Farm to Systems-Where is Our Measuring Tap?

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Outline

I. Background

II. Challenge of measurement

III. What do we need to measure

I. Background

Besides yield, nutrition and income, farmers harvest several benefits from an agro-ecologically farm.

So, we need a different set of parameters to capture impact of an agroecological system.

Measuring the impacts of agro ecology over several parameters has encouraged farmers in India, Nepal & Bangladesh to move towards diversified farming systems.

I. Background (Cont.)

The BIOFARM project, which was scaled up through Sustainable Integrated Farming System project in India, Nepal and Bangladesh tried to promote sustainable agriculture by promoting the 3 agro-ecological principles:

1) Altering cropping sequence through mixed/inter/relay cropping for collaboration and combination.

2) Creating multi-layered space within a production system to ensure collaboration and recycling.

3) Enhancing subsystem diversity on farm, so that energy recycling and collaboration happens by default.

II. Challenge of measurement

Calculating production and productivity is very simple, if we consider only yield as a beneficial output.

However, in agro-ecology, apart from paddy, we see the benefits of:

- Straw as fodder/thatching/mulching,
- Husk as fodder/fuel,
- Roots that add humus to the soil,
- Edible water weed/shrimps/crabs/fishes as food.

II. Challenge of measurement (Cont.)

How do we calculate the productivity?

How will the ecological role that the paddy crop plays in improving water or biodiversity conservation?

Our analytical framework can not assess cropping intensity of a garden, which has more than 40 types of crops, providing food every day, throughout the year.

II. Challenge of measurement (Cont.)

The BIOFARM project tried to assess the efficiency of the method in terms of assessing the changes in social, ecological and economical parameters.

3 years were too short to establish the hypothesis, but it shows the direction of the trend. It was tried through community monitoring and data analysis.

II. What do we need to measure

1. Returns
2. Farm diversity
3. Income distribution
4. Diet diversity
5. Increased food self sufficiency
6. Biomass productivity
7. Some constraints
8. Changing mindsets

1. Measuring returns

Community monitoring is a way of tracking progress, and setting a target is helpful to ensure that one keeps going in the right direction.

The ***wheel diagram*** was developed to help farmers following agroecological principles.

A set of **10 parameters** were developed as they are:

1. Measuring returns (Cont.)

1. Group/cooperative activities: Farmers are active in groups, cluster groups, and joint action.

2. Soil water conservation methods adopted: How soil water conservation methods are integrated in the Farm. Eg., bunds, rainwater harvesting, mulching, etc.

3. Number of subsystems: Biodigestor, poultry, livestock, trees, crops, aquaculture are owned by the farm.

1. Measuring returns (Cont.)

4. The inter sub systems resource flow: The number of linkages between the various subsystems.

5. Number of biodigestors: **B**iogas plant, vermicompost pit, compost pit, use of liquid manure, farm yard manure and green manure.

6. Diversity of crop and cropping techniques:

- Diversity of crop Include fruit type, legumes, leafy vegetables, cereals, etc.
- Cropping techniques include mixed cropping, intercropping, crop rotation, relay cropping etc.

1. Measuring returns (Cont.)

7. Training received: FFS. Broadly, the skills covered are :

1) Analyzing stress,
2) Soil nutrient management methods ,

3) Water management methods,
4) Horticultural component,

5) Backyard poultry management,
6) Livestock management,
7) Pest/disease management of crops/livestock,
8) Group development and value chain.

1. Measuring returns (Cont.)

8. External food input: Quantity from the market.

9. External farm input: Quantity (crop seed) from the market.

10. Income by selling products.

2. Measuring farm diversity

Diversification is the most important in an agro-ecological farm as it signifies the source of income diversifies along with the time of income throughout the year –compared to concentration of income depending on one crop, once a year.

The subsystems were cropland, garden, poultry, livestock, aquatic systems, biodigestor, forest/commons, tree, group business of value addition etc.

3. Income distribution

Having more than one subsystem has affected the distribution of income pattern, as 65 to 85% of the income of family from crops & vegetable.

But within 3 years, there is an intervention by creating space for livestock, poultry, aquaculture and others.

Whereas the major crop diversity changes to minimum 2-3 to maximum 4-5 in the crop land, the home gardens seems to be more diverse with 6-7 on an average.

4. Diet diversity

Diet diversity in India in 2014 showed that 70% women are eating at least 5 food groups. At the beginning , 2011 the majority households were consuming mostly starchy staples.

Generally, more the number of linkages, more efficient the system is.

The average linkage, which was little more than 1 in 2011, has gradually become nearly 8 in 3 years, where maximum incident was of 12.

5. Increased food self sufficiency

As most of the farm families were in the food insecurity level, the challenge was to take them to sufficiency level and promote them to surplus level. In 2013, 48% of farmers were at surplus level in India.

6. Biomass productivity

Productivity is of a single crop.

The Integrated Farming System (IFS) considered biomass productivity of the entire farm including food that went for self-consumption/market, fodder, fuel and biomass that is recycled.

7. Some constraints

Difficult to calculate the labor productivity in terms of time spent for production activities by the family.

It was evident by case that agro-ecological farming is labor intensive and increases pressure on women. So gender has to be brought into the plan.

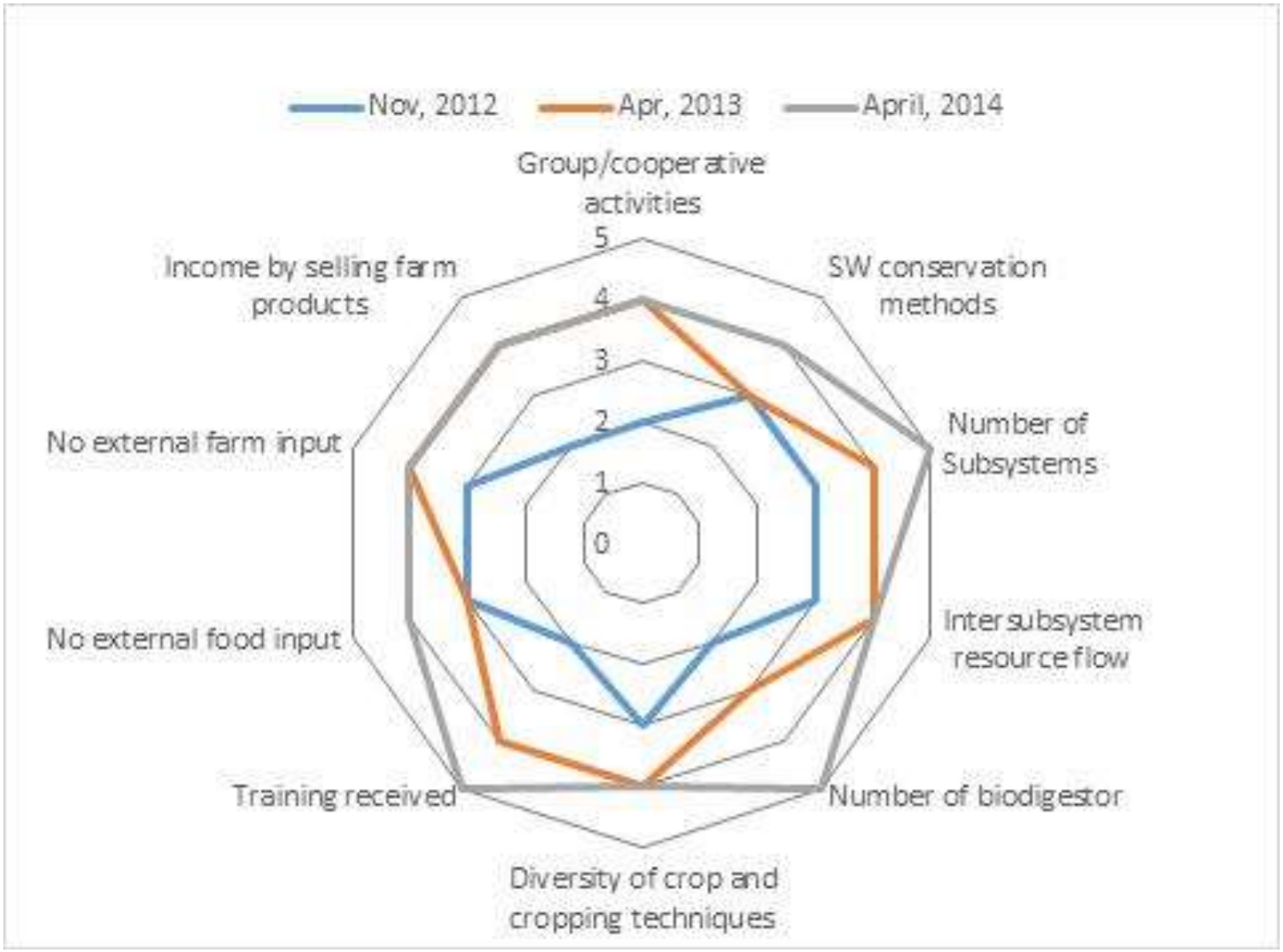
8. Changing mindsets

Building their capacities to record and analyze different parameters or indicators, helped farmers positively in influencing their mindsets in moving towards more diversified farming systems from a highly focused monocropping of paddy.

Encourages the farmer to participate in the collection, analysis and understanding, is probably the key to moving from farm to farming systems.

The wheel diagram



Thank you for your attention