Lecture on Prevailing Integrated Farming System in Jharkhand Validation and Perfection by Dr. M. S. Yadava Dean, Faculty of Agriculture, Birsa Agricultural University, Ranchi on 13/10/2020

Introduction:

Lecture was conducted at NAHEP- CAAST of Ranchi district of Jharkhand state. Jharkhand is poor economic condition; poor infrastructural facility, poor communication system, migration, hunger, lack of employment opportunity etc. As cost of production was less due to recycling of waste materials coming from different enterprises of Integrated Farming System. In IFS, if one enterprise fails then it is subsequently protected by the other enterprises and thereby it reduces the risk in the farm as a whole. Thus it was especially beneficial for small and marginal farmers who are more susceptible to risk.

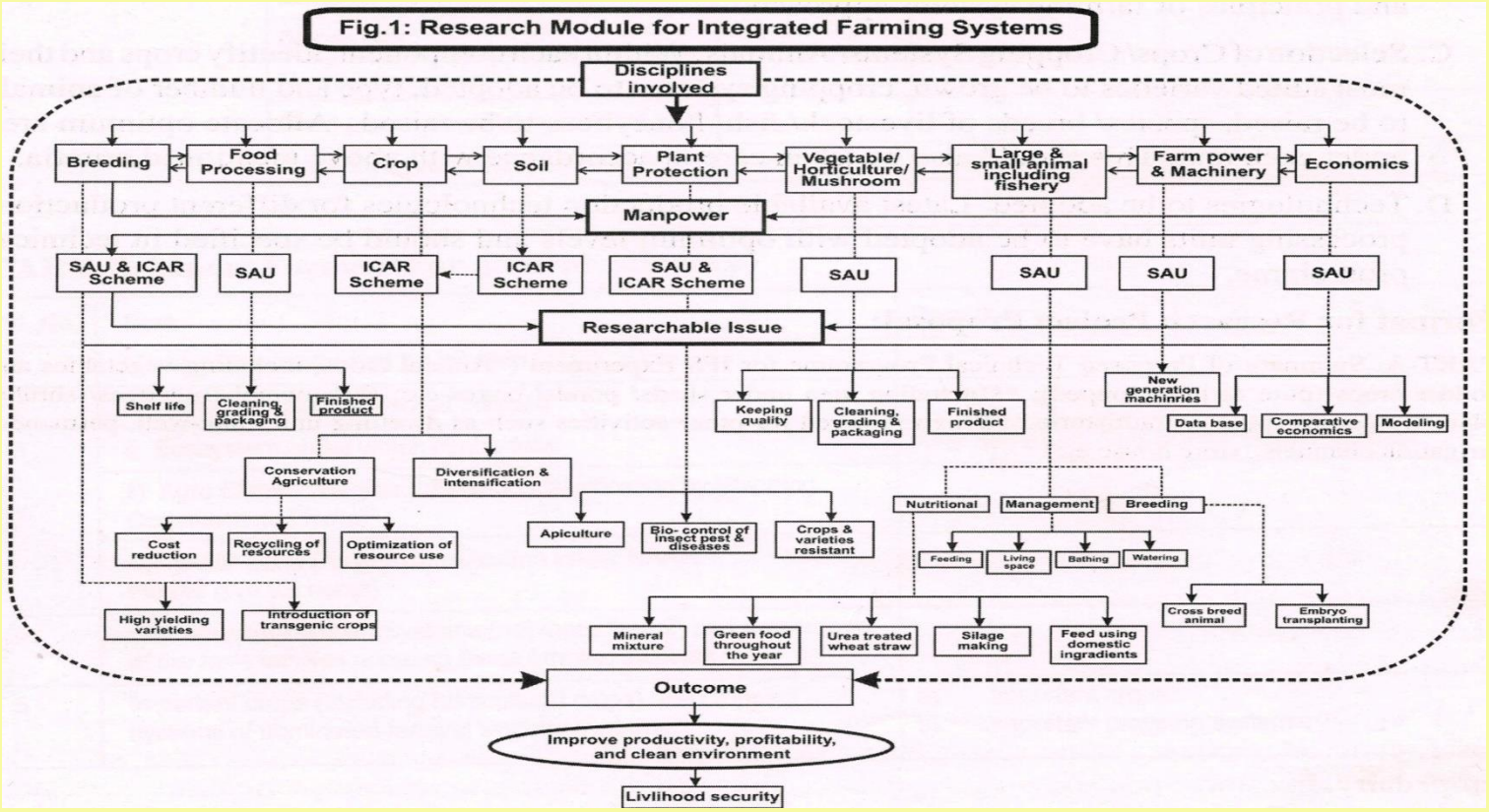
Use of various farming components (cropping, horticulture, livestock, secondary agriculture etc.) integrated on a farm to meet continuous demand of food, employment and diverse requirements of farm family in terms of grain, fruit, vegetable, egg, milk, meat, fiber, fuel etc. along with an opportunity to increase economics per unit area per unit time by virtue of locally acceptable intensification and diversification of enterprises.

Dr. M. S. Yadav focused on the following objectives:

It aims at sustainable agriculture which denotes to a location specific livelihood satisfaction of farm families. The basic aspects which can be utilized to make an improved farming system technology as sustainable are:

- Diversify crops, livestocks and practices of cultivation
- Soil and water management in watershed mode
- Integration of crops, horticultural plants, forest trees and livestocks
- Judicious use of inputs
- Consider choice and goal of the farmers
- Validation of existing IFS models in Jharkhand
- In addition, value addition and post-harvest technologies enhance profitability of the improved integrated farming system technology

Role of different disciplines in Farming System Research



Dr. M. S. Yadav basically focused on the following points:

Crop cultivation: - Monocropping/ Double cropping/ Intensive cropping

"The cropping patterns used on a farm and their interactions with farm resources and available technology that determine their make up."

Cropping system refers to:

Key information about type of crops being grown and number of crops in a season/year or cropping intensity.

eg. Monocropping/ Mixed cropping/ Intercropping/Intensive cropping.

- Growing more number of crops on the same piece of land during the given period of time.
- The turnaround period between one crop and another is minimized through modified land preparation.
- Possible when the recourses are available in plenty.
- Cropping intensity is higher in intensive cropping and so is the income.
- Crop intensification technique includes:
    - Inter cropping
    - Relay cropping
    - Sequential cropping
    - Ratoon cropping, etc.

- Farming system/ Integrated farming system/Intensive integrated farming system



In addition, value addition and post-harvest technologies enhance profitability of the improved integrated farming system technology.

- To characterize existing farming systems to know the productivity, viability and constraints.
- To develop and validate region specific IFS models for enhanced system productivity, profitability and sustainability.
- To assess relative efficiencies of the IFS models in terms of economics, resource use and energy.
- To optimize individual components of IFS in regional perspective.
- Capacity building of stockholders in IFS through appropriate trainings.

- Unlike commodity research, where the focus is on increasing productivity/profitability of individual crop/animal, under farming system approach, it is the farm household that remains the focus of the research programme.
- Selection of Area
- Selection of Enterprise (Module)
- Selection of Crops/Cropping systems/Animals/Agroforestry
- Technology to be adopted
- A schematic representation of the interrelationship of different components contemplated are furnished in the figure.

Recommended 1 acre model for Jharkhand

(Crops + Goatery + Secondary Agriculture (Fishery,Poultry,Apiary,Mushroom etc.)

Component	Particular	Area (m^2)
Crop	Rice-Wheat	1000
	Rice- Potato	500
	Maize-Chick pea	500
	Green gram/Black gram- Mustard	875
	Vegetable-Vegetable	500
Backyard poultry	10 poultry (Gram priya)	-
Goatery	4+1 (Black bengal + Beetle)	-
Water harvesting and fishery	Pond (25 X 16 x2 m^3)	400
Mushroom	5 x 5 m^2	25
Boundary plantation	Moringa, Papaya,Guava, Mango and Tephrosia	On bunds
Additional	Apiary	-
Kisan ghar + threshing floor		200
Total		4000

Recommended 1 ha model for Jharkhand

(Crops + Cow + Secondary Agriculture (Fishery,Apiary,Mushroom,Vermicompost

Components	Particular	Area (m^2)
Crop Sequences	CS_1 Rice – Wheat	2500
	CS_2 Maize – Gram	2000
	CS_3 Black gram - Mustard	500
	CS_4 Soybean – Mustard	500

	CS_5 Groundnut – Green Pea	1000
	CS_6 Maize(F) + Cowpea(F) (1:1) – Oat + Berseem/ Lucerne (1:1)	1500
Cows		590 (5.9%)
Mushroom		145 (1.45%)
Vermi-compost		265 (2.65%)
Apiary	5 Boxes	-
Fishery/ pond		1000 (10%)
Total		10000

Advantages of Integrated Farming System

- Higher food production to equate the demand of the exploding population of our nation.
- Increased farm income through judicious residue recycling and allied components.
- Sustainable soil fertility and productivity through organic waste utilization.
- Integration of allied activities will result in the availability of nutritious food enriched with protein, carbohydrate, fat, minerals and vitamins.
- Integrated farming can facilitate in environmental protection through effective recycling of waste from animal activities like poultry and duck rearing.
- Reduced cost of production of components through input recycling from the by-products of allied enterprises.
- Regular stable income through the products like egg, milk, mushroom, vegetables, honey and silkworm cocoons from the linked activities in integrated farming.
- Inclusion of biogas & agro forestry in integrated farming system will solve the prognosticated energy crisis.
- Cultivation of fodder crops as intercropping and as border cropping can lead to the availability of adequate nutritious fodder for animal components like milch cow, goat and sheep.
- Fuel wood and construction wood necessities might be met from the agro-forestry system without affecting the natural forest.

- Avoidance of soil loss through erosion by Agro-forestry and proper cultivation of each part of land by integrated farming.
- Generation of regular employment for the farm family members of small and marginal farmers.