Research Paper

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Storage Practices of Pulses in Selected Households

Home Science

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ABSTRACT

Pulses are biologically rich source of protein and essential minerals. Pulses play a key role in improving and sustaining soil productivity on account of biological nitrogen fixation and addition of huge amount of organic matter. The crisis of pulses is gradually firing up its grip due to growth of population and introduction of protein based food industries. The total food grain loss accounts to 9.33 per cent on total food grains production. About 10 per cent of this stored food grain is lost every year due to attack by insects, rodents, moisture, birds, micro-organisms etc. Hence, conducting research in the field of grain storage especially in the sphere of pulses storage is the need of the hour. An attempt was made in this direction to find out the existing storage practices and problems faced during storage of pulses in Anamali and Pollachi block.

Introduction

Pulses occupy an important place in the farming system of India. Pulses are the ancient food crops with evidence of their cultivation for over 8000 years. Pulses are considered as a principal source of protein in India. Pulses play a key role in improving and sustaining soil productivity on account of biological nitrogen fixation and addition of huge amount of organic matter. The major pulses which find important place in our dietaries are black gram, green gram, horse gram, red gram, bengal gram, peas and cow pea. (Venugobal et al, 2012. Srilakshmi, 2003 and Lal, 2007).

The crisis of pulses is gradually firing up its grip due to growth of population and introduction of protein based food industries. There are four ways of increasing the per capita pulse availability. One is the increase the area under agriculture, second is to increase the productivity, third is to control of population and the fourth one is to prevent post harvest losses. Considering the limited and dwindling land and water resources, slow growth of productivity and ever increasing population, minimizing post harvest losses is one of the most effective and economic ways of increasing per capita pulses availability (Pandya and Ali, 2000 and Hazra, 2001).

Storage is done to meet the food and seed requirements between two harvests and during natural calamities like drought, famine and war. It has been revealed that many farmers store food grains in poorly designed and constructed storage structures where the grain is attacked by a wide range of insects and pests. Although losses through insects and rodents are as high as 25 per cent of the annual losses of food grains stored in godowns in India, losses due to insect infestation alone account for five million tonnes. Ten per cent of total food grains produced are being wasted in various ways in the country. Out of 10 per cent 6.5 per cent of food grains losses during storage (FCI, 2004).

Hence, conducting research in the field of grain storage especially in the sphere of pulses storage is the need of the hour. Therefore to serve the very purpose, an attempt was made in this direction to find out the existing storage practices and problems faced during storage of pulses in Anamali and Pollachi block.

Methodology

The study was conducted in Coimbatore district of Tamilnadu state. Anamalai and Pollachi blocks were selected as study area as maximum surplus pulses available for storage. Five villages from each block were selected on the basis of storage of pulses. Five hundred households from the selected village were randomly selected for the study.

To collect details related to this study, it was necessary to include in the schedule questions which would help to elicit information on socio-economic profile of the sample, storage practices adopted, quantum of storage, problems encountered during storage and the measures undertaken to solve the problems. A schedule was carefully drawn to elicit the required information. To check the validity and reliability of the schedule, pre testing was done through a pilot study in ten households. Based on the experience in pre testing, the schedule was modified to avoid ambiquity and complexity.

With the help of the finalized schedule, the survey was carried out in five hundred households. The homemakers were contacted personally one at a time at their convenience. Rapport was developed by explaining the purpose of the study. The required information was elicited following the schedule.

Results and Discussion

a) Socio-Economic Profile of the Selected Households

The socio-economic profile helps to understand the age, education, occupation, marital status, type of family and family size of selected households. Table I shows the socio-economic profile of the selected women.

TABLE I
SOCIO-ECONOMIC PROFILE OF THE SELECTED WOMEN
N= 500

S.No.	Category	Classification	Percentage
1.	Age (in years)	20 – 30 31 – 40 41 – 50 Above 51	16 38 27 19
2.	Education	Illiterate Primary Secondary Graduate Post Gradate Professional	23 27 20 14 11 5
3.	Occupation	Agriculture Government employee Private Business Any other	64 10 7 19 -
4.	Marital status	Married Unmarried Widow / divorce	75 20 5
5.	Type of family	Nuclear family Joint family	38 62
6.	Family size	Small Medium Large	34 46 20
7.	Family Income	Income per month Below Rs.10,000 Rs.10,000 – 25,000 Rs.25,000 – 50,000 Above Rs. 50,000	 23 41 29 7

A high proportion of 38 per cent of the women belonged to the age group of 31- 40 years followed by 27 per cent from 41 - 50 years. Majority of them (27 per cent) had undergone primary education and 23 per cent of women were illiterate followed by secondary education (20 per cent). It was found from the survey that majority (64 per cent) of them performing agriculture as the main occupation. The table indicates that majority (75 per cent) of the women were married and lived in joint families (62 per cent). Forty six per cent of them belonged to medium family with 4-6 members. Forty one per cent of the families monthly income between Rs. 10,000 to 25,000.

b). Storage Practices Adopted and Problems Faced

The aspects discussed under this head are quantity of pulses stored, reasons for storage, duration of storage, storage devices in use, problems during storage, causes for pulses losses during storage and methods adopted to control the losses.

i. Quantity of pulses stored by the selected households and reasons for storage

The small families stored up to 25 kgs of pulses such as black gram, green gram, cow pea, red gram, horse gram, bengal gram and green peas while the large families stored upto 50 kgs of pulses for family consumption

ii. Duration of storage of pulses

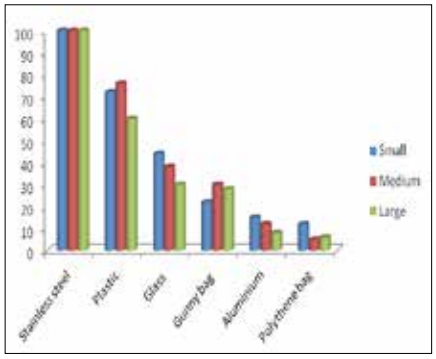
More than 90 per cent families stored pulses upto a period of 12 months for family consumption mainly because bulk quantities of pulses can be purchased from wholesale market in reasonable prize.

iii. Storage devices in use

Figure I reveals the devices used for storage of pulses by the selected households.

FIGURE I

STORAGE DEVICES USED FOR PULSES BY THE SELECTED HOUSEHOLDS



• Multiple response

Air tight stainless steel container was used for storage by all the selected households because of its advantage of ease of handling. Plastic container was used by 72 per cent, 76 per ecnt and 60 per cent of small, medium and large households respectively. Glass container was used by 44 per cent, 38 per cent and 30 per cent of small, medium and large families respectively. Gunny bags and Polythene bags were used by below 20 per cent of households.

iv) Problems during storage

Table II indicates the problems during storage.

TABLE - II
PROBLEMS DURING STORAGE

Problems	Percentage of ouseholds** N(100)		
	S*	M*	L*
Insect and pest attack	100	100	100
Quantity loss	80	77	88
Fungal and bacteria attack	65	58	53
Problem with rodents	30	45	42
Inadequate space	67	49	75
Non availability of chemicals	55	52	62
Seasonal variations	34	30	28

* S - Small, M - Medium, L - Large families
* Multiple Responses

All the households expressed insect and pest attack as the most significant problems faced in storage of pulses. Quantity of loss during storage, fungal and bacteria attack, problem with rodents, insufficient space for storage, non-availability of chemicals to prevent insect attack and seasonal variations were the other major problems faced during storage of pulses.

v) Causes for pulse losses and percentage of loss during storage

There are various factors namely, moisture, insects, rodents, birds, moulds and fungi which are responsible for causing damage to store pulses. Ninety per cent of all categories of households mentioned that insect and pest infestation as the major cause for pulse losses during storage.

Nine to eleven per cent of pulses losses were occurred during storage by small and large families followed 9-12 per cent by medium families. Losses of pulses during storage have been increasing in India every year and its worth of Rs.350 crores.

vi) Methods adopted to control insect infestation during storage

Table III exhibits the methods adopted to control insect infestation during storage.

TABLE - III
METHODS ADOPTED TO CONTROL INSECT INFESTATION DURING STORAGE

Indigenous methods	Percentage of households** N (100)		
	S*	M*	L*
Sun drying	100	100	100
Use of Chemicals	48	65	53
Use of neem leaves	10	4	7
Use of red chillies	8	3	4

* S - Small, M - Medium, L - Large families
** Multiple Responses

The traditional method of sun drying was used by all the households as a pre treatment for storage of food grains to reduce moisture content which coincides with the study of Reyes (1999), revealed that sun drying is the best method which controls the loss by reducing moisture content. Use of chemicals in storage containers was adopted by over 48 per cent of small, 65 per cent of medium and 53 per cent of large households. Use of neem leaves were followed by 10 percent, 4 per cent and 7 per cent of small, medium and large households. Mixing pulses with whole red chillies was practiced by 8 per cent, 3 per cent and 4 per cent of small, medium and large families respectively to reduce insect infestation.

Conclusion

Proper storage of pulses at domestic level is essential to avoid storage losses and enhance food security. A safe storage place must be provided for the pulse until it is needed for consumption and seed purpose. Since pulse production is seasonal, and consumption is continuous, safe storage must maintain grain quality and quantity. This means that pulse have to be protected from insects and pests by adopting organic methods. Constant awareness programme can definitely motivate the households to follow organic storage practices to protect and safeguard the environment.

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