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Golden Research Thoughts

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Abstract:-

The present study was carried out during 2013-2014 to assess the current status of various traditional food grain storage practices followed by farmers in different villages of Nandurbar district of Maharashtra state. The storage practices were found to vary depending upon the climatic conditions and rainfall. In traditional method of storage, farmers are depending on local resources and practices. Observations revealed that a large number of farmers still practice the traditional storage system such as use of natural products like dry neem leaves, wood or cow dung ,ash, smearing of neem oil, turmeric, lime powder and camphor for effective storage. These eco-friendly methods of storage food grains in use since a very long period have withstood the test of time.

INDIGENOUS FOOD GRAIN STORAGE PRACTICES FOLLOWED BY TRIBAL FARMERS OF NANDURBAR DISTRICT

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INTRODUCTION

There are many traditional practices followed by age old farmers of Nandurbar. It has been estimated that losses alone contribute to the loss of 20% of total food grains produced India. Even after their strenuous efforts for producing crops, the farmers are struggling hard to protect their food grains from various conditions causing damage to them. Large number of farmers is storing their produce in traditional methods such as dry neem leaves, wood or cow dung, ash, smearing of Neem oil, turmeric, lime powder and camphor and so on. Most of these practices which exist today as indigenous practices have their origin in the distant past. The utilisations of locally available indigenous practices are meagre. These methods protect the food grains, do not cause health hazards apart from being eco-friendly, cheaper and locally available materials. Hence, a study was undertaken to collect and document the details of various traditional practices available among the farmers so as to preserve and propagate them for use by the future generations.

METHODOLOGY:

The present study was undertaken to identify the various food grain storage practices. The study was conducted in Nandurbar district. Parts of the district fall in three agro climatic zones i.e., the western Maharashtra plain zone, western ghat zone and sub mountain (hilly) zone. The storage practices vary depending upon the climatic conditions and the rainfall. Information was documented by using Rural Appraisal Techniques (PRA) like observation and discussion. Key informants including progressive farmers belonging to small, marginal and big farmers, farm women and farm labourers were involved during the process of data collection.

RESULTS AND DISCUSSION:

Household practices using locally available products are efficiently used for protection of food grains as they have advantage over scientific methods because of their low cost or easy availability. It comes from the combination of skills and knowledge of local peoples which they acquire through their interaction with environment and experiences. By using household products quality of the grain for feeding purposes will not be compromised. Here are the some home strategies adopted for the protection of food grains.

TRADITIONAL STORAGE PRACTICES:

Since ancient times the use of natural resources for safe storage of food grains is adopted by rural peoples. The logic behind the use of these resources is very simple like they are user friendly, easily available and directly associated with scientific reasoning. These practices are generally based on locally accessible and available natural resources. An effort is made here on the collection of traditional methods used by rural peoples of Nandurbar district.

1.Use of Dry Neem Leaves

Neem leaves are used by a large number of farmers against household, storage pests and crop pests because active ingredient Azadirachtin, found in neem leaves, acts as an insect repellent and insect feeding inhibitor and other anti-parasitic, sterilant, anti-fungal and non-toxic qualities there by protecting the wheat grains, paddy, little millet, pulses and seed from spoilage. According to study undertaken by Lokanadhan et.al that Neem leaves not only kills pests but also affects them negatively by acting as feeding and oviposition deterrence, mating disruption, inhibition of growth etc. Collect fresh leaves from plant and dry them in shade, directly mix in food grains or put in cloth bags and placed at the top, middle and bottom of the container then sealed it. Farmers perceived this method to be very economical and moderately effective (50%) in protecting the storage pulses, cereals, legumes and oilseeds from insect pests. It is safe, cheap and effective method. This practice could be present from pests even up to one year.

2. Use of Turmeric (Haldi):

Turmeric powder is another good alternative method to prevent the grains from insects and pests. Turmerones and arturmerone are the components which act as insect repellent in turmeric.This can be used at the rate of 40gm per kg of grains. Rub the grains gently with turmeric powder and shade dried for half an hour before storage. Turmeric can be used in raw form also for protection. Its strong smell and insecticidal properties keep the insects away from food grains. This treatment gives a long lasting protection up to 6-8 months and equally safe for consumption. A few respondents used turmeric powder at the bottom of the container in the middle and top of the container. This method can be used for rice and wheat. Kausarmalik and Rizwana noted in their study that turmeric has pesticidal, insecticidal and anti-fungal properties and Tribolium castaneum is generally known as red flour beetle attacked the stored grain products like nut, spices, beans, cereals, seeds.

3 .Uses of Spices:

Sometimes local practices used by farm women used two dried red chillies in the stored items to provide protection against insects and pests in food grains at household level. Insecticidal properties of

garlic stops the multiplication rate of insects hence control the infestation. Dhaliwal and Gurdeep highlighted in their study that cloves of garlic placed in layers in rice and tightly close the containers where stored food items are kept. Bitterness of cloves and black pepper kept the insects out of reach, put them on top of the storage item and sealed the container properly.

4 .Use of Sweet flag Rhizomes use as pest control agent:

Take 1 kg of sweet flag rhizomes for 50 kg of grains. Make it powdered and put in a cloth pouch which should be placed in the container where grains are stored. (Karthikeyan et.al).

5 .Use of Salt:

Since ancient times common salt (NaCl) was used as preservative in various food items to avoid fungal and bacterial infections. 200 gm of salt is mixed with 1 kg pulses manually and then grains are stored in jute gunny bags and stitched properly. However, it is found that this method is very effective and affordable but only for short duration like 6 or 8 months only. Salt has a hygroscopic and insecticidal property (Manju et.al). Salt had abrasive action on skin of insects thereby preventing their movement inside the storage containers and as a result their growth in the storage box was inhibited. Due to this practice salt helps in keeping the grain dry by absorbing the moisture thus avoiding spoilage and hence aid in safe storage. This practice was perceived to be moderately effective and affordable in cost. Salt was used to store red gram, Bengal gram, black gram green gram and other pulses and legumes.

6 .Use of Lime powder

Farmers use another cheap and easily available source lime (calcium carbonate) for pest control. Powder the lime and mix it uniformly with rice grains and stored them in gunny bags at dry place. The lime had a property of irritating smell keeps insects away and prevents them to multiply (Kartikeyan et.al). Generally 10 gm of lime is used to treat 1 kg of grains. This treatment provides long lasting protection against pest attack

7 .Use of wood or Cow dung Ash

Mixing ash with grain makes the entry of insects in grain a difficult task and causes physical and physiological injuries to the insects. Besides, ash is a fine powder chemically inactive but with insecticidal power. The ash dust that reduces the relative humidity of the storage condition could also dry the grain surface. Egg laying and larval development of the beetles could be hampered because ash dust covers the grain seeds. It might also affect the insect movement to search for mating partners and friction of the dust particles with the insect's cuticle leads to desiccation and hampers the development of the pests.This practice could avoid the wide range of storage pests like pulse, beetle and fig moth for the 6-8 months. If grains are stored for a longer period, then after 6 months the grains and pots are sundried and again filled with fresh ash. Wheat grains are also stored by mixing with cow dung ash which is desiccative and insecticidal in nature. The scientific reason of using ash is that ash contains silica which along with being harmful to insects is also harmful to insect pests according study conducted by Dhaliwal and Gurdeep. This method is still recommended as a cheap and safe control method. To be efficient, one should use at least 5 % of ash. Ash is an inert dust that affects the respiratory system of the insect and may kill it by suffocation.

8. Use of Matchbox

It's almost oldest method used by ladies at houses for storage of food grains and still use effectively. They keep match boxes in layers. Generally 6-8 matchboxes kept at the middle, bottom and top of the container and tightly close the lid of the container. Phosphorous in the matchsticks have strong repellent properties which help to avoid the infestation.

9. Use of Neem oil:

Application of neem oil on pulses seed storage treatment for pest control was one of the familiar and traditional practices followed by farmers. According to study conducted by Lokanadhan et.al neem oil had several properties like repellence, feeding, and ovi-positional deterrence, growth inhabitation etc made it popular storage item and it almost kills the insect even at its egg stage, so that infestation stops early. It prevents seed grains, pulses from infestation of weevils, red flour beetles, long headed flour beetle and fig moth etc. For 1 kg of pulses seeds 20 ml neem oil is used, applied manually to cover seed completely. Neem oil mixed with coconut oil/castor oil (1/1) show more effective results and soybean oil, groundnut oil and corn oil can be used as protectant. Citronella leaves extract shows more effective results in the eradication of pest infestation.

10. Use of Camphor

Camphor was used to store both cereals and pulses to repel a wide range of storage pests. Placing 1gm of camphor pieces per 5 kg of grains in the jute gunny bags. Due to the strong odour emanated from camphor keeping inside the storage bag repelled the pests (Kartikeyan et.al). This practice can be used to for short term storage of grains up to 3months.For subsequent storage, the grains were sundried and fresh camphor was kept in the bag.

CONCLUSION:

Continuous availability of food grains throughout the year is only possible through safe storage practices at house hold level. Tribal farmers of Nandurbar district have been practicing traditional method of storage of food grains since time immemorial. This collection of knowledge is of great significance in conserving and maintaining sustainability of the environment. The safe storage practices discussed above have advantages over due to their low cost, easy availability, safe to use and eco-friendly nature.

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