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It is nice to see, of course in a prosperous season, an uninterrupted green spread up to the horizon in countryside. No matter you are a tourist or development tourist, the spectacle will almost infallibly make you construct a common idea about the field situation. And it will be a mistake infallibly. And what is the point of concern is that if you are associated with any sort of decision making (which affects the farmers directly or indirectly) your idea is not going to terminate in itself as a self-fulfilling complacence and romanticism; some other people are to bear it up all the way.

Ignoring the complex and diverse reality at the farmers' level has increasingly been questioned upon in the recent years. And it is the success of the uncompromising theoreticians and practitioners that non-adoption is no longer explained on the grounded presupposition of farmers' ignorance and faulty methods of communication alone. It is the technology itself, the package concept and the process by which the technology gets generated, are being put under careful observation. Large entities observe more but overlooks small things often – this has been a revelation from the mistakes of transfer of technology paradigm. Fortunately, farmers' reality/farm reality has now gained a status, if not mainstreamed, and are considered duly by the researchers, policy makers and extension personnel. Examples received from different parts of the globe reemphasises the need to examine 'recommendation domains'[1] carefully and in detail, "even in cases in which technologies are developed and already in use by farmers operating under what appear to be circumstances quite similar to possible 'recipients' of such technologies" (Fujisaka *et al*., 1993). Micro farming situation may be viewed as an inseparable issue from the farm reality and logical elaboration of it can offer directionality in overcoming the long practiced blanket approach of technology transfer.

Understanding micro farming situation and farmers' decision making

Many of the scientists' comments about local knowledge concern rural people's classification systems for plants and soils. Local people use many categories in different parts of the world to describe types of lands, landscapes, crops, wild plant species and other natural resources. The categories and names used by them usually differ from those used by scientists. In addition the criteria of classification are usually functional, that is related to use, unlike the standard categorisation criteria derived from physical sciences[2].

At the centre of this sense is the idea of micro-environment. Chambers (1990) went on to define a micro-environment as a "distinct small-scale environment which differs from its surroundings, presenting sharp gradients or contrasts in physical conditions, internal

and/or externally. Micro-environments can be isolated, or contiguous or repetitive, and natural or made by people or domestic animals" (Chambers, 1990). However, the present article goes a level ahead and conceptualises micro-farming situation as a conglomeration of ecological as well as socio-economic dimensions; this is done specially keeping the recommendation domain as the converging point ahead. Not only the criteria of classification differ between researchers and farmers, the amalgamation of differing dimensions (ecological, socio-economic) is also unique and attributable to the farming community.

A Micro farming situation may be thought as a sub-system of a relatively large farming situation, which is relatively homogeneous in nature (and naturally possesses some distinguishable characteristics from the larger system or from another such sub-system). The criteria, on the basis of which a particular micro farming situation is constructed of (or distinguished from another micro farming situation), is strictly subjective and goes with the perception and individual construct of the farmers. While making decisions regarding any farming activity, those micro farming situations are consulted upon cognitively. This strict subjective characterisation of farming situations may not be identified and acknowledged by the scientists/researchers and extension workers[3].

Farmers use the logistics getting originated at the cognitive level (of course those do have empirical basis, i.e. experience) to make decisions regarding farm-related activities. These activities may be as varied as **crop selection, variety selection, sowing, harvesting, intercultural operation, cropping sequence, manure and fertiliser application, drainage, irrigation scheduling, pest problem** etc. Some case studies will perhaps help to comprehend the idea further.

Field Note-1

In the district of East Siang (Arunachal Pradesh) *Apang* tribe distinguished 38 micro farming situations along a hill slope ranging from the hill top to the river basin; farming practice there ranged from dry to wet type accordingly. They distinguished those situations on the basis of soil type, slope, plant type, depth of soil, availability of water etc. some of the decisions they made on the basis of those micro farming situations were crop selection, water management, varietal adjustment, soil management etc.

Source: Field note of Debabrata Basu from East Siang District, Arunachal Pradesh.

Field Note-2:

In the village of Kantabelia of Nadia district (West Bengal) farmers of a large field preferred certain *maths* (micro farming situations) over others for early verities of cauliflower, whereas, some other *maths* were opted for mid and late varieties. Although, to an outsider (or researcher) it will be impossible to distinguish among those field situations (especially along the line of the farmers' rationale), from their long experience the farmers will choose the field for early variety of cauliflower which has good slope, moderate water holding capacity of soil and suitable provision of drainage. No need to mention that early cauliflower are grown in the rainy season, cauliflower is susceptible to water logging and early cauliflower fetches good prices to the farmers.

Source: Field note of Debabrata Basu from Kantabelia village, Nadia, West Bengal.

Field note-3:
In Champadanga village of Hooghly district (West Bengal), where land was fragmented and scattered, a farmer's varietal selection of potato was on the basis of the distance of land from the household. As Kufri Chandramukhi needs more care and monitoring than Kufri Jyoti the farmer grew Kufri Chandramukhi in the land strip nearer to his household and Kufri Jyoti in the land strip situated relatively further from his household. In another case, farmers liked to grow green gram in the nearest fields from the household in fear of possible theft of the crop.

Source: Field note of Debabrata Basu from Champadanga village, Hoogly District, West Bengal.

This is how, as one can understand now, attributes/criteria, other than ostensibly related to farming, come into play in a complex manner to determine farmers' decision making.

Observing micro farming situation: methodology

As is understandable from the name, manual discriminant analysis, unlike orthodox and objective statistical analysis, is done by participants and is subjective in nature. At first the participants are asked to draw the micro farming situation map of their field. They draw the map like any other maps used in PRA (social, land use, hydrological, mobility etc.) by the natives of the village[4].

During the drawing of the map the participants supposedly discriminate the micro farming situations of their area. Now the names of those micro farming situations are written on as many cards and participants are asked to discriminate/sort those cards on the basis of some perceived attributes (criteria). The attributes/criteria are written down instantly (or the criteria may also be written on cards and can be asked to sort them on the basis of the micro farming situations).

The criteria/attributes of discrimination may be as diverse as **land use, soil type, irrigation facilities, water regime, cropping sequences, drainage facility, slope, bio-physical problems, cost of land, fertility status, other facilities** etc. Once the criteria of discrimination are available a matrix is prepared for the purpose of gross quantification keeping the criteria in the column and the micro farming situations in the row. Now the participants are asked to rank/quantify the micro farming situations on the basis of those criteria with locally available materials like stones, leaves, goat drops etc.

What can be found from the micro farming situation analysis

- The location of the relatively homogeneous farming situations (micro farming situations) within a large field.
- The criteria on the basis of which the relatively homogenous farming situations are distinguished.
- The relative magnitude/order of those criteria as perceived by the farmers.
- The farm related decisions taken on the basis of those micro farming situations (differences in management operations for same crop over a set micro farming situations). Farmers' rationale in making those decisions.

A study conducted in the village of Teligacha (Biswas, 2002) of Nadia district revealed at least nine micro farming situations and as many criteria used to distinguish it by the

participants (Table-1). Biswas also showed how the number of set of prescribed treatments was scant in relation to the recommendation domains for different crops[5].

Table-1 Micro farming situations and the perceived criteria presented in a matrix (Teligacha village of Nadia district, West Bengal, India).

MFS / Ctr.	Uttar math	Damdamer math	Damdamer jole	Bansitalar math	Baltalar math	Bele math	Herer jole	Thakurtalar math	Baser jole
Land type									
Slope									
Soil texture									
Drainage facility									
Source of irrigation									
Distance from irrigation source									
Distance from residential area									
Crops grown									
Accessibility									

MFS – Micro farming situation; Ctr.. – Criteria.

Scope of improvisation/research:

- Participants may be asked to mention the relative importance of the criteria to get the pulse of their priority.
- Large number of farming practises attributable to those situations can be identified and isolated.
- The way of appellation of micro farming situations can be studied[6].
- After quantification the corresponding columns of the micro farming situations can be summed up to have a further/overall ranking to understand the relative advantages of those situations.
- After ranking/quantifying the micro farming situations, a study investigating the owner of those situations can be conducted to find out the farmers enjoying relative advantage (is there sign of vested interest?).

Policy implications:

Critical understanding of the concept of micro farming situation is basic to the minimal framework for planning towards a sustainable production model. To say more specifically, it is critical in delineating broad recommendation domains, in which particular combinations of resources, technology and markets can have broadly similar result. And of course inclusive to it is the concerns related to successful transfer of knowledge/technology.

It is critical to the on-farm, farmer-oriented research too. As most of these researches are meant to address several recommendation domains, focus should be on specific recommendation for the farmers within the particular domain. This can also help in setting research priorities to a large extent and research agenda to some extent.

Micro farming situation identification is especially helpful for the diverse, complex and resource-poor situations, where along with the factors related to farming the social factors come into play also. Hilly and rainfed regions are of special interest undoubtedly.

Weakness:
As the socio-economic factors are more prone to fluctuate than those of ecological factors, the envisioning of micro farming situation, although counting on micro-realities, may not be a long-standing land mark for the planners and policy makers.

Conclusion:
A proper understanding of the micro farming situations of an area helps to appreciate the variability both at the individual and collective level. It also helps in (a) formulating hypotheses responsible for the variability in farming operations in the same area and (b) isolating the contribution of ecological factors from that of the socio-economic factors (Gupta, 1991). With due acknowledgement to the abovementioned finding the present article goes a step ahead to amalgamate both ecological and socio-economic factors at the conceptual level. Both these two sets of factors contribute functionally towards farmers' distinction of micro farming situations and decision making on the basis of it. In Madandanga village of Nadia district (West Bengal) at lest 13 micro farming situations were identified and the farming practices in those situations were accordingly different. But one can be sure, even without any first hand information, that the recommendation for jute cultivation for the area was not that much diverse. Farmers make decision in much complex and diverse situations and those are guided by the factors which are more pervasive than the generator of technology in a control situation might think. The micro farming situation, in this sense, is determinant of a recommendation domain; where a technology or research outcome can successfully be diffused (or decided to be adopted). The decision making of farmers and researchers/policy makers, hence, has to get a common interface in the face of this crisis. Otherwise the researches drawing on huge fund and time are going to be non-functional or even aborted and another group of scientists/researchers will go on to find out the correlation between non-adoption of a technology and farmers ignorance/resistance to change.

Notes:

1. International Maize and Wheat Improvement Center (CIMMYT) defined recommendation domain as a '... group of farmers whose circumstances are similar enough that they will be eligible for the same recommendation' (Harrington and Tripp 1984:5).

2. See *Farmers' Knowledge, innovations, and relation to science*, IDS workshop, as mentioned in Farmer First: Farmer Innovation and Agricultural Research edited by Chambers, R., Pacey, A. and Thrupp, L. A., for more detail.

3. Fliegel's (1984) conceptualisation of the farmer's decision making environment envisages physical (Land resources; Climatic condition), social (Provincial/regional/national entities; Villages or other local community; Ethnic and/or religious groupings; Family and keen groups; Settlement pattern) and infrastructural environment (Credit, Marketing, Input supply, Schools, Extension) surrounding individual farmers. This is greatly helpful to understand the basics of micro farming situation at the theoretical level.

4. Gupta (1991) strongly advocated for the need of ecological mapping for the purposes of targeting of technology that claims for understanding of various consumer classes and fractions. He pleaded

for the method of mapping impressionistically (village/block/district wise maps) whereby pockets of various crops and their varieties are demarcated. This is actually based on the rich insights about a) agro-climatic combination or niches in which different pieces of land have been favoured by the farmers over others; b) nature and extent of land use pattern; c) population affected. With this type of database one can easily find the effective alternative for locating the trials and demonstration of potential technologies.

5. The recommendation domain conceived to be as ecological situations getting multiplied by socio-economic conditions of the farmers. The Table, hence, stands self-explanatory.

Intervention	Recommendation domain	Number of set of treatments
Pointed gourd	18	3
Jute	18	2
Early cauliflower	18	1
Late cauliflower	24	3
Summer rice	12	2
Brinjal	18	1
Milch cow	4	1
Goat	8	1
Poultry	8	2

6. Often from the name of the field alone one can have a gross idea of its characteristics. A general trend of appellation of the area's micro farming situations can help even more. The farmers besides Kalyani High Road (State Highway) of Nadia districts generally name their micro farming situations on the basis of soil type. The following lines too can provide some insights regarding this issue.

"… local words and concepts are inclusive… combining categories which the outsider is trained to keep separate… They may combine spatial, social and ecological dimension in a broadly inclusive plan." (Dalby, 1964)

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