

RESEARCH ARTICLE :

Identification of agricultural problems of village using participatory rural appraisal technique

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SUMMARY : The present study on identification of agricultural problems of village using participatory rural appraisal technique was undertaken as Research Review Committee Project for the year 2012-2013 in the village Donwada of Akola taluka of Akola district of Maharashtra State. The required data collected from the village using PRA technique namely preferential ranking technique' and contacting personally with 30 participants. Findings revealed that total twenty two problems of Donwada village were identified by using preferential ranking technique of PRA tool. To find out the importance of problems perceived by the farmers and key informants, rank based quotient (RBQ) was used. The rank based quotient (RBQ) was calculated for each problem and it ranged from 98.78 to 53.03. The highest RBQ value correspond to the problem namely non-availability of labour in the village (98.78) followed by heavy damage/losses due to wild animals (97.27) and less adoption of soil reclamation techniques (96.36). Further, from the study it is observed that the maximum village magnitude value (7969935.6) was attributed to less adoption of soil reclamation techniques and ranked top most problems of the farmers of Donwada village followed by non-availability labour in the village. Moreover, the problems like heavy damage/losses due to wild animals, less adoption of soil and water conservation techniques, lack of knowledge about plant protection measures, non-availability of organic manure and poor linkages with Agril. University Scientists were found to be contributory factors for low productivity of crops. On the basis of problems identified, some training programmes need to be organized by Dr. PDKV, Akola/extension agency/NGO for the farmers of Donwada village on different topics such as awareness about soil and water conservation techniques, soil reclamation techniques for saline sodic soil, INM in cotton, IPM in cotton, process products of soybean, plantation of live fencing crops/plants etc.

KEY WORDS :

Participatory rural appraisal, Agricultural problems, Action plan

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BACKGROUND AND OBJECTIVES

The basic purpose of research or extension in agriculture is to develop technologies or formulate project based on the needs of the farmers and the problems faced by them in actual field situation. For

formulation of project for the village development, participatory approach of farmers is most important.

Participatory rural appraisal (PRA) is a methodology for interacting with villagers, understanding them and learning from them. PRA helps to assess the opinions of how to

utilize the resources for sustainable development, to rank the priorities as see them, to record all the information and prepare a plan of action.

Amongst various tools of PRA, 'preferential ranking technique' is most widely used tool to identify the agricultural field problems of a village and prioritize the problems and prepare action plan for solving the identified problems of the village.

Keeping this in view, the present study on identification of agricultural problems of village using participatory rural appraisal technique was planned and carried out to identify and priortize the agricultural problems of the village and to prepare action plan for solving the selected problems of the village.

Objectives :

- To identify and prioritize the agricultural problems of the farmers and
- To prepare action plan for solving the selected problems of the village.

RESOURCES AND METHODS

The present study was undertaken in the village Donwada of Akola taluka of Akola district of Maharashtra State. An exploratory design of social research was used for identification of agricultural problems in the village through participatory approach. A random sample of 30 participants were selected for the present study. PRA method namely 'preferential ranking technique' developed by Sabarathnam (1988) was used to identify the problems faced by the farmers.

The steps to be as followed :

Identification of key informants and the farmers from village :

For the purpose of identification of problems, 6 key informants were identified through socio-metric method and who were conversant with the village situation. They were asked individually to list out the problems faced by the villagers pertaining to agriculture. From each key informant, got the names of farmers who actually faced the problems listed by them. The farmers identified through key informants were also asked to list out the problems faced by them.

Rank the problems by indicating which problem they prefers to place as the first, second, third etc. and asked them to indicate the loss or extent of damage in

terms of percentage. Continued this process, till 30 farmers were identified. By contacting 30 farmers, list of problems, ranking of problems and losses or extent of damage in terms of percentage was recorded. Then frequency of farmers for various ranks of the problems was calculated.

Quantification of data in terms of "rank based quotient" (RBQ) estimation :

To find out the importance of problems perceived by the farmers and key informants, "rank based quotient" (RBQ) was used (Sabarathnam, 1988). Formula is as given below :

$$RBQ = \frac{i = \ln(F_i)(n + 1 - i)}{Nn} \times 100$$

where,

F_i = Frequency of farmers/key informants for the i th rank of the problem.

N and n = Number of respondents and maximum number of ranks given for various problems by a farmer among all the contacted farmers, respectively.

Estimation of village magnitude value of the problem (VMV) :

Magnitude value of the problem was calculated by the following formula (Sabarathnam, 1988).

$$\text{Village magnitude value (V.M.V.)} = R.B.Q. \times AEOD \text{ or } AYLP \times A.C.$$

where,

RBQ = Rank based quotient

AEOD = Average extent of damage

AYLP = Average yield loss in percentage

A.C. = Area under the crop in the village

Based on the magnitude value of the problem (M.V.P.), the top most problems (possessing the highest M.V.P.) were identified.

OBSERVATIONS AND ANALYSIS

A structured interview schedule was prepared in accordance with the objectives of the project and used for data collection. The respondents were contacted either at farm or at home and the information in the interview schedule was collected. Thus, the information obtained from 30 farmers was taken for analysis.

Problems identified :

One of the most effective methods of PRA *i.e.*,

preferential ranking technique was used in this study for identifying the important problems faced by the farmers of the selected village. In this regards, twenty two problems were identified. These were less adoption of soil reclamation techniques, soil not suitable for ground water irrigation, heavy damage/losses due to wild animals, inadequate drinking water facility, non-availability labour in the village, less adoption of soil and water conservation, high cost of insecticides/weedicides, high cost of fertilizers, lack of knowledge about plant protection measures, lack of extension service of department of agriculture, low market price for farm produce, non-availability of organic manure, high cost of seed, lack of knowledge about use of bio-fertilizers, no veterinary clinic facility of in the village, no facility of warehouse in the village, lack of co-ordination among villagers for village development, poor linkages with Agricultural University Scientists, lack of employment opportunities in the village, problem of electric load shading, no Bank facility in the village and poor village approach road (Table 1).

Quantify the data in terms of RBQ estimation :

To find out the importance of problems perceived by the farmers and key informants, "rank based quotient" (RBQ) was used (Sabarathnam, 1988).

Based on the ranks given by the different key informants and the farmers, different problems are listed out in the Table 2. The rank based quotient (RBQ) was calculated for each problem and is presented in Table 2. It could be inferred that the calculated RBQ values ranged from 98.78 to 53.03. The highest RBQ value corresponded to the problems *viz.*, non-availability of labour in the village (98.78) followed by heavy damage/losses due to wild animals (97.27) and less adoption of soil reclamation techniques (96.36).

Estimation of the magnitude value of the problem :

Magnitude value of the problem was calculated by the formula developed by Sabarathnam (1988). Based on the magnitude value of the problem (M.V.P.), the top most problems (possessing the highest M.V.P.) were identified and are presented in the Table 2.

From Table 2, it is revealed that the maximum village magnitude value (7969935.6) was attributed to less adoption of soil reclamation techniques and ranked top most problems of the farmers of Donwada village followed by non-availability labour in the village. Moreover, the problems like heavy damage/losses due to wild animals, less adoption of soil and water conservation techniques, lack of knowledge about plant

Table 1 : Rank based quotient (RBQ) values for the problem identified in Donwada village

Sr. No.	Problems	RBQ value
1.	Less adoption of soil reclamation techniques	$(22x11+2x10+0x9+4x8+0x7+4x6+0x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 96.36$
2.	Soil not suitable for ground water irrigation	$(15x11+10x10+0x9+0x8+3x7+0x6+0x5+0x4+0x3+2x2+0x1) \times 100 / (30x11) = 90.30$
3.	Heavy damage/losses due to wild animals	$(25x11+2x10+2x9+1x8+0x7+0x6+0x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 97.27$
4.	Inadequate drinking water facility	$(2x11+15x10+2x9+5x8+4x7+0x6+0x5+2x4+0x3+0x2+0x1) \times 100 / (30x11) = 80.60$
5.	Non-availability labour in the village	$(27x11+2x10+1x9+0x8+0x7+0x6+0x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 98.78$
6.	Less adoption of soil and water conservation techniques	$(10x11+1x10+5x9+3x8+0x7+5x6+2x5+2x4+1x3+1x2+0x1) \times 100 / (30x11) = 73.33$
7.	High cost of insecticides/weedicides	$(7x11+3x10+5x9+2x8+3x7+4x6+2x5+1x4+1x3+2x2+0x1) \times 100 / (30x11) = 70.90$
8.	High cost of fertilizers	$(11x11+10x10+1x9+3x8+0x7+5x6+0x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 86.06$
9.	Lack of knowledge about plant protection measures	$(5x11+6x10+3x9+4x8+2x7+2x6+4x5+0x4+2x3+0x2+2x1) \times 100 / (30x11) = 69.09$
10.	Lack of extension service of Deptt. of Agriculture	$(2x11+8x10+2x9+5x8+3x7+0x6+2x5+2x4+4x3+1x2+1x1) \times 100 / (30x11) = 64.84$
11.	Low market price for farm produce	$(8x11+5x10+3x9+4x8+0x7+4x6+0x5+0x4+3x3+2x2+1x1) \times 100 / (30x11) = 71.21$
12.	Non-availability of organic manure	$(7x11+10x10+5x9+3x8+2x7+2x6+1x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 85.75$
13.	High cost of seed	$(8x11+5x10+4x9+3x8+0x7+2x6+2x5+0x4+2x3+2x2+2x1) \times 100 / (30x11) = 70.30$
14.	Lack of knowledge about use of biofertilizers	$(3x11+4x10+7x9+5x8+5x7+0x6+3x5+3x4+0x3+0x2+0x1) \times 100 / (30x11) = 72.12$
15.	No veterinary clinic facility of in the village	$(1x11+1x10+3x9+4x8+5x7+1x6+3x5+7x4+2x3+2x2+1x1) \times 100 / (30x11) = 53.03$
16.	No facility of warehouse in the village	$(1x11+2x10+5x9+2x8+7x7+3x6+0x5+3x4+3x3+2x2+2x1) \times 100 / (30x11) = 56.36$
17.	Lack of co-ordination among villagers for village development	$(5x11+5x10+4x9+3x8+7x7+0x6+2x5+2x4+2x3+0x2+0x1) \times 100 / (30x11) = 72.12$
18.	Poor linkages with Agricultural University Scientists	$(2x11+4x10+5x9+7x8+3x7+2x6+0x5+4x4+0x3+2x2+1x1) \times 100 / (30x11) = 65.75$
19.	Lack of employment opportunities in the village	$(2x11+3x10+1x9+3x8+4x7+5x6+5x5+3x4+1x3+1x2+2x1) \times 100 / (30x11) = 56.66$
20.	Problem of electric load shading	$(9x11+5x10+5x9+1x8+4x7+4x6+2x5+0x4+0x3+0x2+0x1) \times 100 / (30x11) = 80.00$
21.	No bank facility in the village	$(2x11+2x10+5x9+2x8+4x7+2x6+3x5+2x4+3x3+3x2+2x1) \times 100 / (30x11) = 55.45$
22.	Poor village approach road	$(5x11+5x10+6x9+4x8+3x7+1x6+2x5+2x4+2x3+0x2+0x1) \times 100 / (30x11) = 73.33$

Table 2 : RBQ, V.M.V. values and rank of different problems identified by farmers

Sr. No.	Problems	RBQ value	Avg. % losses	Area under crops (ha.)	Magnitude value	Rank
1.	Less adoption of soil reclamation techniques	96.36	90	919	7969935.6	I
2.	Non-availability labour in the village	98.78	80	919	7262305.6	II
3.	Heavy damage/losses due to wild animals	97.27	75	919	6704334.7	III
4.	Low market price for farm produce	71.21	80	919	5235359.2	IV
5.	Inadequate drinking water facility	80.60	65	988	5176132.0	V
6.	Non-availability of organic manure	85.75	55	919	4334233.7	VI
7.	Lack of extension service of Deptt. of Agriculture	64.84	65	919	3873217.4	VII
8.	Soil not suitable for ground water irrigation	90.30	90	460	3738420.0	VIII
9.	Lack of co-ordination among villagers for village development	72.12	48	988	3420218.8	IX
10.	Less adoption of soil and water conservation techniques	73.33	45	988	3260251.8	X
11.	Poor linkages with Agricultural University Scientists	65.75	50	919	3021212.5	XI
12.	High cost of fertilizers	86.06	65	460	2573194.0	XII
13.	Poor village approach road	73.33	35	988	2535751.4	XIII
14.	Lack of employment opportunities in the village	56.66	40	919	2082821.6	XIV
15.	No veterinary clinic facility in the village	53.03	40	919	1949382.8	XV
16.	High cost of seed	70.30	60	460	1940280.0	XVI
17.	Lack of knowledge about plant protection measures	69.09	60	460	1906884.0	XVII
18.	Problem of electric load shading	80.00	25	919	1838000.0	XVIII
19.	High cost of insecticides/weedicides	70.90	55	460	1793770.0	XIX
20.	Lack of knowledge about use of bio-fertilizers	56.36	55	460	1425908.0	XX
21.	No bank facility in the village	55.45	25	988	1369615.0	XXI
22.	No facility of warehouse in the village	72.12	40	460	1327008.0	XXII

Table 3: Action plan to overcome the problem of soil erosion and water runoff

Sr. No.	Activity to be undertaken	Starting time	Finish time	Agencies to be involved	Farmers role / involvement	Predicted changes	No. of farmers to be benefited	Area covered	Technical guidance	Material required
1.	Sowing across the slope	June 2013	July 2013	Farmers, extension agency	Own involvement with labour	Absorbing excess water by root zone, helps in moisture conservation	100	919 ha	Agri. Asst., Extension agency	Bullock pair, seed drill, seeds
2.	Contour bunding	March 2013	April 2013	Farmer, extension agencies, Grampanchayat	Involvement with labour for preparing contours	Harvesting of water by checking the runoff water at any particular level	145	75 ha	Agri. Dept., Dr. PDKV, Akola	Spade
3.	Crop rotation	July 2013		Farmer, extension agencies	Own involvement	Reducing runoff, minimizing soil losses	200	988 ha	Agri. Asst., Extension agency	
4.	Intercropping	July 2013		Farmers, labours, extension agency	Own labour for sowing	Legume crops like pigeon pea, black gram were erosion resistant crops that not allow runoff water to carry much soil with it	200	919 ha	Agri. Asst., Dr., PDKV, Akola	Seeds of leguminous crops
5.	Mulching	August 2013		Farmer, labours, extension agency	Own involvement with labour	Reducing runoff, if natural resources used, helps in increasing soil fertility, moisture conservation, surface sealing	120	919 ha	Dr. PDKV, Akola	Stubbles, straw or plastic papers
6.	Opening of furrows after every two rows at 30 days	July 2013		Farmer, extension agency	Own involvement with labour	Availability of water at root zone	100	919 ha	Extension agency, Dr. PDKV, Akola	Hoe, rope, bullock pair

protection measures, non-availability of organic manure and poor linkages with Agricultural University Scientists were found to be contributory factors for low productivity of crops.

Action plan to overcome the problem of soil erosion and water runoff (soil and water conservation techniques) :

It was also observed from the identified problems that serious problem was soil erosion and water runoff in the village Donwada. It is proposed to undertake the different interventions for increasing the conservation of soil and water both and helps in increasing the soil fertility. The proposed interventions were: sowing across the slope, contour bunding, crop rotation, intercropping, mulching and opening of furrows after every 2 rows at 30 days after sowing (Table 3).

Conclusion :

It could be concluded that total twenty two problems of Donwada village were identified by using 'preferential ranking technique' of PRA tool. The rank based quotient (RBQ) was calculated for each problem and it ranged from 98.78 to 53.03. The highest RBQ value corresponded to the problem namely non-availability of labour in the village (98.78) followed by heavy damage/losses due to wild animals (97.27) and less adoption of soil reclamation techniques (96.36).

Further, from the study it is observed that the maximum village magnitude value (7969935.6) was attributed to less adoption of soil reclamation techniques and ranked top most problems of the farmers of Donwada village followed by non-availability labour in the village.

On the basis of problems identified, some training programmes need to be organized by Dr. PDKV, Akola/extension agency/NGO for the farmers of Donwada village on different topics such as awareness about soil and water conservation techniques, soil reclamation techniques for saline sodic soil, INM in cotton, IPM in cotton, process products of soybean, plantation of live fencing crops/plants etc.

It is proposed to undertake some interventions as action plan to overcome the problem of saline-sodic soil of Donwada village. These interventions were: deep

ploughing in summer, application of FYM @ 5 tonns /ha, application of Gypsum @ 2.5 tonns /ha. once in two years, opening of furrows after every 2 rows at 30 days after sowing to conserve the rain water in soil and increase the efficiency of absorption of fertilizers and also recommended to select salt tolerant crops for such type of soil.

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