Wheat Seed Research and Farmers[•]

India has made remarkable progress in research on wheat seeds. Before the Green Revolution, farmers raising one tonne of wheat per acre were considered exceptional, members of the exclusive *One Tonner's Club*. Now farmers raising 2-3 tonnes per acre can be found almost everywhere. Credit for this noteworthy achievement in wheat productivity should go largely to the researchers of wheat seeds. The research on wheat seed continues to promise further gains.

While all this is true, our interactions with the farmers revealed another side of the story. We found that farmers' list of desirable characteristics of wheat seeds was significantly different from that of research scientists. We therefore decided to go deeper into the issue. We discussed the issue with farmers in different parts of Saurashtra region of Gujarat state where we are working for rural development programmes. Adopting the Participation Rural Appraisal (PRA) approach, we created a relaxed atmosphere so that the farmers can express their experiences, ideas, and views freely and easily.

After discussing the problems of farmer-managed irrigation system in the village of Bamanbore in the Surendranagar district, we asked the farmers who were present in the meeting to give us their views on the desirable characteristics of wheat seeds. "What characteristics do you keep in view when you select wheat seeds for your land in this village?" was our question. One farmer replied, "We like the variety that requires less water." We turned to other farmers and asked, "What do you think of this characteristic?" Most of the farmers agreed with the

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first farmer. We assumed that other characteristics would also be cited, and so we suggested that it would be better to note them on paper.

We took out a chart paper and offered a sketch pen to a farmer. As usual, their first reaction was "We don't know how to write such things." A farmer who carried a pen in his shirt pocket was asked to try his hand. He agreed and noted down the first characteristic, "Less Water Required." Another farmer said, "The seeds should not shatter when ripe." Non-shattering quality was noted next on the chart paper. More characteristics were added, and the chart paper started filling up.

When about ten characteristics were listed, we told that we would like to find out the relative importance of each characteristic. We gave the farmers one hundred grains of wheat and asked them to place them on the characteristics listed on the chart. The number of the grains should indicate relative importance of the characteristic.

Using seeds has an advantage over writing down numbers. The farmers can debate among themselves the relative weight of each characteristic while placing the seeds against it. If they change their mind, they can reallocate seeds without messing up the chart. Initially the farmers had placed a large number of seeds against the characteristic "High Yield" but when they found that they were not left with enough seeds for other characteristics, they took away some seeds from "High Yield" and placed them against other characteristics.

When the first round of discussions ended, the farmers had finalised the allocation of seeds. The chart revealed the farmers' the weight for each characteristic. Then we discussed the rank of different varieties of wheat seeds, popular in that village, in relation to each characteristic. The farmers could easily agree on the rank of the three prevalent varieties in relation to each characteristic.

We had a similar discussion with a farmers' group in Hamirpur, a village in Rajkot district. We learned about the farmers' views and their preferences in wheat seeds for sowing. The exercise was completed almost in an hour. The outcome of this exercise is given in Table 1. We employed the same PRA technique in a few more villages. The picture of farmers' viewswhich emerged from these exercises is given in Table 2.

We then approached a few research scientists to give us their list of desirable characteristics and the ralative weight they assigned to each while conducting research on wheat seeds. Only one scientist named Bhalani responded. This was fortunate because he had been on the team of researchers who had evolved the most popular variety called Lokvan. His views are incorporated in Table 2 to facilitate comparison between the perceptions of the farmers and the researcher.

If we look at Table 2, we see that the research scientist has assigned 50 out of 100 marks to "Yield," whereas the farmers, though they gave it the highest marks, had given only 19 marks on average, the range was from 30 to 12. The researcher considered "Pest Resistance" quality next in importance, giving it 19 marks, whereas the farmers assigned it 15 on an average, the range was from 25 to 5. "Time Required for Maturity" is allotted 15 marks on average by the farmers, the researcher believed it deserves only 5.

The following characteristics which farmers have considered important are not even mentioned in the list of the researcher:

Flexibility in Sowing Time Good Taste Good Fodder Would Not Attract Birds Good Appearance Easy Availability (of Seeds) The Plant Should Not Come Out At Harvest Should Not Adversely Affect Soil Fertility Resistant To Climate Changes Oil Content There are only two characteristics which are on the researcher's list but not on the farmers' listnamely, "Easy Thrashing" and "Suitable For Different Areas."

Simply put, the broad question is this: why is the opinion of the farmer not taken into account in agricultural research? More specifically, why do the scientists not consider it useful, even essential, to know farmers' views abouthe importance of different characteristics of the wheat seeds when they decide their research agenda and formulate their research design? After all, research is meant to meet farmers' requirements. They are the users of the research product. If research in the needs and tastes of consumers is considered important in developing consumer products, why are farmers' needs and priorities not taken into account in seed research?

The PRA methodology presented here can be modified if the researchers are interested in trying this approach. For instance, the researcher himself can meet the farmers in different areas served by his research farm and learn in a fairly reliable manner the requirements of the farmers using the PRA technique. His research then would become more meaningful to the farmers, the ultimate users. This would mean that the present system of deciding the agenda for agricultural research has to be altered; not only the senior scientist "above" the researcher will decide it, but the farmers, who are considered "below" the researcher, will also participate in it.

Table 1

Views of Hamirpur Farmers

Characteristics		Weight	Rank			
		(percentage)	Sonalika	Lokvan		
1	Requires Less Water	20	2	1		
2	Yield	16	2	1		
3	Non-shattering	16	2	1		
4	Period For Maturity	15	2	1		
5	Flexibility In Sowing Time	14	2	1		
6	Good In Taste	9	1	2		
7	Pest Resistance	6	2	1		
8	Market Price	3	1	2		
9	Fodder Availability	1	1	2		
10	Others					

100

TOTAL

Note:

The PRA exercise was recorded on August 2, 1996, by the following farmers:

Becharbhai Bhanjibhai Chikani, Dhanjibhai Makanbhai Chikani, Gordhanbhai Ratansibhai Bhornia, Chaturbhai Makanbhai Chikani, Narsibhai Malabhai Bhornia

Chhaganbhai Talsibhai Bhornia

Exhibit 2

Views of Farmers and a Researcher

(Figures Are in Percentages)

No.	CHARACTERISTICS	Weight Given By Farmers In Different Villages (Talukas)							
		Hamirpur	Bamanbor	SKTGSM	Pithvadi	Hirava	Khicha	Average	Researcher
		(Morbi)	(Chotila)	(Savarkundla)	(Savarkundla	(Dhari)	(Dhari)		Bhalani
)				
1	High Yield	16(LOK)	18(LOK)	35(LOK)	30(SONA)	12(LOK)	17(LOK)	21.33	50
2	Less Water Consuming	20(LOK)	13(SONA)	20(LOK)	25(LOK)	11(SONA)	5(LOK)	15.67	5
3	Non-shattering	16(LOK)	17(SONA)	5(LOK)	5(LOK)	8(J-24)	14(LOK)	10.83	
4	Insect and Pest Resistant	6(LOK)	18(LOK)	15(SONA)	15(LOK)	4(LOK)	14(LOK)	12	19
5	Fetches Good Market	3(SONA)	9(SONA)	10(J-24)		8(SONA)	6(SONA)	6	5
	Price								
6	Short Maturity Period	15(LOK)	16(SONA)					5.17	5
7	Flexibility In Sowing Time	14(LOK)			5(LOK)			4.67	
8	Good In Taste	9(SONA)	9(SONA)	10(J-24)	5(LOK)	5(SONA)	6(SONA)	5.83	
9	Good As Fodder	1(sona)				5(SONA)	2(SONA)	1.33	
10	Does Not Attract Birds			5(J -24)				0.83	
11	Good Appearance				10(LOK)	7(SONA)	4(LOK)	3.5	
12	Lodging Resistance				5(LOK)	5(SONA)	2(LOK)	2	4
13	Quick-maturing					8(SONA)	5(LOK)	2.17	
14	Easy Availability Of Seeds					2(LOK)		0.33	
15	Does Not Pull Out Soil At Harvest						5(J-24)		0.83
16	Starch Content					5(J-24)	3(LOK)	1.33	5

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17	Easy Availability Of Seeds at			3(I	LOK)		0.5	
	Reasonable Price							
18	Does Not Adversely Affect					5(LOK)	4(LOK)	1.5
	Soil Fertility							
19	Resistant To Climate Changes					7(LOK)	3(SONA)	1.67
20	Oil Content					15(SONA)	2.5	
21	Easy Thrashing							2
22	Suitable For Different Areas							5
	TOTAL	100	100	100	100	100	100	100

Notes:

(1)Lokvan (LOK),

Sonalika (SONA), and J-24 are the names of the prevalent wheat varieties.

(2) The variety named in the brackets was accorded No. 1 for that characteristic. For instance,

Hamirpur farmers gave first rank to Lokvan among the three prevalent varieties for High Yield. They

gave 16 marks out of 100 to the characteristic of the high yield.

(3) The list of the characteristics was not the same in each village. The blank cell against a characteristic indicates that it

was not considered during the PRA exercise by the villagers. For the purpose of

calculating average the blank is considered as zero.

(4) SKTGSM: Shree Kundla Taluka Gram Seva Mandal