Identifying Grass Root Problems and Generating Sustainable Solutions through Participatory Rural Appraisal

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ABSTRACT

Traditional Extension methods has been widely replaced by modern ICT based extension methods, but still Indian Extension system is lagging behind in understanding the actual problems of farmers and thus the gap between problems and recommended solutions is large. One of the most important reasons for widening of this gap is inability of modern ICT based extension methods to understand the grass root problems and their linkages at village level.   In this context, present study has been done to outline the grassroot problems of village through Participatory Rural Appraisal (PRA). All tools of PRA were executed during study and results have indicated positive perception of farmers towards PRA with respect to understanding village problems. This study has outlined the major grassroot problems of village Salakhedi on the basis of PRA and as a result authors have identified potential action plan based on PRA analysis.

Key words: *Grass root problems, Participatory Rural Appraisal, ICT based extension,*

Traditional Extension methods has been criticised and said to be inefficient to solve problems at grass root level. ICT based extension has shown a huge potential to reach the farmers for delivering timely, location specific and customised information. Traditional Extension methods has been widely replaced by modern ICT based extension methods, but still Indian Extension system is lagging behind in understanding the actual problems of farmers and thus the gap between problems and recommended solutions is large. One of the most important reasons for widening of this gap is inability of modern ICT based extension methods to understand the grass root problems and their linkages at village level.

To identify grass root problems and to generate sustainable solutions, participatory methods has to be adopted, after all the philosophy of extension is to *help people to help themselves*. Participation is a process by which people, especially disadvantaged people, influence decisions that affect them (*World Bank 1992*). PRA (Participatory Rural Appraisal) is one of

the most important methods of participatory extension to understand, evaluate and to identify the grass root problems and in turn providing sustainable local resource based solution. PRA is an approach for learning about rural life and conditions from, with and by rural people (involve villagers and local officials in the process), which involves analysis, planning and action (*Chambers 1992*). PRA is a growing combination of approaches and methods that enable rural people to share enhance and analyse their knowledge of life and conditions, to plan and act and to monitor and evaluate. The role of the outsider is that of a catalyst, a facilitator of processes within a community which is prepared to alter their situation (*Chambers 1994*). In agricultural Research, PRA attempts to challenge the assumptions of conventional ways of perceiving farmers, where knowledge is the exclusive area of the researcher and where the farmer is a passive recipient of information (*Pretty and Chambers 1994*). *Chambers (1992),* described the features of PRA methods: a reversal of

learning, to learn from rural people; learning rapidly and progressively with flexible use of methods, improvisation and crosschecking; offsetting biases; optimizing trade-offs between quantity, relevance, accuracy and timeliness; triangulation and cross checking and seeking diversity. The present work was carried out as a part of the field Experience Training of the trainee Scientists at KVK, Ujjain during 2014 with the following objectives:

i.   To identify the grass root problems in study area on the basis of tools of PRA.

ii. To find solutions and explore technological interventions for the prioritized problems.

METHODOLOGY

The study was conducted at one of the adopted villages of KVK, Ujjain named 'Salakhedi'. It is a small village of Ghatiya tehsil in Ujjain district of Madhya Pradesh state with a population of 662 with 120 households. The total Geography Area of village is 160 ha out of which 120 hactare is being cultivated. The major occupation in this village is agriculture and 70 per cent of the farmers have a land holding ranging from 3-5 acres. Major Kharif crops are Soybean, Maize, Moong, Urd and major rabi crops are Wheat, Chickpea, Garlic and Onion. The major cropping pattern of the village is Soybean – wheat, Soybean – Onion, Soybean – chickpea, Soybean – Garlic and Maize – Garlic. The village have 215 cattle population. The village is well equipped with farm machinery which includes 11 tractors, 30 country ploughs, 11 seed drill, 10 oil engine pumps and 75 knapsack sprayer.

Rapport building: The Project Coordinator, KVK, Ujjain, Scientists of KVK Ujjain, Village level Extension Officer, Veterinary Officer was consulted before selecting the village. KVK, Ujjain had adopted the Salakhedi village in 2009 and already had done useful interventions, therefore rapport building was easy. Since village is adopted village of KVK, Ujjain so interventions can be done (based on PRA recommendations).

PRA Tools used: The PRA tools used include Basic information, transect walk, agro-ecological mapping, social mapping, time trend, seasonal calendar, gender analysis, time line, livelihood analysis, technology mapping, consequence diagram, problem – solving tree. Diagrammatic charts of each tool were made in association with opinion leaders of the village. Transect

walk was made with villagers across the village and data regarding topography, soil type, land use pattern, major crops, trees, livestock, cropping pattern, technologies adopted, socio-economic and cultural settings and agricultural problems was compiled and further analysed.

Village Seminar: A village level seminar was organised at Salakhedi village (04/03/2014) in presence of KVK scientists and state level agricultural department officials. Based on the recommendation came out in village seminar, action plan were prepared to provide sustainable solution for village problems.

Problem Identification: The major problems identified in the village Salakhedi were listed and Rank Based Quotient (RBQ) of the problems was calculated based on the ranking done by 20 farmers of the village. Rank Based Quotient was calculated using following formula as given by *Sabarathnam (1988):*

$$RBQ = \frac{\sum f_i\,(n + 1 - i)}{N \times n} \times 100$$

Where,

i = Concerned ranks,

N = Numbers of farmers,

n = Numbers of ranks

fi = Frequency of farmers for ith rank of the technological need

Based on the agriculture-related problems identified, a problem-solution tree was constructed to highlight the possibilities to overcome the identified problems.

RESULTS AND DISCUSSION

Village transect: Transect walk was carried out with key informants of village Mr. Shiv Sharma, Mr. Arjun Singh Anjana. The major findings of transect walk is described in Table 1

Timeline and Seasonal calendar: Major events occurred in a village in a chronological way were discussed with older people of village. This gave an idea of existing technologies of village as well as adopting behaviour of villagers. The important events were Soybean crop introduced by replacement of cotton (1978), Murrah breed introduced (1985), Introduction of Tractor and seed drill (1998), introduction of Jersey breed introduced and formation of Milk society (2006),

Table 1: Details of village collected through transect walk

Particulars	Field area	Residential area	River side's area
Soil Type	Medium Black Soil	Light Black soil	Degraded or Eroding Soil
Crops	Wheat, Soybean, Chickpea, Onion, garlic and Potato	Berseem, Fodder and Seasonal flowers	-
Livestock	-	Cow, buffalo and goat	-
Trees	Neem and Mango	Tamarind, Neem and Mango	Babul
Water Sources	Open Well, Tube well and River	Hand Pump and Open well	River
Pests	Soybean: girdle beetle, semi looper, termites attack and pod borer	Mosquitoes	-
Diseases	Soybean: Coller rot, Raijectonia rot, Anthrepnos and soybean mosaic Chickpea: coller rot and fusarium wilt	Wheat: rust, Karnal bunt and loose smut FMD, HS in cattle and PPR in goat	-
Technologies	Tractor, Seed Drill, Sprayer , thresher and Sprinklers	Chaff cutter, Screens and Household Milling Machine	-
Problems	a) Low production in Soybean, Wheat, Milk, Chickpea	a) Unhygienic conditions in cattle barns, b) Insufficient production of cattle feed and fodder and Unavailability of water	-
Potential	a) Water harvesting & Conservation, b) Raise Bed Techniques in soybean, c) Resistant Varieties d) Intercropping	a) High Milk production, b) Good quality fodder production c) Co-operative societies and self help groups formation	a) Fisheries business

Table 2: Seasonal problems analysis- Major crops

Particular	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept
Wheat					TP & YR							
Chickpea				PB, FW & FP								
Soybean										GB, SL, RR & ERP		
Garlic				ThP								
Onion				ThP								

[ERP- Excess Rain Problem, FP- Frost problem, FW- Fusarium wilt, GB- Gurdle Beetle, PB- Pod Borer, RR- Root Rot, SL- Semi Looper , ThP- Thrips Problem, TP- Termite Problem, YR- Yellow Rust]

adoption of village by KVK, first biogas plant and Major intervention by rural agriculture extension officer (2009), introduction of Orange cultivation (2011), introduction of Sprinkler, Seed treatment drum and Raise bed technique for Soybean (2012) and introduction of Potato crop introduced and SRI method of wheat cultivation (2013). *Seasonal calendar* indicated that farmers were involved in the agriculture activities during 9 months only and are totally free in rest 3 months of the year. So, a short duration 3rd crop (like mong, sesame etc.) can be introduced in the village. The gender disaggregated seasonal calendars indicated that men are more involved in agricultural work than women. Women were mainly involved in household activities and they are mostly free throughout the year. So, some SHG's (Self Help Groups) can be formed, especially for women to do small scale business in the village.

Seasonal problem analysis: The main problem is excess rain results into water logging in the soil which cause root rot disease and hence decrease in productivity. In garlic and onion main problem is tip burning which occurs in the month February and March due to sulphur deficiency. Garlic is grown in rabi season followed by Soybean. Since soybean is an oilseed crop, the sulphur from soil is more and subsequent crop suffers with sulphur deficiency if adequate sulphur is not applied. In wheat, termite attack, rodent attack and yellow rust are the main problems. The pod borer incidence has

Table 3: Role of organisation/people in overall development of village

Organisation/person	Description
Rural Agriculture Extension Officer (Rank 1)	He is playing the major role in overall development of village. His major achievements after his joining in 2010 are • Persuaded all farmers to use optimum seed rate (earlier farmers were using high seed rate, now majority of farmers are using optimum seed rate) • He has persuaded farmers to treat their seed before sowing. He has also provided seed treatment drum in village and playing a major role in input supply to farmers. He has provided 16 sprinkler in 2012 and 16 in 2013 to the village farmers.
KVK, Ujjain (Rank 2)	Salakhedi village has been adopted by KVK, Ujjain in 2009. KVK Ujjain has disseminated optimum packages of practices of major crops of village-wheat, soyabean and chickpea. Seed and other input availability is being also looked upon by KVK, Ujjain. Raised Bed Technique of Soyabean has been introduced by KVK, Ujjain in 2013, to two progressive farmers (Babulal and Bhagirath) in and introduction of Durum wheat (Pusa Mangal) is in progress.
Cooperative Society (Rank 3)	Mainly playing major role in farm input supply, but the society is based in nearby village which is dominated by other caste peoples (villagers of salakhedi often being discriminated), therefore seed and other input requirement is not being fulfilled completely by the cooperative society.
Cooperative Bank (Rank 4)	Mainly proving help in taking loans, but farmers are facing lots of problems in official work with bank.
ATMA (Rank 5)	ATMA is playing a minor role directly. ATMA has installed 1 biogas plant in village on a subsidy mode.
Dealer (Rank 6)	Providing inputs (mainly pesticide, weedicide and agricultural implements). Dealers of Ujjain are playing important role.

increased after the adoption of "Dollar' variety of soybean and farmers suffer more than 80 per cent economic loss due to severe frost in the month of January since this variety is highly susceptible to it.

Social Mapping and Resource Mapping: With help of key informants and villagers a social map of salakhedi was drawn which gave idea about social structure, stratification and availability of social facilities including spatial distribution of castes, information regarding occupational pattern, location of households, social institutions, groups, leadership patterns, value systems, social gatherings, norms, customs, social evils existing in the village.

Caste information and distribution: Total of 123 families, out of which, 108 families belong to SC community (Bachada, Balai and Mehtar), 10 families belong to OBC (Gari, Aanjana, Kir and Baragi) and 5 families belong to General (Rajput and Brahman).

Social Institution: Village has 1 Aganwadi, 1 Primary school (upto 5th) and 1Secondary School (upto 8th). The village have very poor social infrastructure. There is no post office, bank, medical shop, higher schools and other important infrastructure. The villagers are low cosmopolite (very low extension agent contacts, mass media exposure and innovativeness).

Economic Information: Out of 123 families, 5 are Joint Families and 118 are nuclear families. There are 60 small farmers (<10 Bigha land), 30 medium farmers (10-20 Bigha land) and 10 Big farmers(>20 Bigha land). 75 villagers are below poverty line. There are 2 Self Help Groups (12-15 members each) mainly engaged in processing (pickles) and 1 milk cooperative.

Leadership pattern and social evil: SC community possess leadership (Sarpanch is from SC community). Alcoholism in some families and 'Ghoonghat'system in whole village (women have to cover her whole face by saree all the time)

Resources include 11 Tractors, 50 bikes, 30 Bullock-cart, 11 seed drill, 7 Thrasher, 2 reaper, 75 knap sack sprayers and 2 motor sprayers. Tractors and bullock cart are generally used for carrying Produce to market and to carry inputs from market. There are 200 mobiles, 20 T.V. Mobiles are generally used for personal purpose and T.V. for entertainment. There was no newspaper

Table 4: Level of adoption/rejection of technology (major crops)

Criteria	Technology	Status	Reason
Wheat	Harshita and Sujata	D	Less yield, long duration, tall variety and small seed size
	Lok-1	OA	Good yield, less irrigation needed, better quality, short duration and less shattering of grains
	Malavshakti	A	Better yield and high protein, less irrigation
	Poshan	A	Better yield and high protein
	SRI technology	A	Better productivity
	Pusa Mangal	I	Better yield and high protein
	WH147	R	Long duration, Less yield, Rust problem, more irrigation needed and Shattering of grains
Chickpea	Dollar(Kabuli) (Exotic variety from Mexico)	OA	Big size, high yield and high market value
	Vishal (desi)	A	Big size, good yield and market value
	JG-130 (desi)	A	More insect problem and medium size, less market value
	JG-74 (desi)	A	Rainfed, good taste
Soybean	JS-9560	A	Short duration, more production, bigger size and good market value
	JS-335	A	Medium duration, suiTable for early rain, good production
	Raised bed technique	A	High productivity, less seed rate and prevent water logging
	Punjab-1 and PK-472	R	Grain shattering

(A- Adopted, OA- Over adopted, D- Discontinued, R – Rejected, I – Introduced)

Table 5: Level of adoption/rejection of Livestock

Criteria	Technology	Status	Reason
Cow	Malvi	A	Better quality milk and disease resistance, less maintenance
	Jersi	A	High milk yield
	Marwari	A	High milk yield
Buffalo	Murrah	A	High milk yield
	Jaypuri	A	High milk yield
	Malvi	A	Better milk quality, disease resistance, low maintenance cost
Goat	Indigenous breed	A	High market value and low maintenance cost
	Barberi	A	More milk, more no. of child,
Cow/Buffalo	A.I. Technology	A	Increased productivity (A- Adopted)

and internet facility. Ujjain is the prime market for farmers to sell their produce and to purchase all farm inputs (seed, fertilizer and other chemicals). The mode of transport is tractor (for agriculture produce and farm inputs) and bus/bike (personal purchase)

Venn diagram : With the help of key informants organisations playing crucial role in development of village were ranked and on the basis of ranking two venn diagram were drawn, namely Venn diagram (overall development of village) and Venn diagram (Introduction of Raised bed technology of Soyabean). The information revealed by venn diagram is shown in Table 3.

Technology Map : A detailed study of adoption and rejection behaviour of villagers was done and a technology map was prepared. Table 4 and 5 shows the level and reasons of adoption/rejection of technology in major crops and livestock respectively.

Matrix Ranking : Matrix ranking of major crops and milch animals was done to understand the reasons for technology decision behavior of the farmers. The scores and rank of major crops and livestock are shown in Table 6, 7, 8 and 9.

It is evident from Table 6, 7, 8 and 9 that LOK-1 is the most preferred wheat variety but it is susceptible to many diseases. Poshan and Pusa Mangal varities are

Table 6: Matrix ranking for different wheat variety adopted in the village

Parameters	KIs	POSHAN		MALAVSHAKTI		LOK-1	
		Rank	Points	Rank	Points	Rank	Points
Yield	KI-1	A	3	C	1	B	2
	KI-2	A	3	B	2	C	1
	KI-3	A	3	C	1	B	2
	TOTAL		9		4		5
Irrigation needed	KI-1	C	1	B	2	A	3
	KI-2	C	1	A	3	B	2
	KI-3	C	1	B	2	A	3
	TOTAL		3		7		8
Quality	KI-1	B	2	C	1	A	3
	KI-2	B	2	C	1	A	3
	KI-3	B	2	C	1	A	3
	TOTAL		6		3		9
Shattering of grains	KI-1	C	1	B	2	A	3
	KI-2	C	1	B	2	A	3
	KI-3	B	2	C	1	A	3
	TOTAL		4		5		9
Duration needed	KI-1	C	1	B	2	A	3
	KI-2	C	1	B	2	A	3
	KI-3	B	2	C	1	A	3
	TOTAL		4		5		9
Protein (%)	KI-1	A	3	A	3	B	2
	KI-2	A	3	A	3	B	2
	KI-3	A	3	A	3	B	2
	TOTAL		9		9		6
Final Score			35		33		46
Final Rank			2		3		1

recently introduced by the KVK, Ujjain which are not only having high yield but also resistant to diseases. Among different soybean varieties adopted in this region JS-9560 is the most preferred one, followed by JS-9305 and JS-335. Chickpea dollar variety is the most preferred variety, followed by Vishal, JG130 and JG 74.

The different milch animals adopted in this village are ranked based on milk yield, milk quality, disease resistance, rearing cost and cost of the animals. Among buffalo Malvi (desi) has ranked first followed by Murrah and Jaypuri.

Livelihood analysis : Based on wealth ranking a detailed livelihood analysis of villagers was done. The livelihood analysis is drawn from farm families each representing a wealth category. The livelihood analysis of Salakhedi village indicates that agriculture is the major source of income for rich and middle class families. The poor and to some extent, the middle class depends on employment in agriculture and other labour work. Since maximum income comes from agriculture, majority of the expenditure are used for the same. Majority of the farm equipments and livestock present in the village belongs to the farmer placed in the rich category. Major findings from livelihood analysis are shown in Table 10.

During village seminar problems of farmers were discussed and eight problems were ranked by farmers. It is evident from RBQ (Table 11) that low milk production and Termite and rodent attack in wheat crop are the two most important problems of village that needs immediate action. Other important problems have low variance in mean score which indicate that farmers are treating them almost equally important; these are Foot and Mouth disease in cattle, Fusarium wilt in chickpea crop, Pod borer infestation in chickpea crop, Girdle

**Table 7: Matrix ranking for different Soybean variety adopted in the village**

Parameters	KIs	JS-335		JS-9560		JS-9305	
		Rank	Points	Rank	Points	Rank	Points
Yield	KI-1	C	1	A	3	B	2
	KI-2	C	1	A	3	B	2
	KI-3	C	1	A	3	B	2
	TOTAL		3		9		6
Size	KI-1	C	1	A	3	B	2
	KI-2	C	1	A	3	B	2
	KI-3	C	1	A	3	B	2
	TOTAL		3		9		6
Shattering of grains	KI-1	C	1	B	2	A	3
	KI-2	B	2	C	1	A	3
	KI-3	C	1	B	2	A	3
	TOTAL		4		5		9
Duration needed	KI-1	C	1	A	3	B	2
	KI-2	C	1	A	3	B	2
	KI-3	C	1	A	3	B	2
	TOTAL		3		9		6
Price	KI-1	C	1	A	3	B	2
	KI-2	C	1	A	3	B	2
	KI-3	C	1	A	3	B	2
	TOTAL		3		9		6
Final Score			16		41		33
Final Rank			3		1		2

Table 8: Matrix ranking for different Chickpea variety adopted in the village

Parameters	KIs	Dolar		JG-130		Vishal		JG-74	
		Rank	Points	Rank	Points	Rank	Points	Rank	Points
Yield	KI-1	A	4	C	2	B	3	D	1
	KI-2	A	4	C	2	B	3	D	1
	KI-3	A	4	C	2	B	3	D	1
	TOTAL		12		6		9		3
Size	KI-1	A	4	C	2	B	3	D	1
	KI-2	A	4	C	2	B	3	D	1
	KI-3	A	4	C	2	B	3	D	1
	TOTAL		12		6		9		3
Shattering of grains	KI-1	D	1	A	4	C	2	B	3
	KI-2	D	1	A	4	C	2	B	3
	KI-3	D	1	A	4	C	2	B	3
	TOTAL		3		12		6		9
Duration needed	KI-1	B	3	C	2	C	2	A	4
	KI-2	B	3	C	2	C	2	A	4
	KI-3	B	3	C	2	C	2	A	4
	TOTAL		9		6		6		12
Price	KI-1	A	4	C	2	B	3	D	1
	KI-2	A	4	C	2	B	3	D	1
	KI-3	A	4	C	2	B	3	D	1
	TOTAL		12		6		9		3
Final Score			48		36		39		30
Final Rank			1		3		2		4

Table 9: Matrix ranking for different Milch animals adopted in the village

Parameters	KIs	Murrah		Jaypuri		Desi	
		Rank	Points	Rank	Points	Rank	Points
Milk yield	KI-1	A	3	B	2	C	1
	KI-2	A	3	B	2	C	1
	KI-3	A	3	B	2	C	1
	TOTAL		9		6		3
Milk quality	KI-1	A	3	B	2	C	1
	KI-2	A	3	B	2	C	1
	KI-3	A	3	B	2	C	1
	TOTAL		9		6		3
Disease resistance	KI-1	C	1	B	2	A	3
	KI-2	B	2	C	1	A	3
	KI-3	C	1	B	2	A	3
	TOTAL		4		5		9
Rearing cost	KI-1	C	1	B	2	A	3
	KI-2	C	1	B	2	A	3
	KI-3	B	2	C	1	A	3
	TOTAL		4		5		9
Cost of the animal	KI-1	B	2	C	1	A	3
	KI-2	C	1	B	2	A	3
	KI-3	C	1	B	2	A	3
	TOTAL		4		5		9
Final Score			30		27		33
Final Rank			2		3		1

AI-Artificial Insemination
FMD-Foot and Mouth Disease
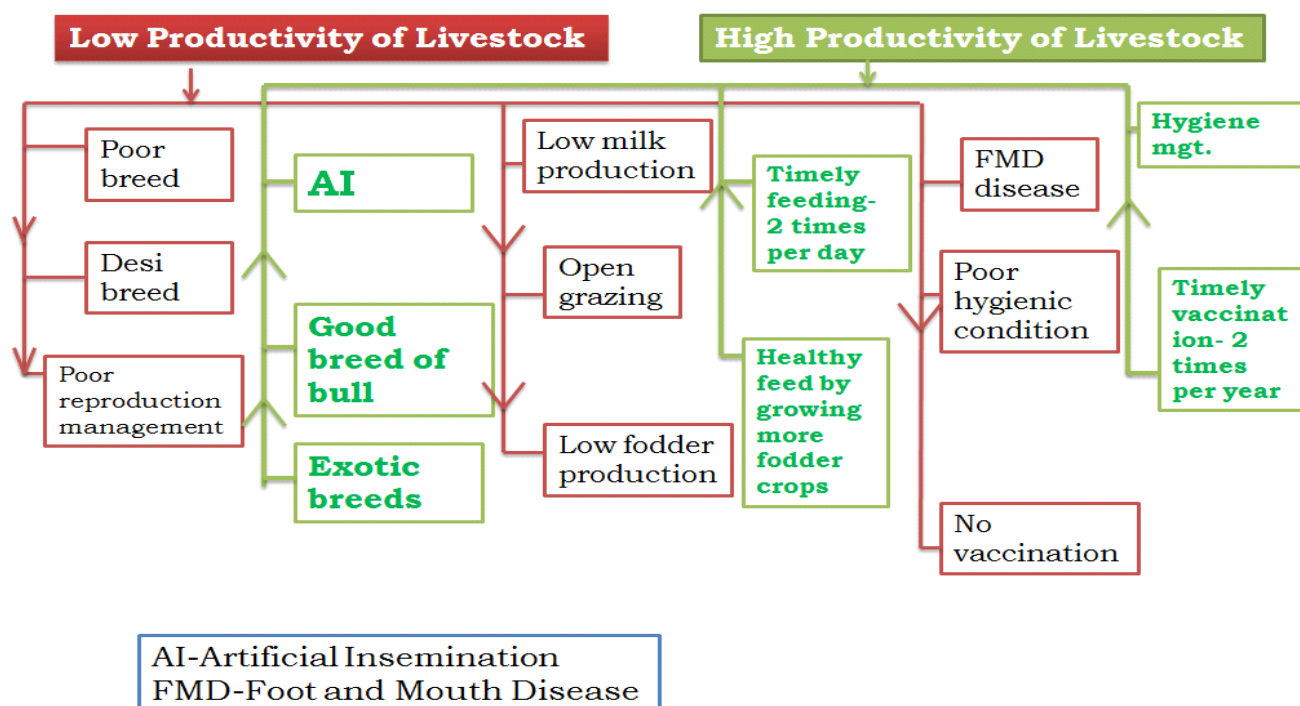
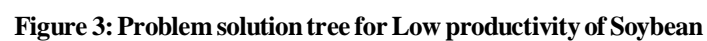**Figure 1: Problem solution tree for Low productivity of Livestock**

Table 10: Livelihood analysis of village Salakhedi

Item	Rich (KI: Babulalji)	Medium (KI: Gaurdhanlal)	Poor (KI: Daya Ram)
Family members	22	12	06
a)Adult	11	07	02
b)Children	11	04	02
c)Senior citizen	-	01	02
Employment	Agriculture Dairy Other	Agriculture Dairy business	Agriculture Labour Dairy business
Assets	Tractor, Thresher, Generator, Seed drill, Three calf, Three buffalo, Two cows, Reaper, Land area- 20 Biga	Tractor, Four buffalo, One cow, One bike Land area- 10 biga	Two buffalo One cow, Two goat One bike
Income (Rs/month)	6,000	4,500	2,500
Source of income	a. Agriculture – 80% b.Dairy- 10% c.Others- 10%	a. Agriculture- 90% b. Livestock- 10%	a. Agriculture- 50% b. Labour- 40% c. Dairy- 10%
Expenditure (Rs/month)	5,000	4,000	2,500
Expenditure	a.Agriculture- 50% b.Food- 20% c.Savings- 15% d.Health- 6% e.Education- 6% f.Electricity- 3% g. Clothing- 2%	a. Agriculture- 47% b. Food- 22% c. Savings- 11% d. Education- 7% e. Health- 6% f. Clothing- 2% g. Miscellaneous- 5%	a. Agriculture- 30% b. Food- 32% c. Education- 10% d. Health- 8% e. Clothing- 6% f. Miscellaneous- 19%
Savings	1000	500	nil
Decision Making	Father	Father	Father
Coping strategy and relatives	Savings	Savings	Borrow from neighbours
Migration	-	-	-

Table 11: Problem ranking of village Salakhedi

Farm Problems in village	Rank given by farmers (N=50)								RBQ	Final Rank
	1	2	3	4	5	6	7	8		
Girdle beetle infestation in Soybean crop	9	7	4	19	2	6	2	1	592.75	5
Lodging of Wheat crop	7	5	3	21	4	7	3		589.25	6
Termite and rodent attack in wheat crop	28	9	10		1	2			614.25	2
Yellow rust in wheat crop	3	2	1	6	17	16	4	1	574.75	7
Low milk production	31	10	6	2	1				617.00	1
Foot and Mouth disease in cattle	16	17	8	2		6	1		606.25	3
Fusarium wilt in chickpea crop	10	6	4	16	3	1			485.25	8
Pod borer infestation in chickpea crop	13	10	15	8	2	2			604.50	4

Low Productivity of Wheat

Lodging of plant

High density planting

Excess seed rate and fertilizer

Short stature varieties

Optimum fertilizer

Normal seed rate

Termite and rodent

Low water in field

Less number of irrigation

High Productivity of Wheat

Proper irrigation

Chemical measures

Yellow rust

High humidity and rainfall

Early sowing & susceptible varieties

Chemical treatment

Timely sowing of resistant varieties

Figure 2: Problem solution tree for Low productivity of Wheat

Low Productivity of Soybean

PEST Girdle beetle Semi looper

Monoculture

Excess use of Urea

Susceptible varieties

Lack of IPM

IPM

Crop rotation

Optimum fertilizer

Chemical measures

Resistant varieties

High Productivity of Soybean

Rotting

Water logging

Flat bed, High density planting, excessive fertilizer

Raised bed technique

Normal seed rate & optimum fertilizer

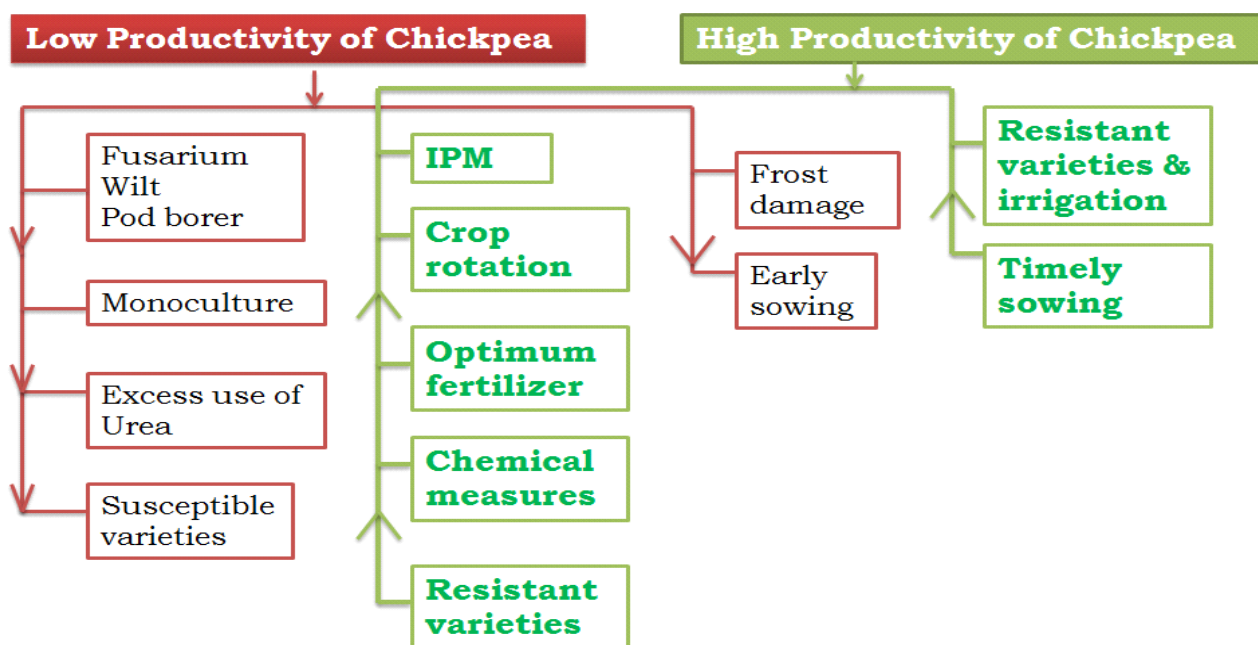**Figure 3: Problem solution tree for Low productivity of Soybean**

Figure 4: Problem solution tree for Low productivity of Chickpea

beetle infestation in Soybean crop, Lodging of Wheat crop and Yellow rust in wheat crop.

Problem Solution Tree : Based on available resources and discussion during village seminar, problem solution trees were made for low productivity of livestock, low productivity of wheat, low productivity of soybean and low productivity of chickpea whch are represented in figure 1, 2, 3 and 4 respectively.

CONCLUSION

Before giving recommendations to farmers, it is very essential to identify their grass root problems and available resources so that the solutions recommended will be accepTable by farmers as well as become sustainable at village level. This study has shown that in this era of ICT where information transfer is quick and digitalised, PRA still has crucial role to play. This study has revealed that Grass root problems of villages can be effectively identified through a systematic PRA and then sustainable solutions and researchable areas can be generated, after all the philosophy of extension is to *'help people to help themselves'*.

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