

SEED UTILIZATION BEHAVIOUR OF TRIBALS IN RAINFED AREAS

P.D.Verma¹, J.J.Pastagia² and Arti N. Soni³

1 Senior Scientist & Head, KVK, NAU, Vyara, Dist.Tapi - 394650

2 Professor (Entomology), College of Agriculture, NAU, Waghai, Dist.Dangs - 394720

3 Scientist (Home Science), KVK, NAU, Vyara, Dist.Tapi - 394650

Email: drverma@nau.in

ABSTRACT

“Seed belong to no one; it is a gift of life to life itself”

In fact the importance of quality seed in agriculture has been recognized as primary wealth since ancient time. Mannu (200BC) stated that good seed in good soil yields abundantly. Interestingly, there was even an institution such as punishment for selling of inferior seed by traders as a regulatory control over seed quality. Agricultural technology is viewed as a means through which agricultural productivity and production improvement can be made in the livelihood security on sustainable basis in tribal areas. Transfer of technology is one of the policy instruments to accelerate agricultural development through promoting the adoption and diffusion of improved technologies. Despite intensive efforts, the rate of adoption of improved technologies in tribal areas is very poor. The main objective of this study was to study the extent of seed utilization behavior of the tribal's in rainfed areas. A total of 400 tribal farmers from Dangs district of Gujarat were randomly selected from 40 villages. The results revealed that Agro-centres were emerged as the main seed supply agency in the tribal areas followed by co-operative society and Agricultural university. It was also observed that the maximum use of improved varieties including hybrid were in case of paddy, summer groundnut and chick pea. Across communities farmers grow traditional (Ancestral) varieties in Finger millet, little millet, niger soybean and groundnut rainy season. Same trend was observed in case of Seed replacement.

Keywords: seed system, seed use, ancestral variety and improved seed.

INTRODUCTION

India has one of the largest public National Agriculture Research System (NARS) in the world. The country is also a biodiversity hotspot. India's food, nutritional, livelihood and socio-economic security depend upon agriculture and land resources. Seed is a carrier of technology as well as played a pivotal role in world's bio-revolution; since crop productivity is directly related to the genetic potential of the seed planted and will continue to be an essential component for the decades to come. It is estimated that the direct contribution of quality seed alone to the total production is about 15-20% depending up on the crop and it can be further raised up to 45% with efficient management of other inputs. Despite the importance of quality seeds tribal farmers do not distinguish between grain and seed and use common farm produce as seed. The reasons may be; 1. Lack of awareness about the potential of quality seed. 2. The non availability of good quality seed. 3. High seed price. To a greater extent,

this also explains the large gap between attaining levels of productivity achieved in front line demonstration plots and the actual productivity at farm levels. In view of this situation it was felt necessary to conduct a study on seed utilization behavior with the following objectives: 1. To know the source of seed procurement. 2. To know the extent of seed utilization, seed replacement ratio and seed treatment.

OBJECTIVE

To know the seed utilization behaviour of tribals' in rainfed areas

METHODOLOGY

This study was located in Dangs district of Gujarat an area in the Western Ghat mountains region. The study was conducted in 40 villages of Dangs district in Gujarat. Multistage random sampling technique was used to select the respondents. In the first stage the district was divided

in four divisions on the basis of existing cropping pattern. Out of four selected division 10 villages from each selected division were selected randomly at second stage. From each selected village 10 farmers were selected by using random sampling technique at third stage. Thus sample comprised of 400 tribal farmers. The study was limited only for major crops viz Paddy, Finger millet, Little millet, Groundnut, Soybean, Niger, Chickpea, and Pigeon pea. The categories of seed utilization were rectified seed improved seed truthful seed and traditional seed their own seed. The information was collected through personal interview method with the help of well structured interview schedule. A detailed description of seed system for *eight major crops* have been used to support and explain the results obtained through the personal interview method with the farmers.

RESULTS AND DISCUSSION

The discussions were made in the following heads:

Seed supply agencies

The results of the study clearly showed (Table 1) that the majority 82.75 % used the agro service centre (Private shop) for seed procurement followed by co-operative society(16.00%) and (9.00%) Agril. University *i.e.* Krishi Vigyan Kendra. It was also observed that farmers also purchased the seed from Hatt, and mobile shop *i.e.* about 8 %, where as farmers also taking the seed from their neighbors and relatives 8.50 per cent. It was interested to note that only 1 farmer has purchased the seed from Seed Corporation, which clearly indicates the lack of awareness about the seed corporation agency. As the farmers purchased the seed from Hatt and mobile shop without any proper identification reflecting the poor quality of seed.

Table 1 : Source of Seed procurement utilized by the farmers n=400

Sr. No.	Seed procurement agency	No.	Percent
1	Agro centre (Private)	331	82.75
2	Co-operative Society	64	16.00
3	Agril.University (KVK)	30	07.50
4	Seed corporation	01	00.25
5	Hatt	34	08.50
6	Mobile Shop	31	07.75
7	Neighbouring farmers and Relatives	34	08.50

The results clearly indicated the dominance of private sector in seed supply. As the private sector has started to play a significant role in the production and distribution of seeds. Besides, there is wide gap between quality seed production and distribution at farmers’ door way. The public institutions producing seeds are mainly concentrating on open pollinated varieties of 60 per cent and the private seed companies meeting the requirement of hybrid seed and other transgenic crops to fill up the gap. Not only that currently quality seeds are met to the extent of 20 per cent only. Farmers themselves meet the balance of 75 per cent through own saved seeds. The farm saved seeds does not have any quality standards. Many times, non-descript varieties are also used as seeds by the resource poor farmers which result in a low productivity.

Table 2 : Distribution of respondents according to types of varieties of paddy grown n=400

Sr. No.	Variety	Frequency	Percent
1	Paddy (traditional only)	10	02.50
2	Non-hybrid improved variety only	26	06.50
3	Non-hybrid improved variety + others	110	27.50
6	Hybrid + others (serial no. 3 to 5)	364	91.00
4	Hybrid + others	51	12.75
5	Hybrid only	203	50.75

Table 3 : Distribution of respondents according to various varieties of Paddy n=400

Sr. No.	Name of Variety	Frequency	Percent
1	6201	155	38.75
2	IR-28	127	32.00
3	Other hybrid (Not aware about the name)	86	21.25
4	Suruchi	68	17.00
5	Traditional(Bhadush,Bangal iyu,Moriyo, Chansattiu etc.)	56	14.00
6	6444	36	09.00
7	GR-7	28	07.00
8	312	18	04.50
9	Gorkhnath	17	04.25
10	Rupali	16	04.00
11	Kabir	13	03.25
12	Jaya	11	02.75
13	Punam	7	< 2 %

14	Archna	1	< 2 %
15	Bhil	1	< 2 %
16	Rajaram	1	< 2 %
17	Dudhmalai	1	< 2 %
18	Masuri	7	< 2 %
19	US-10	6	< 2 %
20	Sonali	4	< 2 %
21	GR-10	4	< 2 %
22	Gurjari	2	< 2 %
23	Kaveri	3	< 2 %
24	Pionior	3	< 2 %
25	3325	4	< 2 %
26	Ganga	2	< 2 %
27	Resma	2	< 2 %
28	JK	2	< 2 %
29	Sonal	2	< 2 %
30	Champion	1	< 2 %
31	Bomaygiri	1	< 2 %
32	Tulsi	1	< 2 %
33	Kerle	1	< 2 %

It may also be inferred from the table 2 and 3 that the availability of paddy seed is maximum at the farmers' door as compared to other crops. Note only that a total of 33 distinct varieties of paddy were grown in the rainy season. However, in other crops it was not more than two or three varieties. The results also invite the scientists to study the genetic materials available in tribal areas.

Extent of Improved Seed Utilization:

The results showed (Table 4) that hybrids and improved varieties dominated the seed lots of Paddy(Rainy season) and Groundnut (Summer season followed by chickpea whereas Finger millet and little millet, niger and soybean were dominated by the traditional varieties.

The data depicted in table 4 clearly revealed that in case of Finger millet (Ragi) (Table 4) only 5 farmers ,Vari 6 farmers and soybean 4 farmers were grown the improved variety partially where as 98.75 percent farmers using the traditional variety of Nagli followed by Vari 341 (85.25%) and soybean 134 (33.50 %) respectively. In case of Niger *i.e.* all the 241(60.25) farmers grown the traditional variety. It was also observed that in summer groundnut all the 39 (9.75) respondents were grown the improved variety *i.e.* J-11, however in case of Kharif groundnut all the 207 (51.75%) respondents grown the traditional variety of groundnut. In pigeon pea only one farmer was grown improved variety remaining 338(84.5) farmers grown the traditional variety of pigeon pea. In Rabi season gram (chick pea) was selected for the study. The results revealed that 143(35.75%) of the farmers grown the traditional variety, however 58 (14.50%) of the respondents growing the improved variety of Chick pea. The findings of these aspects clearly indicated that the availability of seed is very poor which compel the farmers to grow traditional variety at large scale.

Table 4: Extent of Seed replacement and improved seed utilization

n=400

Sr. No.	Crops under study	Type of seed and number of farmers		Seed replacement interval	
		Improved seed	Traditional Seed	Improved seed	Traditional Seed
		No. (Percent)	No. (Percent)		
1	Paddy	390(97.50)	10(2.50)	Every year	Used their own seed every year
2	Chick pea	58(14.50)	143(35.75)	Two year	Used their own seed every year
3	Groundnut (Rainy season)	Nil	207(51.75)	-	Used their own seed every year
4	Groundnut (Summer)	39(9.75)	00	Every year	-
5	Pigeon pea	01(0.25)	338(84.50)	One year	Used their own seed every year
6	Niger	Nil	241(60.25)	-	Used their own seed every year
7	Soybean	04(1.00)	134(33.50)	Two year	Used their own seed every year
8	Finger millet	05(1.25)	395(98.75)	One year	Used their own seed every year
9	Little millet	6(1.50)	341(85.25)	One year	Used their own seed every year

The probable reason might be that the public sector alone cannot meet all the seed demand of our farmers. The private sector has managed to harness the benefits of technological innovation in some profit oriented segment of the seed sector, as is evident particularly in hybrids. Further, the private sector has an edge over the public sector in capturing market signals and delivering the desired seed product in time. However, there have been instances

of fleecing of farmers through supply of spurious and low quality seeds and charging of exorbitant prices by the private sector. The use of hybrid paddy shows a dramatic increase in the past after the introduction of hybrid paddy in tribal region also established its supremacy in increasing yield and income of the tribal farmers. All the hybrid varieties of paddy are developed and marketed by the private seed sector thus there is need to develop efficient hybrid variety by the public

sector to reduce the monopoly of private sector

Seed replacement

The frequency with which seed is replenished by farmers from external sources is known as the seed replacement rate. Used by commercial seed organizations to forecast the demand for their varieties, the seed replacement rate is defined here as the number of times/year a farmer has replaced the seed of a given variety of a crop grown in the study season since first growing that variety. A higher seed replacement rate is thought to be desirable for improved seed. Seed replacement for the same variety protects against genetic deterioration; replacing seed for the purposes of changing varieties can enhance yield potential.

The seed replacement (Table 4) rate was very poor except paddy. In paddy 97.50% respondents replaced the seed every year *i.e.* hybrid and other improved variety only. However in case of gram 58(14.50 %) farmers have replaced the seed before two years only. No seed replacement was found in case of Niger and kharif groundnut. The seed replacement was very poor (>2.00) in case of Nagli, Vari, Soybean and pigeon pea. In these crops farmers replaced the seed only one time before 1-3 years only, which clearly showed the large scale adoption of traditional variety. The results also revealed that in summer Groundnut all the 39 respondents replaced the seed of groundnut every year.

Seed Treatment

In addition to above results an effort was also made to know the extent of seed treatment to maintain the seed quality for better germination as well as to control some seed and soil born diseases. The results of the study clearly showed that only 3.25 per cent of the respondents follow the seed treatment practice in paddy only. However, in remaining crop the respondents did not adopt seed treatment practice.

In general, the seed replacement rate was highest (Table 4) for hybrid paddy (rainy season) groundnut summer season followed by Chick pea. It was extremely low for farmers' varieties. The reason behind that the farmers replaced the seed of traditional varieties more often during contingency years when local seed supplies dwindle. Seed is than procures from other farmers and relatives or public assistance. Another reason may be that the seed of these traditional varieties is not supply through formal channel at all to satisfy the needs of the tribal's.

Other reason may be the distances to seed sources, in either formal or informal channels, are positively related to the improvement status of the seed, and are higher for major than for the minor millets. The higher the improvement status (generally this also implies higher seed production costs), the longer the distance traveled to procure it. Distances are similar for original and replacement sources-meaning that farmers tend to return to the original source of seed for a named variety in order to replace it. Transfers from one farmer to the next are more localized and proximate expect the paddy, groundnut and Chick pea.

CONCLUSION

It can be concluded from the result of the study that agro service center (Private shop) emerged as the major sources of seed supply agency followed by co-operative society, Krishi Vigyan Kendra, hatt mobile shop and neighbors' and relative respectively. The use of improved variety and replacement of seed was higher in case of paddy and summer groundnut followed by chickpea. However the seed replacement and use of improved variety in remaining crops namely, Finger millet, little millet, niger, kharif groundnut, pigeon pea and soybean was the little. Therefore, the following measures could be suggested to improve the extent of seed utilization of the tribal's.

- (1) There is an urgent need to establish the seed co-operative society with sufficient quantity of quality seed.
- (2) There may also be introduced the concept of seed bank at village level.
- (3) There is an urgent need to start the seed production programme at farmers' field to increase the seed availability at farmers' door.
- (4) It is also necessary to create the awareness about the importance of improved seed through various programmes like trainings, interaction, *shibir* etc.

In nutshell, it may be argued that over the last few decades there has been substantial debate over the best way for science and technology to foster innovation in agriculture and its allied sectors. Current changes at institutional, technological, market and policy level in modern Indian seed sector makes it a suitable case for analysis through the lens of a sectoral system of innovation. Also intuitively the seed sector quite naturally lends itself, as it appeared in other sectors like pharmaceutical, biotechnology, and food processing, to be analyzed as a sectoral system of innovation.

As the countries like Canada has already applied this concept in the analysis of their seed sector.

REFERENCES

- Jaffee S. and Srivastava J.(1994) The role of the private and public sectors in enhancing the performance of seed systems, *The World Bank Research Observer*, 9(1): 97-117
- Jha D. (2001) Agricultural research and small farms, *Indian Journal of Agricultural Economics*, 56 (1): 1- 23
- Morris M. L.(1998) *Maize Seed Industries in Developing Countries*, Lynne Rienner Publishers, Colorado
- Pal S., Tripp R. and Janaiah A.(2000) Public private Interface and Information Flow in the Rice Seed System in Andhra Pradesh (India), Policy Paper No. 12, National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi
- Pal S.,Tripp, R. and Louwaars N. P.(2007) Intellectual property rights in plant breeding and biotechnology: Assessing impact on the *Indian seed industry*, *Economic and Political Weekly*, 42 (3): 231-240
- Patel, R. N., Prajapati, M. R. and Patel, V. T. (2015). Adoption Behaviour of Tribal Farmers for Vermicompost Technology. *Guj. J. Ext. Edu.*, 26(1): 65-66
- Rana R.K., Pandit A., Pandey N.K. and Meena P.C.(2012) Sustaining Potato Revolution: Demand of Seed-Potato in Gujarat (India). *Indian J. Agric. Res.*, 46(3): 242-248
- Singh H., Mathur P. and Pal S.(2008) Indian Seed System Development: Policy and Institutional Options, *Agricultural Economics Research Review*, Vol. 21, January-June 2008 : 20-29

Received : October 2017 : Accepted : December 2017