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Assessment of Mungbean Seed Longevity Conservation Strategies among San Mateo Folks

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Abstract

Seed storage plays a vital role for the production of high yield, longevity, vigor, and quality. Mungbean seed decreased its viability if it is not stored properly. The respondents of the study considered 100 mungbean farmers that were randomly selected. Data were collected using a structured questionnaire and focus group discussion. The data revealed that farmers are still doing manual harvesting and sun drying and majority of the respondents are using mechanical thresher. Findings also revealed that majority practiced the traditional way of storing seeds. The farmers must be provided well-suited methods or technology to assure quality and condition of the crop.

Keywords: *Longevity, Mungbean, Storage, Technology, Quality*

Introduction

Seed storage is the an effective and widely used method for the conservation of plant genetic resources, particularly for species with orthodox seeds that could be reduced to low moisture content and stored at freezing temperatures without increasing longevity. (Nanduri, 2017) In order to minimize the risk of loss of viability during storage and because of its association with high germination and vigour, seed durability or storability has become a trait of interest to seed breeders. (Hay et. al., 2018)

In storage warehouses or containers, the conservation of seed quality and seed longevity depends on a number of factors. Low moisture content and low temperature typically minimize seed viability losses, and various combinations of moisture content and temperature can be used to prolong seed viability during storage. (FAO, 2018) A sort of information that has grown into the culture and has been passed down from one generation to another generation is conventional storage methods. Some conventional grain storage methods are unique to society's culture and differ between cultures. In order to minimize the losses incurred after harvesting, farmers assess such adequacy in pre-storage drying by using moisture-proof and properly aired storage structures. (Mobolade, 2019)

Generally seed processing uses a variety of handling procedures that necessary to attain clean, pure seeds of high physiological quality which can be processed and easily handled during subsequent processes, such as pre-treatment, transport and sowing, where applicability differs depending on seed form, condition of the seeds at collection and potential storage time. In order to preserve seed viability over an extended period of time, storage conditions are important. Therefore, this study will be conducted to examine various strategies of mungbean farmers in processing and storing their mungbean seeds. The findings of the study could help the mungbean farmers to determine the suitable and other storage practices of different mungbean farmers and provide additional interventions to the farmers.

Methods

A total of 100 mungbean farmers were randomly selected in the study. A structured questionnaire and focus group discussion were used to collect all the information's needed. All the respondents were informed about the purpose of the study and to interact freely. The collected data was computed using percentage and then analyzed to fulfil the objective of the study.

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Results and Discussion

Table 1. Harvesting and Threshing of Mungbean

Harvest Maturity	Percentage
70% - 80%	23%
81% - 90%	65%
91% and above	12%
Time to Start Harvesting	
5:00 am – 6:00 am	65%
6:01 am – 7:00 am	28%
7:01 am – 8:00 am	2%
4:00 pm – 5:00 pm	5%
Method of Threshing	
Manual	29%
Using Mechanical Thresher	71%

Table 1 shows the different harvesting and threshing activities conducted by the mungbean farmers. It shows that majority of respondents (65%) choose to harvest their mungbean if 81% - 90% of the pods are mature. Harvesting too early and too late could result loss of immature pods and losses from pod shattering during the harvest season, respectively. This farmers practice is similar to the Australian Mungbean Association, the ideal stage of harvest to maximize yield and quality is when majority of pods are physiologically mature and 90% of the pods have turned yellow through to black.

It also shows that 65% of the respondents choose to start harvesting mungbean from 5:00 am to 6:00 am, this is to avoid harvesting during the middle of the day. The pods of the mungbean are brittle and thin so if it harvested dry day shattering can be a problem during the harvesting.

After harvesting, mungbean was dried through sun drying. 71% of the respondents used mechanical thresher while 21% of respondents used manual threshing by placing dried pods in the sack and beating it with a stick or walking over the pods until all seeds severed from the pods. This only implies that most of the farmers uses mechanical thresher in order to save their time and effort. The maturity percentage, time of harvesting and method of threshing are very important factor to consider to lessen the post-harvest losses and to ensure the quality of seed for storage. It supports the study of Kumar (2017), harvesting timing and method are critical factors dictating the losses during the harvesting operations.

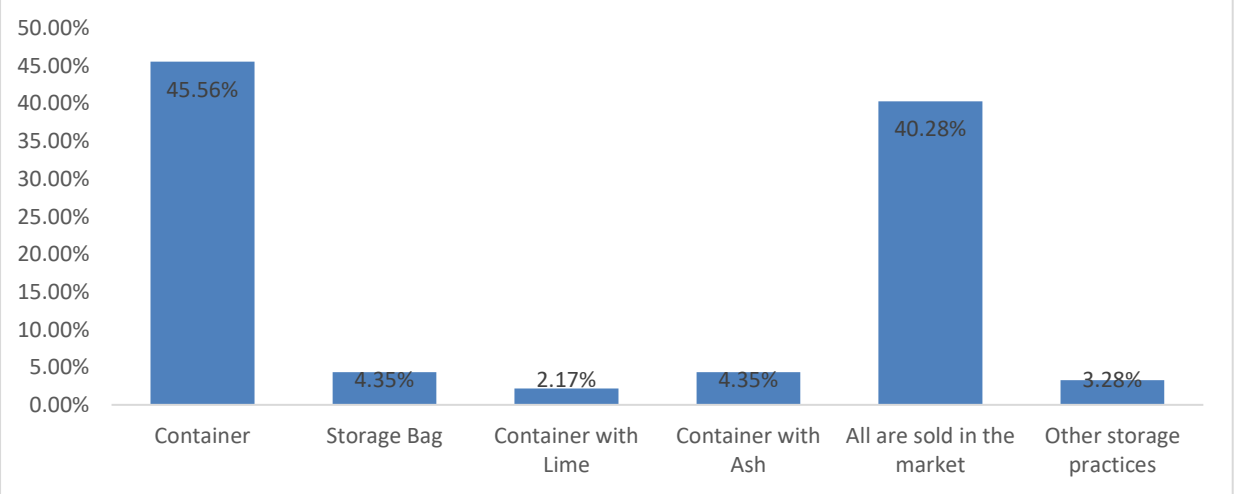

Figure 1. Storage of Mungbean

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Prior to storing the mungbean, farmers dry the seed through sun drying. The figure 1 shows the different storage practices by the respondents. This means that most of the respondents (45.65%) practiced the used of container in storing their mungbean seeds. It also shows that there are farmers (40.28%) that never stored their harvest and directly sold it in the market and some of the other respondents used storage bag (4.35%). There are also farmers that put some additives in their containers such as lime (2.17%) and ash (4.35%) while other respondents practiced different ways to prevent attack of insects and longer shelf life of mungbean.

The result shows the respondents stored their mungbean in the traditional way without scientific basis and cannot guarantee to protect the mungbean against insect infestation, mycotoxins production, nutrient loss and discoloration. According to the result of the focus group discussion, most of the respondents opt to change their way in storing mungbean because it has been their practiced for many years.

Findings from Focus Group Discussion (FGD)

The harvesting of mungbean is performed manually which is labor intensive and slow process. Most of the respondents has a small farm while the others depend only if someone will call them to harvest for others.

In the case of Ms. Aguilar, some of harvested mungbean was directly sold to the buyers while the others are stored as their source of food and used next mungbean season. She exposed the mungbean seeds through sun drying and put them in a container. She has been doing it for 40 years that is why she is confident on her practiced in storing mungbean.

The different storage practices are adopted and have been practiced within their family. Since they never observe or encountered problems in their storage practice, they will continue doing it.
In spite of the traditional or common practices in storing mungbean seeds there are still farmers that are willing to adopt new technology to ensure their mungbean will not be easily deteriorated.

Conclusion

Seed is a living matter and proper storage is very important to avoid deterioration. Mungbean should be harvested at the point of natural dispersal and careful post-harvest handling techniques must be maintained to ensure seed quality. Based on the result of the study, harvesting is done manually and dried under the sun and most of the respondents are using mechanical thresher. They also adopt the traditional way of storing their mungbean seeds by putting it in a container, storage bags and some are putting also additives inside the containers. Therefore, it is needed to further promote new technologies that can play a critical role to alleviate post-harvest losses and increase the farmers' revenue.

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