

Indigenous Technology to Protect the Storage Life of Seed.

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Abstract

For proper agricultural prosperity the dissemination of Indigenous technology among rural farmers is necessary need. The trends of utilizing in hazardous chemical for improving the grain yield and protecting the crop has increased but ecological and biochemical pollution is also increasing .Chemical seed treatment no doubt protect and prolong the storage life of seed but some certain toxicity create for beneficial microbes. Storage loss of seed in India is a big problem so botanical seed treatment is beneficial for sustainable agriculture .The application of Neem kernel, Karanj kernel, Sitafal seed extract, and onion, garlic and earthen pots are not new. It also exists but not proper disseminate among rural farmers. Where there farmer easily adopt because it is adoptable, cost effective, Save biodiversity & prolong storage life of seed.

Key word: storage life, botanical seed treatment, ecology, Agriculture

Introduction

Indigenous knowledge is eco friendly and safe both to man and his environment. It is estimated to 60-70% of food grain produced in the country is stored at home level in indigenous structures ranging from bamboo baskets to mud structure, gunny bags and modern bins. Proper storage of seed is necessary to protect from spoilage , increasing keeping quality, germination % and viability% of the seeds .There is evidence of ash , sand ,herbs used in ancient civilization ,which have been credited with mystical power for increasing storage life of seed . Day by day the indigenous technique are lapsing so there is a need to generate awareness and dissemination of the indigenous technical skill among the rural areas of different dry land villages in chitrakoot region is very necessary .the indigenous technique may be the source of research . The modification, reformation and documentation is also required .Traditional technical skill teach us how to best utilization of natural sources for protect storage life of seed.

Methodology

The study was conducted in the selected village of rainfed tracts of Chitrakoot Bhagnpur, Simaria, Rajoula etc in these locules, the villages were selected. Participatory Rural Appraisal Technique were adopted to identify and gather description about the indigenous seed storage practices that are prevalent in the selected villages. Key information including progressive farmers categories, aged farmers, farm women and farm labour were involved during the process of data collection by containing the respondents through one to one interaction and group discussion methods. The storage of grains and seeds were documented. Villages together reliable information about indigenous technical knowledge of rainfed land of Chitrakoot.

Stored wheat seed with wheat Straw

The wheat (*Triticum aestivum* L.) Seed stored with wheat straw is best and common practices utilized by farmers. One layer of wheat straw and 2 layer of packed in proper sun dried wheat in gunny bags and again one layer of wheat straw locally called **Bhusa** broadcast and well air tight. The entire structure is covered around with pigeon pea Straw locally called **Khariya**. The farmers believe that the wheat straw create air tight structure for protecting the wheat seed from moisture.

Wheat seed stored with onions

Wheat seed is stored with onion is another wheat seed storage practices of remote villages of Chitrakoot farmers. In this indigenous technical skill the 2 kg of proper sun dried onions spread the lower layers of cylindrical container and then put on the bread wheat seed. 2 to 3 layers must be adopted. This is also beneficial for protecting storage life of seeds. Farmers believe that the odour of onion is organic repellent for insect.

Red gram storage with common salt (*Cajanus cajan*)

(*Cajanus cajan*) Grain storage they had utilized common available ingredient table salt in their house for storage purpose. In this practices, about 200gm of salt was mixed for a kg of red gram manually. These treated grains were then stored in jute gunny bags and the bags were stitch. Due to this practice, insect were kept away from the stored grains. As salt had abrasive action on insect skin prevent its movement inside red gram grain, for short term inside the storage container. Farmer believes that this practices stored red gram grains, for short term duration of 6-8 months.

Ash seed treatment in sorghum

Ash was mixed with the sorghum bicolor seed at ratio of 1: 4 after the ash treatment, sorghum seed were tied air tight in the jute gunny bags .during storage grains were subjected to losses by various insect e.g., rice weevil (*Sitophilus oryzae*), Rodent (*Tartermia indica*) and Mite (*Oligonychus indicus*) farmers strongly believe that ash controlled these losses considerably stored the sorghum grains for 6 month without any storage pest problem .

Ragi storage with Neem leave

Neem (*Azadirachta indica*)leaves the storage of Ragi .the strong odour of these leaves keep the storage pest like lesser grain borers (*Rhyzoperth dominica*),saw toothed (*Oryzaephilus surinamensis*) and flat grain beetle (*Cryptolestes minutus*) away being very cheap and simple most of the farmer followed this technology to get rid of storage pest than to rely on costlier chemical treatment Neem leave being organic repellent were also safe to use .

Camphor use in stored grain

In this practice about 1gm of camphor piece per 5 kg of grains was placed as such in jute gunny bags. This practice of placing camphor inside the grain storage bag repelled the storage due to strong odour emanated from camphor. Short term storage of grains up to 3 months was possible.

Pungam leaves in paddy storage

In this method fresh pungam (*Pongamia glabra*) leaves were placed as layers in between the gunny bags arranged one above other in store rooms .these leaves acts as a repellent against grain moth (*Sitotroga cerealella*) and rice weevils (*Sitophilus oryzae*). The storage odour released from pungam leaves avoided the pest attacked.

Storage of vegetables seeds with cow dung

Vegetable grower stored the seeds indigenous which may be used for sowing next season .after proper drying the seed were stored in cow dung .farmer s collected fresh cow dung and made, plate like round shaped structure by tapping it with hand locally called varati vegetable seeds such as ash gourd (*Benincasa hispida*), Bottle gourd (*Lagenaria siceraria*) were then embedded in cow dung and then dried under sun for 2-3 days. After drying the seed get stacked on the varati. Varaties were then stored in open / inside wooden box stored seed in this method up to one year. Farmers believed that cow dungs have immunostimulant properties increase the germination (90%) and viability of the seed considerably. Fresh cow dung has to be used for effective storage.

Paddy husk in managing storage pests

In paddy (*Oryza sativa*) Angoumois grain moth (*Sitotroga cerealella*) and rice weevil (*Sitophilus oryzae*) damage was severe. Farmers stored the paddy grains in earthen pots and placed paddy husk in top layer (5cm) above it. Farmer had found that storage pests unpreferred these earthen pots stored with paddy husk.

Mud pots in grain storage

Farmers perceived that grains and seed materials when stored in earthen pot prevent most of the storage pests. For this they had made mud pot of different capacity and size with the help of clay and soil. In this practice, grains and seed materials were sun dried and cleaned before storing in pots. First farmers placed a circular ring like structure locally called **Kothila** made of paddy (*Oryza sativa*) straw on the floor. Above that ring they placed the pots filled with grains the pots were arranged one above the other and the top most pot was then closed with a lid. This arrangement was usually made inside the house at the corner region. The grains or seed materials stored in this mud pots were kept safe away from wide range of storage pest for nearly 6 months. After 6 months the grains were taken out and subjected to sun drying and again stored in mud pots.

Seed seeping in botanicals:

Soaking of loose smut infected wheat seeds in 3% onion or 4% garlic extract at 30°C for 29 hours brings down the infection, however, soaked seeds cannot be stored for more than 10 months.

Some common stored insect pest during observation



Figure 1 Angoumois Grain Moth



Figure 2 saw toothed



Figure 3 confused



Figure 4 pulse beetle

Result and discussion

After completion of survey the result are summarized following

The 4 village of rainfed tracts of chitrakoot the indigenous technique are lapsing drastically. In Rajoula village no any earthen pots locally called **Manda** are available. The village of Bhaganpur one **Kothila** is present at the home of Ram Balak Patel. There are numbers of farmers using sulphas tablate in the store room .Steal made pots are generally used for storing grains in four villages of Chitrakoot. The neem leaf, onion, and wheat straw are frequently used and suggested me for quality storage technique. The village of Bhaganpur a farmer whose name is Dadola Prasad Pandey is using a novel technique for storage of vegetable seeds in fresh cow dung.

Conclusions

Insect damage in stored grain and pulses may amount to 10-40% in the past ,insect infestation was often a less serious problem because farmers cultivated traditional varieties which although low yielding but resistance to insect attack .however the introduction of high yielding varieties has resulted in increased storage losses, as these varieties are usually susceptible to insect damage. Hence, storage of grains and seeds without pest infestation is essential. Indigenous

practices have advantages over outside knowledge. It has little and no cost and is readily available.

References

- 1 .Pushpamma P& Rao K C,Pigeon Pea Production , Processing &Utilization In A.P ,*In Proceeding of The International Workshop On Pigeonpea* (ICRISAT Patancheru ,A.P),2(1980),435-441
- 2 .Dhirendra K and Bhale M.S, *Seed Technology Scientific Publisher India Jodhpur* (2000) 40:211
- 3 .Kanwar P&Sharma N,An Insight Of Indigeneious Crop Storage Practices For Food Security,Agrotechnology and Socio Economic Aspects, Edited By Kanwar SS, Praveen K Sardana & Satyavir (SAARM,India)Isbn:81-87267-06-2,2003,175-179
4. Channal G, Nangur S& Nanjayyanamath C, Indigenous Grain Storage Structures, *Leisa India*, 6(3) (2004) 10.
- 5 .Natrajan & Santha Govind, Indigenenous Agricultural Practices Among Tribal Women, *Indian Journal Traditional Knowledge* 5(1) (2006)118-126
6. Nagnur Shobha, Channel Geeta &Channamma N, Indigenous Grain Structure And Method of Storage, *Indian Journal Of Traditional Knowledge* 5 (1) (2006) 114-117.
7. Karthikeyan C, D Veeraragavathathama & D Karpagam, Traditional Storage Practices, *Indian Journal of Traditional Knowledge* 8(4) (2009) 564-568.