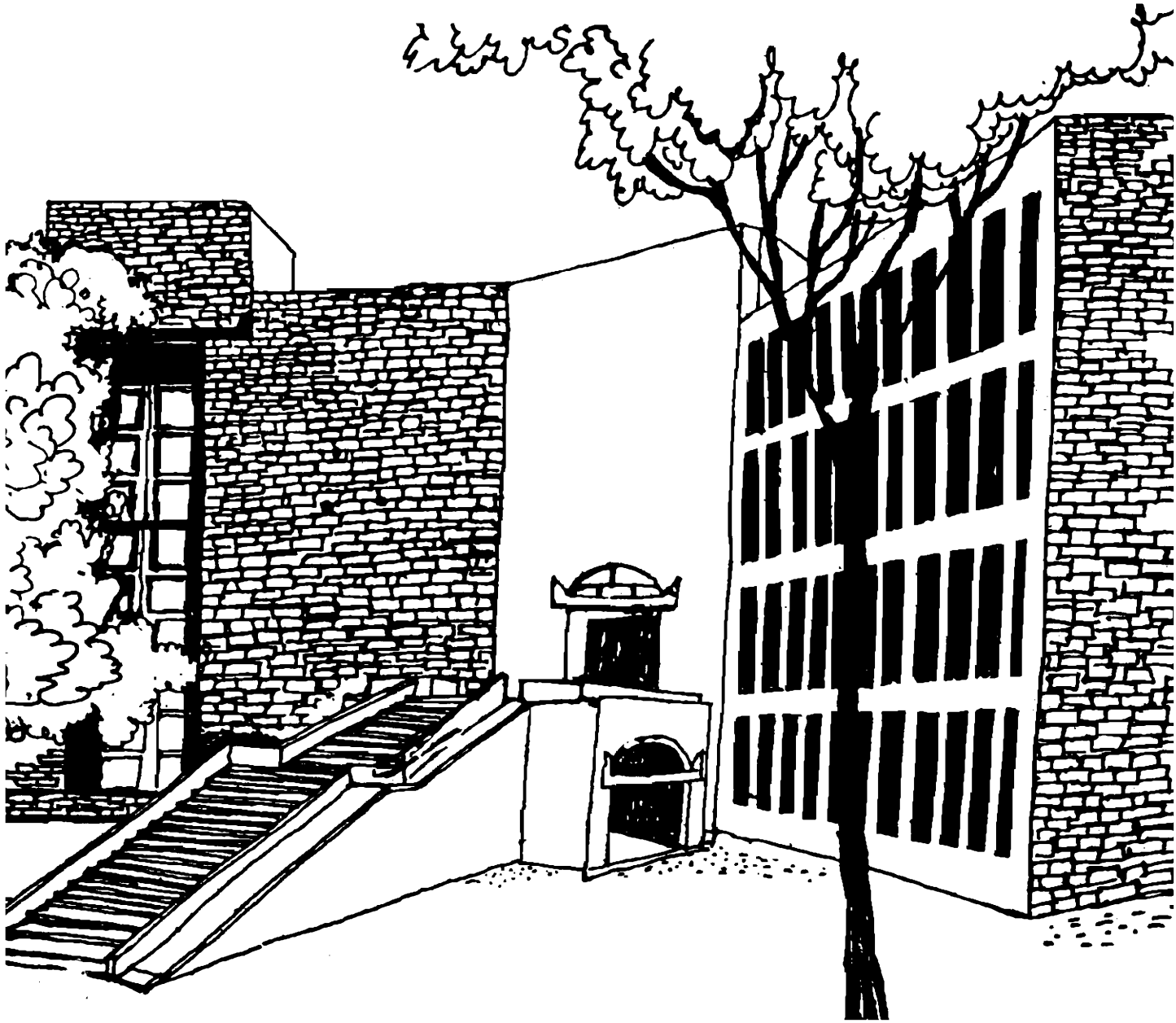
विद्याविनियोगाद्विकासः
IIM
AHMEDABAD

Working Paper



SEED REPLACEMENT PRACTICES

By

Gurdev Singh

&

S R Asokan

W P No. 947
July 1991

INDIAN INSTITUTE OF MANAGEMENT
AHMEDABAD-380 015
INDIA

ABSTRACT

One important reason for low demand for quality seeds is the reportedly low seed replacement rate especially in case of non-hybrids. To investigate the reasons for such practices followed by the farmers is the main objective of this pilot study conducted in Faridkot district of Punjab. The study revealed that contrary to the belief a majority of farmers replace seed of all major crops within four years. In fact, the replacement was reported quicker than the perceived recommended replacement schedule in almost all crops. Even the perceived replacement schedule was much shorter than four years. In some crops majority of them replaced seed every year. However, the seed used by the farmers was rarely of standard quality (certified/labelled). Non-availability of quality seed of crops like cotton was the main reason for use of substandard seed. This may be the factor behind low expected yield as the reason for replaceement which often occurs quicker than expected.

SEED REPLACEMENT PRACTICES

Gurdev Singh
S R Asokan

Introduction

Acceleration of growth in agricultural production in developing countries, it has been increasingly recognised, would depend more on enhancing productivity rather than expansion of area under cultivation. Improved seed combined with other complimentary inputs does make a substantial contribution to increasing productivity. Genetically good quality seed alone can increase crop production upto 20 per cent. Despite such high returns most farmers continue to use crop produce retained from their farms (referred to as own seed hereafter) resulting in low replacement demand for quality seeds. Ideally seed should be replaced every year for hybrids and every four years for open pollinated crops. However, seed is replaced less often than recommended especially in case of non-hybrids.

In order to understand the practices on seed replacement and causes for the reportedly low replacement rate of some seed a pilot study was conducted in a village in Faridkot district of Punjab. A sample of 26 farmers was drawn and a specially designed structured questionnaire was canvassed to gather information on the asset structure; cropping pattern; cropwise seed rate used, output realised, seed replacement practices followed; and

reasons for the behaviour of sample farmers with respect to replacement of seed for different crops.

Profile of Sample Farmers

Table 1 gives the profile of sample farmers. It shows that 11 of the sample farmers belong to marginal and small farm categories. The farm size ranged between Ø.4 hectares to 11.2 hectares with an average holding size of 3.5 hectares. All the farmers get irrigation water from public canal and about two fifths of them also had their own tubewell/pumpset for supplementing the canal water.

Table 1 : Profile of Sample Farmers

(No. of farmers)

	Marginal farmers (upto 2.5 acres)	Small farmers (2.5-5 acres)	Others 5.Ø acres)	All farmers
Size of group	6	5	15	26
Own Tube Well	2	-	8	1Ø
Canal irrigation	6	4	15	25
Bullock (own)	1	2	12	15
" (hired)	5	3	1	9
Tractor (own)	1	2	1Ø	13
" (hired)	5	3	5	13
Sprayer (own)	3	2	13	18
" (hired)	4	2	2	8

All the sample farmers used services of tractor and plant protection equipment. However, only 5Ø per cent of them had tractors. As many as 18 owned a sprayer and five of them were small or marginal farmers.

The major crops grown in the area are wheat and cotton. Paddy, mustard and barley are other crops grown by some farmers. In addition, fodder crops of jowar, berseem and oats are also grown. Table 2 shows the crops grown by different groups of sample farmers.

Table 2 : Crops Grown by Sample Farmers

(Per cent of growers)

Crops	Marginal farmers	Small farmers	Others
Wheat	23.1	19.2	57.7
Paddy	6.6	13.3	80.0
Cotton	20.0	20.0	60.0
Jowar	20.0	12.0	68.0
Barseem	23.1	19.2	57.7
Oats	11.1	22.2	66.6

Seed Replacement Practices

Table 3 depicts the seed replacement behaviour of sample farmers. It may be noted that almost all the cotton and jowar growers replaced seed every year. In case of other crops replacement every year or two has been very common. It is because of this behaviour that delayed replacement was negligible i.e., only in case of one wheat grower, one berseem grower and two oats growers the replacement period was more than four years. In no case it was more than six years. As the replacement practices were quite homogenous among the sample farmers, it would be futile to examine them for different groups of sample farmers on the basis of land holding or ownership of resources.

Table 3 : Actual Replacement Behaviour of Sample Farmers
(No. of farmers)

Years	Wheat	Paddy	Cotton	Bersem	Jowar	Oats
1	11	9	23	17	24	3
2	4	4	1	3	-	4
3	7	1	-	1	-	2
4	3.	-	-	-	-	-
More than 4	1	-	-	1	-	2

Whether this seed replacement behaviour of the farmers was a concious decision based on sound rationale may be clear from the analysis of the responses on their perceived recommended replacement schedule and actual replacement practices followed as shown in Tables 4 and 5 respectively. Table 4 gives the frequency distribution of responses on the perception of the sample farmers about the recommended replacement schedule for different crops. It reveals that a majority of them perceived recommended replacement period within four years. It, however, is amply clear that they lacked this knowledge and their perceptions were primarily guided by the practices they followed as reflected in Tables 3 and 5. Table 5 shows that only four farmers in case of wheat, one in paddy and one in oats could not stick to their perceived replacement schedule. Others followed the exact schedule or even were quicker in replacement. In fact, more than 50 per cent reported quicker replacement in wheat, paddy, berseem and oats. Similarly, more than 50 per cent of cotton and jowar growers reportedly followed the perceived replacement schedule of one year.

Table 4 : Recommended Replacement Schedule for Different Crops as perceived by Sample Farmers

(No. of Farmers)

Crop	Replacement period (years)						
	One	Two	Three	Four	Five	More than 5	Total
Wheat	6	6	6	1	5	2	26
Cotton	13	6	1	2	2	-	24
Paddy	4	4	4	1	1	-	14
Berseem	9	5	3	1	2	2	22
Jowar	18	2	2	2	-	-	24
Oats	3	-	4	1	-	3	11

Table 5 : Perceived Recommended Replacement Schedule and Actual Replacement of Different Seeds

(No. of farmers)

Crop	Quicker replacement	Replacement on schedule	Delayed replacement	Total
Wheat	15	7	4	26*
Paddy	9	4	1	14
Cotton	11	13	-	24
Berseem	12	10	-	22
Jowar	6	18	-	24
Oats	6	4	1	11

* Only in one case the actual replacement was after six years.

What prompts the farmers to replace seed? About 70 per cent of the farmers responded that they would replace seed if the expected yield is low. More than half of the sample farmers would replace seed of existing variety for a new variety. About 20 per cent of the farmers felt the need for replacement of seed damaged by pests. Only 27 per cent of the farmers responded high cost as the reason for delayed replacement decisions.

In case of cotton about 23 per cent would replace seed more often as they can not produce quality seed of their own. About 50 per cent would replace seed if the expected yield is low. About two thirds of the farmers reported that introduction of new variety results in replacement of old variety. Non-availability of quality seed delays the replacement was reported by about one third of the sample. For the same reason about 39 per cent of the farmers had to procure seed of undefined quality available in the market.

The contradiction of low yield as the main reason for replacement of seed and quicker replacement points out that the seed available in the market was of poor quality. This inference is supported by the views expressed by some knowledgeable seed dealers/retailers on the quality of seed supplied by the trade. It was reported that genetically pure ~~seed of any cotton~~ variety in the area may not exist. Even PUNSEED brand cotton seed was found to be admixture. The problem of admixture was more serious where the difference in price of seed and crop produce was bigger.

Sources of Seed for Sample Farmers

Apart from own seed, the other sources of seed for the farmers could be fellow farmers, trade channel, outlets of public/private seed agencies, and agricultural university. Table 6 shows the different sources of seed patronised by sample farmers.

Table 6 : Sources of seed patronised by sample farmers (1990-91)

Source	Marginal farmers	Small farmers	Others	All farmers
Wheat				
Own seed	4	3	12	19
Agrl. Dept.	-	-	-	-
Trade channel	2	2	2	6
Fellow farmers	-	-	1	1
Cotton				
Own seed	-	-	3	3
Trade channel	5	5	12	22
Paddy				
Own seed	-	1	6	7
Trade channel	-	1	6	7
Berseem				
Own seed	1	2	8	11
Trade channel	5	2	7	14
Fellow farmers	1	-	-	1
Jowar				
Own seed	-	-	1	1
Trade channel	5	3	16	24
Oats				
Own Seed	-	1	10	11
Trade channel	-	2	5	7

It is interesting to note that nearly three-fourths (19) of the sample farmers used own seed in the case of wheat. They belonged to all farm size groups. Another six patronised traders for wheat seed. The remaining one procured wheat seed from a fellow

farmer. The surprising aspect is that none of the farmers used branded seed of public or private seed agencies. Even agricultural university is not stated as a source for wheat seed.

With regard to cotton nearly 85 per cent (22) of the farmers purchased cotton seed from trade channel. Other three used their own seed and the remaining one obtained cotton seed from a fellow farmer. In the case of cotton too branded seed was not used. Paddy was grown only by 14 of the sample farmers. Half of them used own seed and the remaining half bought it from traders. Like wheat and cotton, in paddy also certified seed was not used. Jowar was grown by all except one farmer. It was a fodder crop. Only one farmer used own seed while the remaining majority bought it from trade channel. In case of berseem(another fodder) more than half of those who grew this crop purchased seed from trade channel. Another one obtained berseem seed from fellow farmer while the remaining 11 produced their own seed.

Surprisingly, source of seed for sample farmers was consistent across the size of holding groups. Except for cotton and jowar majority of the farmers produced their own seed.

Reasons for Choice of Source of Seed

Table 7 shows cropwise reasons for the choice of particular source of seed. In the case of wheat 35 per cent responded to this question. Two thirds of them stated easy availability as

Table 7 : Reasons for Choice of Source for Seed
(No. of farmers)

	Marginal	Small	Others	Total
Wheat				
1. Easy availability	3	3	-	6
2. Better quality	-	3	3	6
3. Confidence in own seed	6	3	6	15
Cotton				
1. Better quality	-	-	2	2
2. Replacing for new variety	-	1	-	1
3. Not available anywhere else	1	-	-	1
Paddy				
1. Better quality	-	1	4	5
Berseem				
1. Better quality	-	-	2	2
2. Confidence in own seed	-	1	2	4
3. Exchange with grains	1	-	-	1
4. Not available anywhere else	1	1	-	1
Jowar				
1. Better quality	-	1	2	3
2. Not available anywhere else	1	-	-	1
Oats				
1. Easy availability	-	1	-	1
2. Better quality	-	-	2	2
3. Confidence in own seed	-	1	2	3

the main reason for resorting to a particular source. A similar proportion stated better quality as the reason. About 56 per cent of the sample farmers were confident of the quality of their own seed.

In the case of cotton all the four farmers who responded to this question indicated non-availability of seed from elsewhere. Three of them adopted new seed.

In the case of berseem eight farmers indicated the reason for choice of source. Half of them could produce quality seed themselves while other two patronised a particular source for quality. Of the rest one considered exchange with grains easy and the other stated non-availability of good seed from elsewhere.

Only five of the 14 who cultivated paddy responded and reported quality as the criterion for choosing a particular supplier of paddy seed.

Better quality seed and non-availability of seed were the two reasons reported respectively by three and one of the jowar growers who could give some reasons for the choice of a particular source. Similarly, in case of oats only six responded. Of them one indicated easy availability, other two indicated better quality and the remaining three considered their own seed better than other sources.

Discussion with seed dealers and retailers supplying seed to the village revealed that during last couple of years the supply of

all seeds was normal. However, farmers have more faith in seed obtained from fellow farmers and trade channel than in certified seed from public seed agencies. Especially in case of cotton their experience was not all that satisfactory. Even the PUNSEED brand was found to be admixture. Farmers' own selection from crop produce, though genetically not pure, was considered more reliable than some branded seeds.

Since admixtures are a common phenomenon and since factors affecting yield are many, loss in yield is rarely attributed to poor quality seed. The relationship between quality of seed and yield was considered as casual and the channel could explain away the loss in yield due to some extraneous factor(s) and farmers continue to trust the word of trade on quality of seed. Though traders recognise the importance of supply of quality seed, it becomes difficult for them to push good material against price premium.

Importance of Fellow Farmers

It is generally felt that one of the important sources of seed is fellow farmers. In order to find out what made this source popular among the farmers, a set of questions were put to the respondents.

Ten of the farmers resorted seed purchases from the fellow farmers because of new varieties grown by the latter. Other five

patronised this source as the fellow farmers were the registered seed growers of some company/corporation. Also 12 of the sample farmers considered this source less costly. As many as 16 of the sample farmers were not sure about the superior quality of the seed produced by fellow farmers. A large majority of the farmers were of the view that it was convenient to buy seed from fellow farmers as payment could be made later (11), seeds could be exchanged with grains (15) and it involves no transport (16).

Conclusions

Contrary to general belief majority of the sample farmers replaced seed sooner than recommended. However, the replacement was not always done with certified seed. Though farmers have positive attitude towards adoption of new seeds and they are definitely inclined to use quality seeds, their perception about the quality seed was at variance and they lacked knowledge about the recommended seed replacement schedule.

In many cases and in almost all crops the visible replacement of seed was earlier than recommended. Most of the sample farmers replace seed if the expected yield is low. It implied poor quality of seed available to the farmers in the area. Second major reason for replacement is the adoption of new varieties.

To realise the potential of quality seed farmers should be educated through demonstrations about the superiority of the

certified seeds and timely replacement of older generation seeds with fresh lot of certified or quality seed of same or different variety The data from these demonstrations may be analysed and yield and returns from older generation seed should be worked out and compared with that of certified seed. This may be supplemented by the drill box surveys which may be carried out by the Agricultural Universities from time to time to determine the purity and germination of the seed used by farmers. Further timely and adequate supply of quality seeds would help in proper seed replacement decisions at farm level.