

Studies on Storage of Vegetables by Local People of Mayurbhanj District in Odisha, India

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ABSTRACT

A study on storage of fresh vegetables by the local people was conducted in some blocks of Mayurbhanj district in Odisha, during 2018. The information was collected from eight blocks i.e. Chandua, Suliapada, Barasahi, Shamakhunta, Bangiriposi, Baripada sadar, Udala and Kaptipada. During the interaction with the local people, it was observed that different traditional methods like drying, wrapping or covering with some specific leaves and straw, coating with red soil etc are used for storage of various vegetables. Besides, they use wet sand for storage of ginger, carrot, and other tubers, and preserve onions and garlic in bundles hanging from the bamboos. Discussion with the people and visit to their storage site, revealed that the percentage of rotting of vegetables was decreased by 30 to 40 percent following these methods compared to normal damping/packaging. The storage of vegetable helps them self consumption as well as earning more money during off season. Though, the traditional method of storage of vegetable is environment friendly and cost effective for the people, there is need to encourage the use of improved varieties, provide storage facilities and adequate control measures for the socio-economic development of people in tribal dominated area of Mayurbhanj district in Odisha.

Keywords : Post-harvest diseases, Rotting, Traditional methods.

I. INTRODUCTION

From the beginning of human civilization there is an inherent endeavor to store the vegetables and fruits, so that these can be available throughout the year. With the development of science, some methods have been developed by Fellows (1), (2); Kitinoja and Kader (3), Kader (4), (5), (6); Kader and Rolle (7) and many others on postharvest technology for preservation and processing of various horticultural crops including fruits and vegetables.

Literature review revealed a lot of information pertaining to reduction of post harvest losses of fresh produces. Hedges et al. (8) reported that post harvest loss is a great challenge all over the world because of qualitative and quantitative loss of food. The loss may occur at any time. It may occur during post harvest handling, or from harvesting to consumption i.e. the loss along the supply chain. According to Gustavsson et al. (9) every year about one third of the food produced for human consumption is lost worldwide. In developed countries this loss is lower compared to developing countries where the loss takes place during

storage and transportation stage. While considering the magnitude of losses in fresh fruits and vegetables, Bencini (10) reported that about 5 to 25% losses takes place in developed countries and about 20 to 50% in developing countries. Insects and bacteria are often responsible for losses of vegetables. When such organisms grow, they cause some chemical changes, producing toxins, which spoil the vegetables and making them unsuitable for human consumption. Most of our dietary food consists of agricultural and horticultural products including different vegetables and fruits. These are usually seasonal and get rotten quickly. According to Bartz and Brecht (11), Gross et al. (12), Chakraverty et al. (13), Wills et al. (14), Nunes (15), Masarirambi et al. (16), Yahia (17), Kitinoja et al. (18) and Gomez – Lopez (19), the loss of post harvest vegetables depends on commodity type, cultivar susceptibility to post harvest disease, treatments used for disease control, harvesting period (i.e. maturity / ripeness stage), storage environment (atmospheric or room temperature, relative humidity, etc.), handling during and after harvest, post harvest hygiene etc. Vegetables and fruits are often contaminated by various microbes. Contamination can be experienced in fields or during harvesting, transportation, processing, distribution and marketing or even at home. Many of the fungi belonging to the phylum Ascomycota and the associated fungi cause post harvest diseases. Fungal genera i.e. *Penicillium*, *Aspergillus*, *Geotrichum*, *Botrytis*, *Fusarium*, *Alternaria*, *Colletotrichum*, *Dothiorella*, *Lasiodiplodia*, *Phomopsis* etc are some of the post harvest pathogen responsible for loss in varieties of fruits and vegetables. Besides, in industrial sectors, the storage of food items including fruits and vegetables is being done by using a variety of preservative which are mostly chemicals. Every chemical has some side effects. Long term consumption of such chemicals may create health hazards in man and even transmit from mother to new born baby through food chain.

Taking all these aspects into consideration a research work was designed to study the storage pattern of some vegetables adopted by the local people/farmer with a view to socio-economic development of people of Mayurbhanj district in the state of Odisha.

II. MATERIALS AND METHODS

Extensive field study was conducted from village to village covering Chandua, Suliapada, Barasahi, Shamakhunta, Bangiriposi, Baripada sadar, Udala and Kaptipada blocks in the district of Mayurbhanj, Odisha during 2018. Interaction with the local people and farmers followed by visiting of storage sites were conducted to know the methods that, they adopted/practiced to store their fresh vegetables.

III. RESULTS AND DISCUSSION

The vegetables contain about 85 to 90% water. Fresh produce continues to lose water after harvest. Water loss causes shrinkage and loss of weight. Poor marketing facilities and their own future consumption requires storage of the product. In order to avoid the difficulties, local people commonly adopted certain traditional practices i.e. drying under sun light (Fig.- 1, 2, 3 and 4), covering with a layer of red soil (Fig.- 5), preservation beneath wet soil (Fig.- 6), covering with dry straw (Fig.- 7 and 8), covering with green leaves (Fig.- 9 and 10), store in wet sand (Fig.- 11 and 12), and hanging from bamboo in the form of bundles (Fig.- 13 and 14), etc. to minimize the loss. After harvesting of brinjal, tomato, cauliflower and bitter gourd they chop them separately, dry them under sun light for 10 to 15 days and store in air tight container. For green peas and green chilli, simply they dry them under sun light and store in plastic bags. They preserve the potato, covering a thick layer of wet red soil. They store desi alu, yam, and elephant foot yam beneath the soil. Tomato, cucumber, parwal, green banana and carrot are preserved covering under fresh straw

whereas some other people store them by wrapping banana leaves. They store the lemon, ginger and carrot in wet sand. It was observed that the efficacy of storage or shelf life of vegetables range from few days to one year depending upon the nature of vegetables.

All these practices greatly reduce the loss of vegetable and keep them fresh. The methods of storage of some vegetable and their shelf life adapted by the people of Mayurbhanj district is presented in Table-1.

Table-1. Indigenous technique used for storage of some vegetables by the people/farmers of Mayurbhanj district in Odisha

Sl. No.	Methods	Types of vegetables	Shelf life
1	Dried under sunlight for 10 to 15 days	Brinjal (<i>Solanum melongena</i> L.) Tomato (<i>Solanum lycopersicum</i> L.) Bitter gourd (<i>Momordica charantia</i> L.) Different species of green chilli.	2-3 months
2	Covered with thick layer of wet red soil	Potato (<i>Solanum tuberosum</i> L.)	4-6 months
3	Beneath the wet soil	Desi alu (<i>Dioscorea alata</i> L.) Elephant foot yam (<i>Amorphophallus muelleri</i> Blume)	3-4 months
4	Covered with dry straw	Tomato (<i>Solanum lycopersicum</i> L.) Cucumber (<i>Cucumis sativus</i> L.)	10-15 days
5	Covered with green custard apple leaves	Cucumber (<i>Cucumis sativus</i> L.) Brinjal (<i>Solanum melongena</i> L.) Bitter gourd (<i>Momordica charantia</i> L.)	8-10 days
6	Wrapped with dry banana leaves	Cucumber (<i>Cucumis sativus</i> L.) Brinjal (<i>Solanum melongena</i> L.) Bitter gourd (<i>Momordica charantia</i> L.)	10-15 days
7	Beneath the wet sand	Lemon (<i>Citrus limon</i> (L.) Osbeck) Ginger (<i>Zingiber officinale</i> Roscoe)	3 -6 months
8	Hanging from bamboo in bundles	Onion (<i>Allium cepa</i> L.) Garlic (<i>Allium sativum</i> L.)	1 yr and more

The method of preservation adopted by the local people and also by the marginal farmers was found to be environment friendly, energy saving, cost effective and hygienic though shelf life of preserved vegetables is less in comparison to cold storage.

IV. CONCLUSION

Refrigeration no doubt is a very popular method of storage of vegetables, but the poor in habitant of Mayurbhanj district particularly in rural sector find refrigeration expensive because of distance. Therefore, adequate cold storages need to be set up in each block, and Government should take steps for storage of vegetables in subsidized rate. So that, they can store

their product in cold storage and their socio-economic development will be progressive.

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Fig. 1 Brinjal dried under sunlight



Fig. 2 Tomato dried under sunlight



Fig. 3 Bitter gourd dried under sunlight



Fig. 4 Green Chilies dried under sunlight



Fig. 5 Potatoes covered with red soil



Fig. 6 Elephant Foot Yam covered with wet soil



Fig.7 Tomatoes and Brinjal covered with straw



Fig. 8 Drumstick covered with dry straw



Fig. 9 Cucumber covered with green custard apple leaves



Fig. 10 Brinjal covered with green custard apple leaves



Fig. 11 Lemon covered with wet soil



Fig. 12 Ginger covered with wet sand



Fig. 13 Onion hanging from bamboo



Fig. 14 Garlic hanging from bamboo

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