

Original Research Article

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## A Study on Seed Banking Behaviour of Tribal Farmers of the Andhra Pradesh State, India

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### ABSTRACT

#### Keywords

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The present study has been initiated focusing on tribal farmers knowledge, attitude and manifested behaviour towards seed banking. The study was conducted in Andhra Pradesh state (erstwhile united Andhra Pradesh). *Ex-post facto* Research Design was used in the present investigation. Random sampling method was used to select the respondents. A total of 240 respondents were selected for the study from three districts. The results revealed that majority of the tribal farmers (58.75%) were found to possess favourable attitude towards seed banking. 47.5% of the tribal farmers were found to have medium level of knowledge on seed banking activities. They have knowledge on special storage structures like gunny bags, bottle guard shell, pots, mud bins that occupy less space. Majority of the tribal farmers (62.8%) had high seed banking behavior. There was a positive and significant relationship between seed banking behaviour of the tribal farmers and the variables viz., age, farming experience, land holding, cosmo politeness, extension contact, training, socio-politico participation, risk orientation, storage facilities and religious belief.

### Introduction

Seed is critical input because without viable seed the survival of their household is endangered. With the modernization of agriculture, agricultural practices and cropping patterns have changed and genetic diversity started getting lost. As a result, the genetic base of traditional seed varieties reduced considerably and several traditional seed varieties are now facing extinction. The main reason for this is the lack of seed banks and seed banking behaviour at village /community

level. Farmers, in the process of adopting improved crop cultivars, lost some of their inheritable and accumulated knowledge, innovations and technologies of seed selection, treatment and storage. Considering these issues, promoting the local seed varieties through informal seed distribution systems such as community seed banks/seed banks is the need of the hour in tribal areas. Knowledge on seed banking is required to promote informal seed distribution systems in tribal areas. Very limited research has been taken up in this community seed banks and

seed banking behavior of farmers in tribal areas. In this context, the present study was contemplated.

## **Materials and Methods**

The *ex-post facto* research design was adopted for the study, since the variables chosen for the study have already occurred. Andhra Pradesh was selected purposively for the study. Random sampling method was used to select the respondents. To represent the entire state, three districts from all three regions of the state were selected *viz.*, Adilabad district from Telangana region, Vijayanagaram district from Coastal Andhra region and Kurnool district from Rayalaseema region. Considering the time and resources, only two mandals from each district and four villages from each mandal were selected. Thus making a total of twenty-four (24) villages for the study. From each village, ten respondents were selected for the study. Thus the study constituted a total of 240 respondents.

Knowledge test and attitude scale were developed to measure knowledge level and attitude of farmers towards seed banking. The interview schedule was developed for the study. The interview schedule was pre tested with outside the sample area. The data was collected through interview schedule. The collected data was coded, tabulated, analysed. The findings emerged out of the data was interpreted, necessary conclusions and inferences were drawn. Statistical tools like Frequency, Percentage and correlation coefficient was used to analyse the data.

## **Results and Discussion**

In the present study, seed banking behaviour is operationalised as tribal farmers attitude, knowledge and skill (manifested seed banking behaviour) towards seed banking in terms of seed saving, seed accessibility, seed production, seed storage, use and distribution

to others. Hence the variables attitude, knowledge and seed banking behaviour are discussed together under following headings.

### **Attitude of the tribal farmers towards seed banking**

The study revealed that, the majority of the tribal farmers (58.75%) were found to possess favourable attitude towards seed banking. This was followed by (22.50%) of the tribal farmers with the neutral attitude, and the remaining tribal farmers (18.75%) exhibited unfavourable attitude towards seed banking (Table 1).

The reason for favourable feeling might be due to the habit of seed saving in tribal areas, availability of local seed varieties, low cost of local seed and their preference to eat produces from local seed as it gives more taste when compared to produce from hybrid seeds.

### **Knowledge of the tribal farmers on different seed banking activities/approaches**

The study reveals that (47.50%) of the tribal farmers were found under the medium category of knowledge on seed banking activities. The tribal farmers belonging to the low category of knowledge were found (20.00%) followed by very low (15.83%), high (10.00%) and very high (06.67) level of knowledge (Table 2).

The probable reason for this trend is their favourable attitude towards seed banking and traditional practices of seed saving might have resulted in the medium level of knowledge by the majority.

The above findings are in line with the observation of Valeria *et al.*, (2010).

It is evident from the study that, majority of the respondents gave the answer for the best place for storage of harvested seed (79.17%)

followed by purpose of the stored seed (77%), before storing of seed which operation is required (74.58%), what are the different sources of seed collection in your community (70.83%), name any two indigenous varieties in your community (67.08%), which seed is healthier to human being and environment (61.25%), local seed varieties ensure that good quality seed is always available in tribal areas

(57.91%) (Table 3).

**Knowledge on seed storage structures**

56.67 per cent of tribal farmers had a medium level of knowledge on storage structures followed by low (30.00%) and high level of (13.33%) storage facilities respectively (Table 4).

**Table.1** Distribution of the tribal farmers according to their level of attitude

Sr. No.	Category	Respondents (n=240)	
		Frequency	percentage
1	Unfavourable (6-15)	45	18.75
2	Neutral (16-25)	54	22.50
3	Favourable (26-35)	141	58.75

**Table.2** Distribution of respondents according to their knowledge level on seed banking activities/approaches

Sr. No.	Knowledge level	Respondents (n=240)	
		Frequency	Percentage
1	Very low (6-11)	38	15.83
2	Low (12-17)	48	20.00
3	Medium (18-23)	114	47.50
4	High (24-29)	24	10.00
5	Very high (30-36)	16	06.67

**Table.3** Distribution of the respondents based on the frequency of respondents giving the correct answer to the knowledge test

S.No	Statement	Frequency	Percentage
<b>Fill in the blanks</b>			
1.	The best source of seed in your community (Local seed varieties from tribal farmers)	133	55.41
2.	By using which seed we can conserve genetic material (local seed varieties)	69	28.75
3.	In which way the demand for seed can be fulfilled (community seed banks)	13	5.41
4.	Fungicide used for seed treatment (Thiram/Captan @ 3g/kg seed)	5	02.08
5.	Moisture content should be maintained in stored seed (3–7% seed moisture content)	62	25.83
6.	Before storing of seed which operation is required	179	74.58

	(drying of seed)		
7.	The seed security can be achieved through in tribal areas (community seed banks/village level seed banks)	20	8.33
8.	Seed exchange with in community members is known as (community seed banks)	12	05.00
<b>Multiple choices:</b>			
9.	What is meant by community seed bank (A place where seed can be saved, accessed and distributed)	4	01.67
10.	In situ conservation of seed means, conserving the seed in (natural population)	58	24.17
11.	Can you give the meaning of individual seed exchange? (seed will be exchanged with other farmers)	144	60.00
12.	Which is the best seed in the tribal area? (local seed varieties)	95	39.58
13.	For which purpose the saved seed can be utilized? (As seed for next season)	185	77.03
14.	Products from which seed is healthier to human being and environment? (local seed varieties)	147	61.25
15.	Which seed will be available at a lower price? (local seed varieties)	121	50.42
16.	In which way seed sovereignty can be achieved? (local seed varieties)	37	15.41
17.	Seed accessibility at the community level can be improved through? (Community seed banks)	15	6.25
18.	Which is the best source of seed for small and marginal farmers? (local seed varieties from farmers)	94	39.16
19.	Sustainable use of genetic resources can be achieved through? (local seed varieties)	59	24.58
20.	Seed conservation and exchange at village level can happen through? (Community seed banks)	14	05.83
21.	Farmer's dependence on seed companies can be reduced through? (local seed varieties)	56	23.33
<b>True/False</b>			
22.	Informal seed distribution system means, seed distribution with neighbours, friends and relatives without any formal procedure(True)	71	29.58
23.	local seed varieties ensure that seed is always available in tribal areas (True)	139	57.91
24.	local seed varieties ensure that seed is available at a higher price (False)	111	46.25
25.	The community seed bank become lively hood source of for farmers(True)	05	02.08
26.	Local seed varieties will not give good yield even in dry land areas also (False)	07	02.91
27.	Local seed varieties will reduce input cost for cultivation (True)	84	35.00
28.	Seed treatment necessary for the seed that you use (True)	34	14.16

29.	Empowerment of farmer’s organization can be achieved through activities like community seed banks (True)	14	05.83
30	By using of high yielding varieties indigenous varieties depletion happen (True)	87	36.25
31	Community seed banks can not act as an alternate income generating activity (False)	18	7.5
32	Reason for depletion of seed stock in the villages is use of hybrid seed (True)	114	47.50
<b>One word answer</b>			
33	Indigenous seed variety means? (Farmers saved/produced seed) Ans:	109	45.41
34	Please name any two indigenous varieties in your community?	161	67.08
35	What is meant by local seed fairs? (: local seed varieties are sold by farmers)	58	24.16
36	What is meant by farmer’s right? (Rights are given to farmers for conserving the seed)	8	3.33
37	What is the difference between the local seed variety and hybrid seed? (seed produced by cross-pollinated plants artificially).	40	16.67
38	What are the consequences of continuous using of hybrid seed and replacing the local varieties? (Loss of agro biodiversity)	158	65.83
39	Which is the best place for storage of harvested seed? (Air tighten dry container)	190	79.17
40	Please mention any one pesticide which will control the storage pest? (Beta cyfluthrin and silicon dioxide)	12	05.00
41	Tell any indigenous practice for rodent control? (rodenticide baits)	82	34.16
42	How is the seed distributed from community seed bank? (Through seed exchange or seed sale)	15	06.25
43	Can you give any activity through which we can conserve agro biodiversity? (local seed varieties)	41	17.08
44	What are the popular sources of seed collection in your community? (Natural habitats/friends/relatives/community members, NGOs and govt agencies)	170	70.83
45	How can we establish alternate seed supply in tribal areas? (Community seed banks)	15	6.25

Note: Answers are given in brackets.

**Table.4** Distribution of respondents according to the Knowledge on storage structures

Sr. No.	Storage facilities	Respondents (n=240)	
		Frequency	Percentage
1	Low (2-3)	72	30.00
2	Medium (4-5)	136	56.67
3	High (6-7)	32	13.33

**Table.5** Frequency of respondents according to their knowledge on type of storage structures  
n=240

S.no	Type of storage	Frequency	Percentage
1.	Pots	79	32.92
2.	Bottle gourd shells	92	38.33
3.	Bag storage under the roof on wooden sheets	49	20.41
4.	Bag storage in kitchen/in any other room	158	65.83
5.	Mud bins	119	49.58
6.	Underground Pits	10	04.16
7.	Special storage structures	5	02.08
8.	Community-based storage godowns	0	0

**Table.6** Distribution of respondents according to seed banking behaviour

Sr. No.	Seed banking behaviour	Respondents (n=240)	
		Frequency	Percentage
1	Low (6-13)	41	17.08
2	Medium (13-20)	49	20.41
3	High (20-27)	150	62.50

**Table.7** Relationship between independent variables and seed banking behaviour of the Tribal farmers

S. No.	Characteristics	Correlation coefficient (r)
1.	Age	0.518**
2.	Education	0.063 NS
3.	Farming experience	0.475**
4.	Land holding	0.312*
5.	Social status	0.154 NS
6.	Annual income	0.138 NS
7.	Cosmopolitaness	0.225*
8.	Extension contact	0.321*
9.	Socio-politico participation	0.194*
10.	Transport facilities	0.018NS
11.	Training received	0.265*
12.	Storage facilities	0.249*
13.	Religious belief	0.296**
14.	Innovativeness	0.134NS
15.	Risk orientation	0.208*

\* Significant at 0.05 level of probability

\*\* Significant at 0.01 level of probability NS –Non Significant

**Different types of seed storage structures and methods**



**Bag storage under the roof on wooden sheets in Kurnool District**



**Seed storage in mud bins in Adilabad district**



**Maize cobs are hanged on roof to keep dry and protect from storage pest in Vijayanagaram district**



**Seeds are stored in pot in Adilabad district**

**Seeds are stored with neem leaves and ash to prevent from the storage pest in Adilabad district**



**Farmer saved seed of different crops**



**Tribal farmers are selling their saved seed in the local market**



It could be inferred from the results that a great proportion of the tribal farmers had a medium level of knowledge on storage structures (Table 5). They have knowledge on special storage structures like gunny bags, bottle guard shell, pots, mud bins that occupy less space. They don't have knowledge on Community based gowdams. The same result was generated by Ravishankar (2003).

### **Seed banking behaviour of the tribal farmers**

Seed banking behaviour in manifested form is studied in terms of seed accessibility, seed production, seed storage, use and seed distribution to others.

It was evident from Table 6 that 62.08 per cent respondent had high seed banking behaviour, followed by medium (20.41%) and low (17.08%) seed banking behaviour respectively.

This is due to non-availability and the high cost of HYVs, the habit of seed saving in tribal areas, availability of local seed varieties, low cost for local seed and their preference to food habit from local seed as it gives more taste when compared to produce from hybrid seed.

It is revealed from the Table 7 that, there was a positive and significant relationship between seed banking behaviour of the tribal farmers and the variables viz., age, farming experience, land holding, cosmo politeness, extension contact, training, socio-politico participation, risk orientation, storage facilities and religious belief

As the seed banking is traditional and old practice, hence the variables age and farming experience were positively and significantly related to the seed banking behaviour of the tribal farmers. Because the older farmers are

more traditional. The positive and significant relationship was observed between the variables land holding and seed banking behaviour. This might be due to high input seed cost. The bigger the farm size more input cost is required. Hence the tribal farmers are using the own seed instead of purchasing seeds. The continuous guidance provided by the extension personnel enhances knowledge on recommended technologies in the farming. Hence, the variables extension contact was positively and significantly related with the seed banking behaviour of the tribal farmers. The positive and significant relationship was observed between the variables cosmo politeness and seed banking behaviour of the tribal farmers. This can be justified based on the fact that if the individual is more exposed to the society he can take up the practice of seed banking involving seed collection, production, saving, use and distribution/exchange with others.

Training received by a farmer sharpens the hidden skills and acts as a medium to imbibe any new knowledge or skill in a given profession. Hence, these variables were positively and significantly related the seed banking behaviour of the tribal farmers. Saving and maintaining local seed involves risk of germination. Hence the variable risk orientation was positively and significantly related with the seed banking behaviour of the tribal farmers. If the tribal farmers were having enough storage facilities then only he can save or store the seed. Hence the variables storage facilities were positively and significantly related to the seed banking behaviour of the tribal farmers. Tribal farmers have more faith on god that is why they follow the advices of local religious priest in selecting the seed and other practices of seed saving are traditional. This might be one reason for positive significant association between religious belief and seed banking behaviour of tribal farmer's.

Activities studied under seed banking behaviour of farmers do not demand high cost, complex technical knowledge in terms of education and innovativeness. Probably because of this the association of seed banking behaviour of farmers was found non-significant with variables viz., transport facilities, education, innovativeness, social status and annual income

To increase the seed banking behaviour in tribal areas, to produce and conserve enough quantity of quality traditional seed varieties, improved seed varieties involvement key stakeholders viz., Tribal farmers, extension officers, research organisations and policy makers is essential. Because they are key role players in promoting and maintaining seed banks in tribal areas. Tribal farmers could know the importance of seed banks. They could form Farmers Interest Groups. They should Establish Community seed banks. They need to maintain the adequate amount of quality seeds. Policy makers should establish a cooperative mechanism between the government, private sector and NGO's at all levels.

They should provide financial support for establishment community seed banks. Integration of the informal and formal seed distribution systems is required in order to scaling up. Extension Officers should popularise of seed banks/community seed banks and establishment of the same. They could provide information on available local varieties and seed bank management. Research organisations should conduct research on low-cost quality seed production technologies suitable for tribal areas.

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