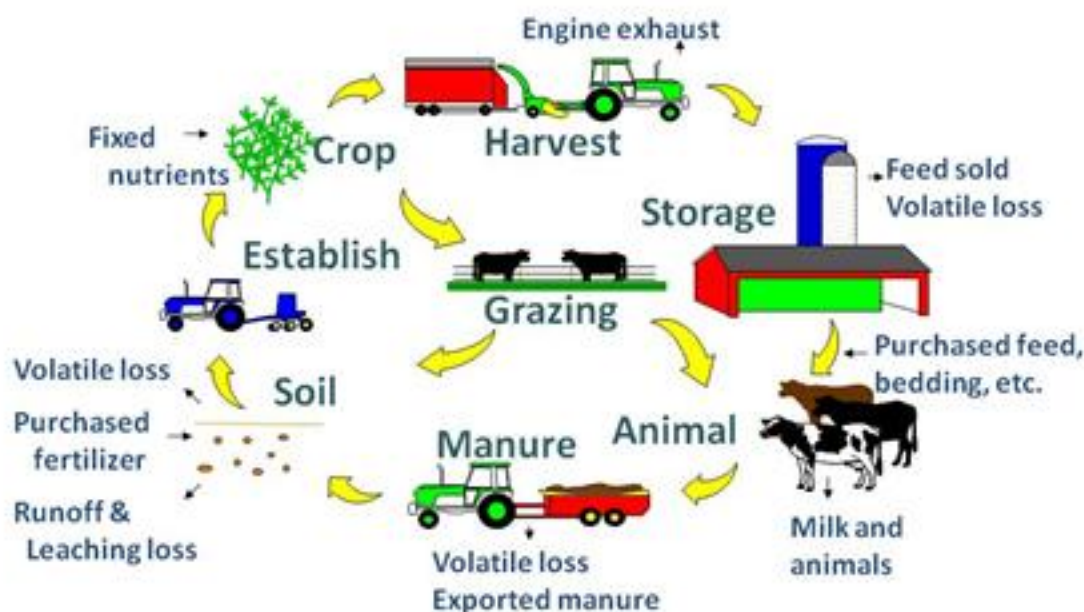
High input costs, For meeting the rising need of food, feed, fiber, fuel and fertilizer, Nutritional, requirement of family, Increased demand of soil nutrients, For increasing the income, Employment, Standard of living, Sustainability-

Element of integrated Farming system

Watershed, Farm pond, Bio-pesticides, Bio-fertilizers, Bio-gas, Vermicompost, Green manuring.

Component of integrated farming system-

Crop husbandry, Livestock production, Poultry, Horticulture, Aquaculture, Apiculture
Mushroom cultivation, Agro-forestry, Biogas plants, Boundary plantation



Source; USDA (IFS Model)

Future thrust:

- Development of ecologically stable, environmentally sound and location specific low cost viable IFS modules for different holding sizes which are socially acceptable is required.
- On-farm testing and refinement of the developed modules according to the farmers' need and requirement as it is a continuous process i.e. addition of profitable components and replacement of less profitable components with time, choice of the farmers and availability of market.
- Need to study the sustainability of the developed or identified farming systems under different agro-climatic situations in the long run including high value crops.
- Need to identify the constraints in adoption of identified integrated farming systems for particular area or locality.
- Documentation of ITKs of IFS in the farming community and its scientific validation.
- Need to prepare a strong policy draft for the consideration of planners for its promotion and creating awareness at large scale with some pity financial assistance either through loans or subsidy.

Constraints:

- Nutritional value of crop residues are generally low in digestibility and protein content. Physical and chemical treatment of these residue is technically possible. Expensive to poor farmers.
- Intensive recycling can causes nutrient losses
- Resource investments are required to improve intake and digestibility of crop residues

Conclusion:

The focus of present government is on doubling farmers' income by 2022. The partial budgeting, economic estimation of manure and urine from animal components and factors associated with total income from different enterprise combinations have shown the directions for policy makers, extension functionaries and progressive farmers to prepare strategies for doubling farmers' income. Only livestock component would provide the facilitating inputs to enhance the income of farm families within a short period of five years in a synergistic mode. The adoption of IFS is the right approach in this direction and should be supported through institutional, extension, policy and marketing interventions in a system approach.

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