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Participatory impact monitoring of a soil and water conservation programme by farmers, extension volunteers and AKRSP in Gujarat

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AKRSP supports village institutions in undertaking soil and water conservation on the private land holdings of the farmers as a part of the watershed management programme, identified by the villagers as one of their priorities for natural resources management. The village institutions nominate village extension volunteers; (village extensionists or EV's) who take up responsibility for appraisal, technology generation, adaptation and diffusion, implementation, management and monitoring of the programme. These EV's go through a series of 'experience sharing' and 'learning' exercises in which they learn from other farmers, other EV's and outsiders. They prepare watershed treatment plans and maps for their village and subsequently use these maps for monitoring the implementation of the programme. EV's are then trained in conducting impact studies after the rainy season is over to assess the impact of the soil and water conservation programme. In a discussion with the farmers who participated in the programme on 'How and what to monitor' the farmers suggested that the information should be collected on the following variables: (i) erosion controlled (ii) land reclaimed (in productive use after the treatment) (iii) moisture retention in the soil (number of furrows where good crop growth was there) (iv) productivity and income generation.

· The sequence of participatory impact monitoring

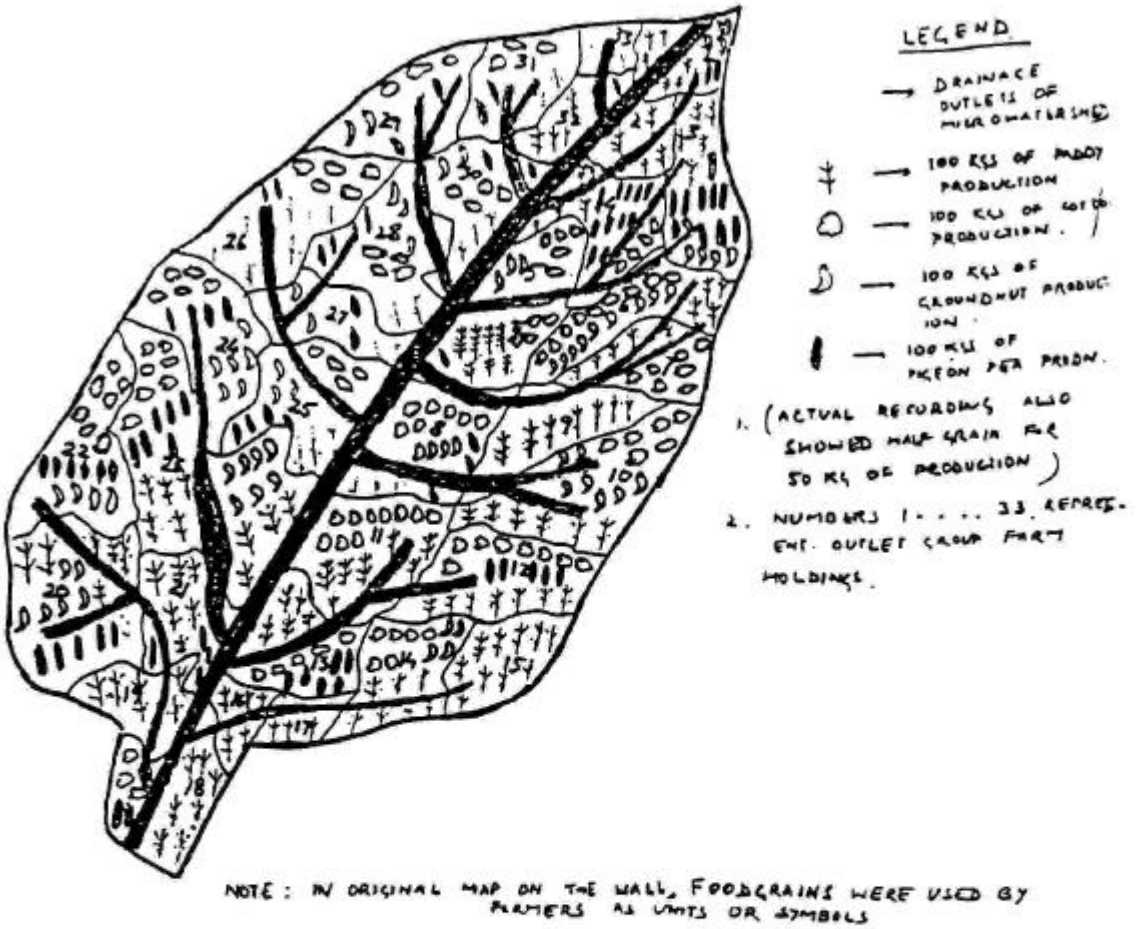
The sequence involves the following steps:

- Discussion with each farmer on his field;
- Deciding the variables to be observed with the farmer groups;
- Ground mapping of Baseline and Impact Maps;
- Paper Mapping mainly through symbols;
- Presentation of these findings to watershed outlet groups;
- Aggregation of the information collected and preparing aggregate maps based on this information(see Figure 55); and,
- Presentation of these findings to the village community leading to the discussion on the following issues:

  i. what investment, what return;
  ii. which technologies were tried out, which worked and under what conditions, which did not work and why;
  iii. what are the local variations and diversities;
  iv. what are the range of options to choose from;
  v. what are the various variables on which to experiment;
  vi. what next; and,
  vii. generation of technology domain and adaptation for the village.

Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

Figure 55. Baseline production map of watershed outlet group in microwatershed in Bharuch District

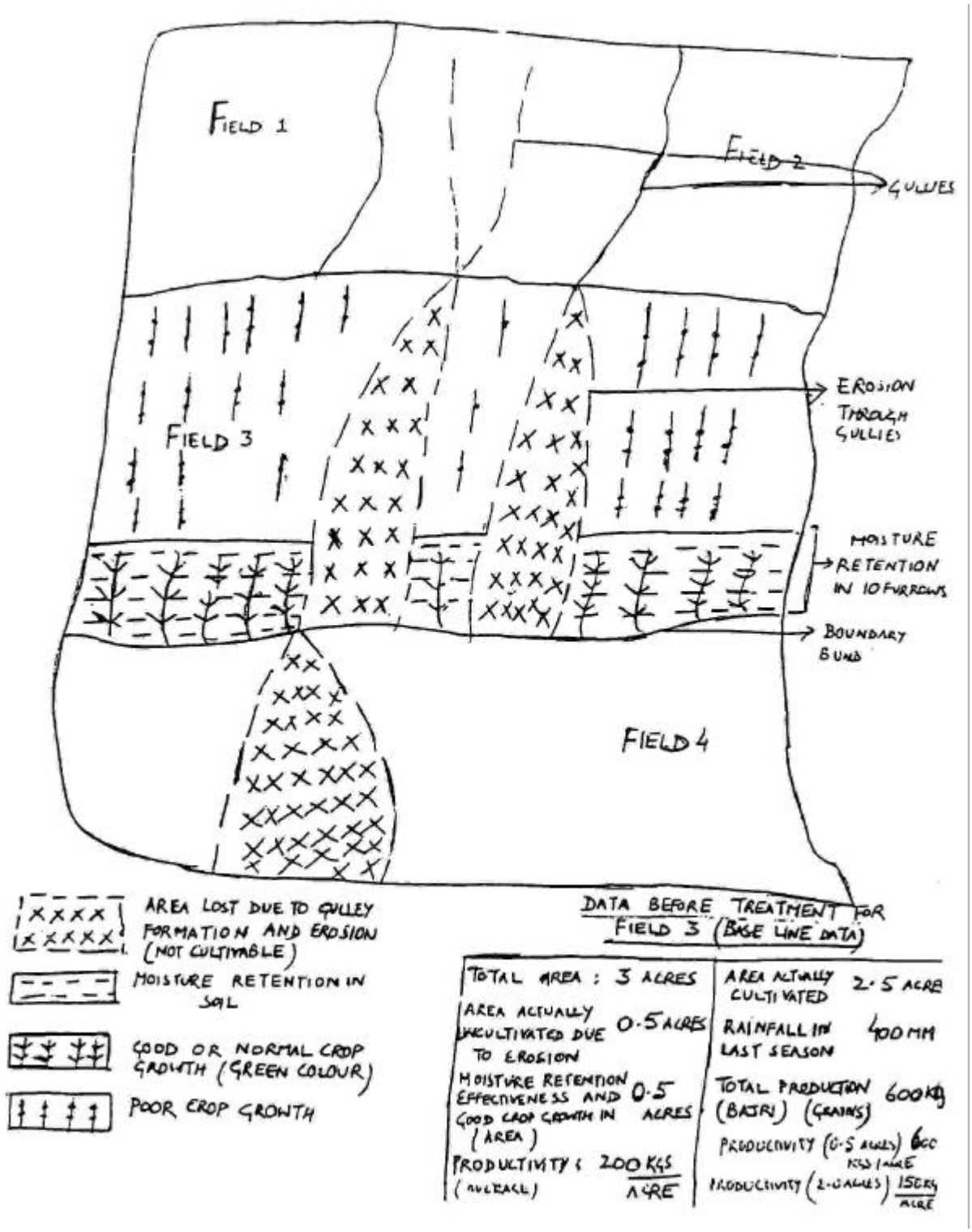


ILLUSTRATIVE AGGREGATE INFORMATION FOR EACH HOLDING

FIELD NO.	AREA CULTIVATED (ACRES)	PRODUCTION IN KG			
		PADDY	GROUNDNUT	PIGEONPEA	COTTON
1	3	300	400	200	-
2	3.5	600	-	-	-
3	4.5	500	500	1000	-

Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

Figure 56. Status of soil and water conservation and productivity before treatment, May 1990. Madargadh village, Surendranagar



Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

· Process of impact monitoring

The process of impact monitoring by the farmers involves the following steps:

- The extension volunteer interacts with the farmer on his field. The farmer is encouraged to make a ground map of his field showing the condition before the treatment indicating the gullies formed, area under cultivation, area unfit for cultivation, run off flows, erosion flows, drainage flows and crop productivity before the treatment. This is copied and mapped on the paper by the EV and in some cases by the farmer himself. A map showing the condition of the field before the treatment is illustrated in Figure 56. Symbols were used to show erosion, the moisture retention, the cultivated area and the crop growth.

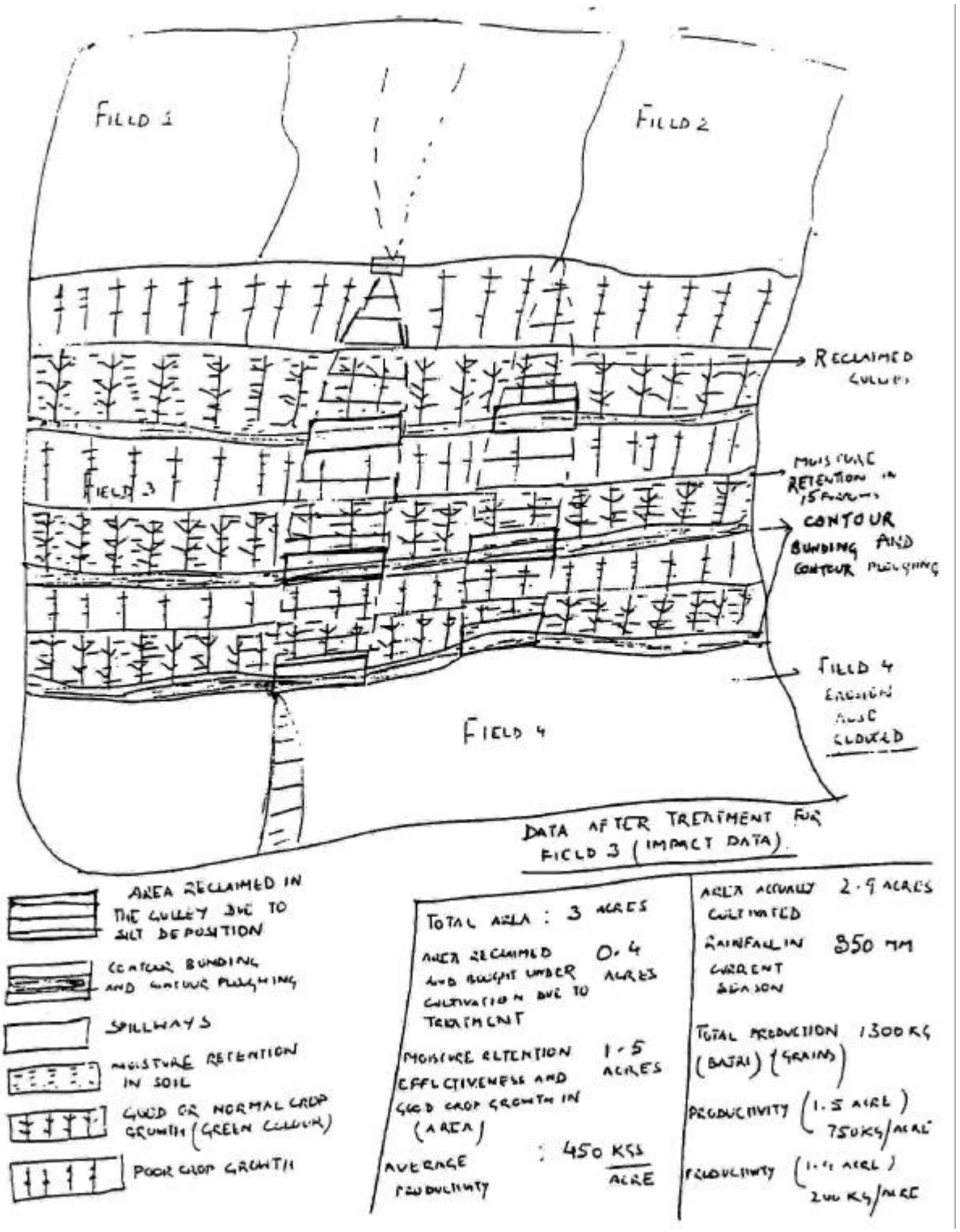
- After this the farmers map all the treatments carried out on his field during the soil and water conservation work and show some neighbouring treated and untreated fields. He then diagrams the impact indicators after the treatment was completed. He shows all the gullies which had been partially or fully filled and reclaimed, and also indicates the land reclaimed through this process which could now be cultivated. The new area brought under cultivation and the extent of moisture retained by contours and contour cultivation is indicated. He compares the crop growth on his field with untreated fields (his own as well as his neighbour's) and indicates comparative figures. He also showed the productivity of his treated and his untreated field. Such a map is shown in Figure 57.

- These 'before' and 'after' maps are collected from all the farmers in the village. Each watershed is organised into watershed outlet groups. The EV presents these diagrams showing the impact on the drainage outlet to the group members. The data collected is aggregated for the outlet group and impact indicators are also aggregated. At this stage there are often intensive discussions on the findings and inconsistencies in data as pointed out by the outlet group members. This leads to discussions on issues like benefits in relation to the costs and which techniques had worked better and why as well as on why certain structures and techniques had failed.

- Presenting these findings leads to discussion of alternative technologies on each farmer's field. In one case some farmers indicated the number of furrows which had benefited by higher moisture retention, showing that by contour bunding and contour ploughing only 10 to 15 furrows were benefited by higher moisture retention. They indicated that smaller in situ conservation structures were needed at closer distances to enable higher degree of moisture retention per furrow leading to a uniform and higher increase in productivity. Some farmers suggested that constructing smaller section bunds after every 15 furrows would be useful, which could be made by bullock drawn bund farmers. They said that contour bunds would still be useful as it would help in stopping erosion and result in better silt deposition thereby improving the soil quality further and more area would be reclaimed and cultivated.

Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

Figure 57. Status of same fields after treatments with contour bunding, contour ploughing and spillways, November 1990, Madargadh village, Surendranagar



Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

- It was decided by the village institution that both the options would be tried out next year to find out which is optimal and under what circumstances. The farmers felt that the trade off was between soil quality and higher moisture retention. Specific recommendations are being developed for each region of the village based on this exercise. All watershed outlet groups are sharing their experiences with each other facilitated by the extension volunteer. Technology generation, experimentation and adaptation have been facilitated through this participatory impact monitoring process.

- In a village a number of farmers use Farm Yard Manure (organic manure) in furrows and some farmers broadcast it. When asked by the EV the farmers said that they had not experimented adequately with other alternatives. They also said that their experience showed that the furrow application method particularly for the bajra (local millet) crop leads to termite attacks if there was a larger gap between the two rainfalls or if the rain started late. Results of these experiments were diagrammed through field sketches and presented to the group of farmers. This helped in evolving specific guidelines for further experimentation by the farmers.

Table 3. Analysis of impact data by the villagers

Variable	Before treatment	After treatment	Impact
Area cultivated	2.5 acres	2.9 acres	+0.4 acres reclaimed
Area under cultivation	0.5 acres	1.5 acres	+1.0 acres effective increase as furrows which retain moisture have increased due to contour bunds and ploughing
Rainfall	400 mm	350 mm	In spite of lower rainfall effective moisture retention has increased. Scope to increase moisture retention further
Productoin (Bajrigrains)	600 kg	1300 kg	Production has increased due to both increased area bought under cultivation after reclamation and increase in productivity
Productivity (Bajrigrains)	200 kg/acre	450 kg/acre	Productivity has increased by 250 kg/acre due to both the increase in effective area under moisture retention and contour farming
Total investments made: Rs. 900 & Rs. 300 per acre Additional returns: 700 kgs of production & Rs.1/kg = Rs. 1400 Net returns: Rs. 500 in the first season itself, showing that the activity has a small gestation period (different from what farmers perceived initially)			

Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London

· Recommendations after analysis of impact data by villagers

Following analysis of the impact data presented in Table 1, three recommendations were arrived at:

- Increase area under effective moisture retention by making smaller section bunds after every 10 furrows so as to increase effective moisture retention area to 2.2 acre;
- Experimentation in one field with treatment of only section bunds and no contour bunding (particularly in fields with lesser erosion). Observing the results and then reporting to other members of the village institution. Cost of treatment can further be reduced and returns may be the same or even be higher; and,
- People are now contributing 50% of the cost. Since the gestation period before getting returns is small, the programme can have a credit component.

These recommendations were evolved by the village institution members after the presentation of the results of the participatory impact monitoring exercise.

· Application of participatory impact monitoring for natural resources management projects

- Monitoring becomes a dynamic process and is directly linked with planning and taking decisions and corrective action. It leads to decisions about investments, choice of technology and returns.
- Diagrams and maps help the farmers to understand the results of experimentations being carried out by him and other farmers in the village.
- Farmers are able to understand linkages between inputs and outputs and qualify the indicators which are difficult to measure e.g. soil loss, erosion, moisture retention etc.
- It enables discussion among the farmers on how to generate technologies, adaptation according to their local situation and evaluate technologies (why certain technologies worked and why some did not work).
- Farmers are able to develop a framework for analysing the results of their experiments and are able to find out the viability of their enterprise. They are able to understand productivity critically and are able to take better decisions about management of scarce resources.
- Observing phenomena like moisture retention in furrows, erosion controlled, gullies reclaimed, land bought under cultivation and increase in productivity has helped in economic analysis by the community and has resulted in lower cost of development programmes in the village.

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Source: RRA Notes (1991), Issue 13, pp.86–88, IIED London