JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

ASSESSMENT OF SUITABLITY OF MATERIAL FOR ONION STORAGE AT INDOOR CONDITION IN MONSOON SEASON

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Abstract:
Storage of onion requires different ambient conditions at different season. Temperature, humidity plays crucial role in storage of onion for long duration. Unstable supply and demand of onion increases and decreases price of onion tremendously. Storing onion at household as well as by farmers would be beneficial. Onion losses are qualitative as well as quantitative, moisture loss, various fungus and mold infection deteriorate quality of onion. Storing onion is not the rocket science but definitely requires general logic and observation regarding suitability of material and ambient conditions are critical factors. In the above context study has been carried out regarding suitability of material for onion storage by comparing storage of onion in different material. Use of natural and cost effective technique for storage of onion at indoor conditions.

Keywords: Onion, Storage condition, storage material

I. Introduction:

Onion is valued for its bulbs having characteristic odour, flavour and pungency, which is due to the presence of a volatile oil – allyl-propyl-disulphide. Pungency is formed by enzymatic reaction when tissues are broken. Bulbs are suited for storage for a long period and for long distance transport. It is used as salad and cooked in many ways in curries, fried, boiled, baked and used in making soups, pickles etc. Value addition in onion is done by marketing dehydrated onions and onion flakes

Onion is stored at ambient storage condition in most of the tropical countries where the storage losses are very high. The higher storage losses were due to physiological loss of weight occurring during the drier months when mean temperatures are high with lower humidity. The rotting losses are high in the high humid months (Tipathi and Lawande 2019). Storage methods and condition have their own impact on post-harvest life and keeping quality of onion. Storage temperature and relative humidity are related with sprouting, rotting, and physiological weight loss and with storage period (Quazi and *et.al* 2021). The Onion storage and dryer operate in varied conditions depends on the temperature and moisture content of the location areas (Moradas and Sealongo 2021). Consumers are also unable to develop a habit of consuming more onions because onion stocks disappear from the market within a few months of harvest and by the end of the season onion prices jump very high (Hatem and *et.al.*2014). The design control temperature and humidity that preserves onion for a period of 6- 12 months. The materials to be used for fabrication of the cabinet include aluminium, wood, and solar power generating facilities (Musa and Mukhtar 2015). Ambient temperature and relative humidity were lower in forced ventilated wooden structure followed by natural ventilated wooden structure and traditional method respectively (Chattha and *et.al.*2020). . It's also important to ensure proper ventilation to prevent molding and rotting. An open basket, bamboo steamer, mesh bag, netted bag or even pantyhose will be suitable (Maskepatil and *et.al* 2019).

II. Material and methods:

In this experiment four types of material like cotton net, fibre net, nylon net and sutali twine net were selected for study. The mesh size of 50mm ×50mm was tightly built to wooden crate at top area of crates. Crates are generally used for fruits packaging in market, refused wooden crates are used, and these wooden crate facilitate ventilation from bottom and side. The period of experiment was 31 July to 31 August 2022 i.e. Monsoon season, at that time humidity was high. The certain quantity of *Panchganga* species of onion were spread on each kind of mesh along with silica gel bags and Neem leaves for

1 month. The initial and final weight and physical appearance of stored onion were noted each whenever possible in the week. The difference in the weight was calculated by using

Formula;
$DW=IW-Fw\ /\ IW\times 100$
DW=Difference in weight
IW=Initial weight
FW=Final weigh

III. Result and discussion:

Table no.1: onion weight observation table

Date	Cotton	Nylon	Sutali twine	Fibre
31-7-2022	1069 gm	894.94gm	1069.94gm	1149.94gm
11-08-2022	1039.94gm	889.94gm	1069.94gm	1154.94gm
22-8-2022	975gm	825gm	1035gm	1035gm
31-08-2022	965gm	795gm	985gm	1035gm
Weight difference	104gm	99.94gm	84.94gm	114gm

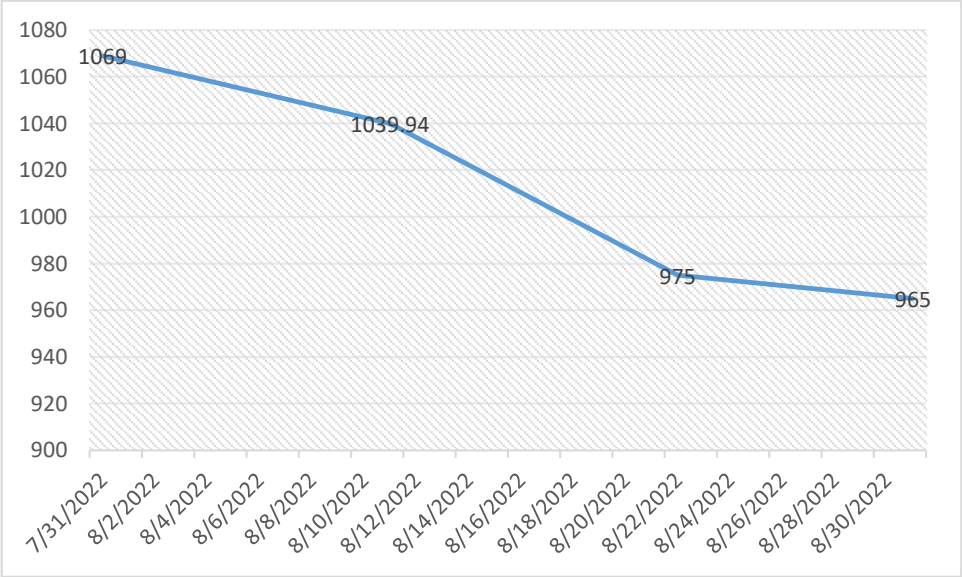

Fig.1: Onion storage on cotton mesh

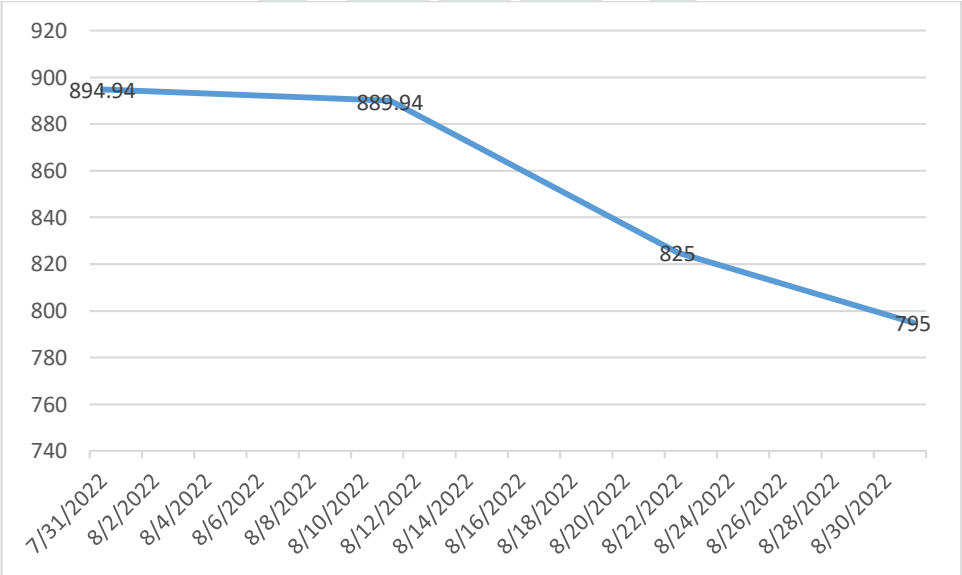

fig.2: onion storage on nylon mesh

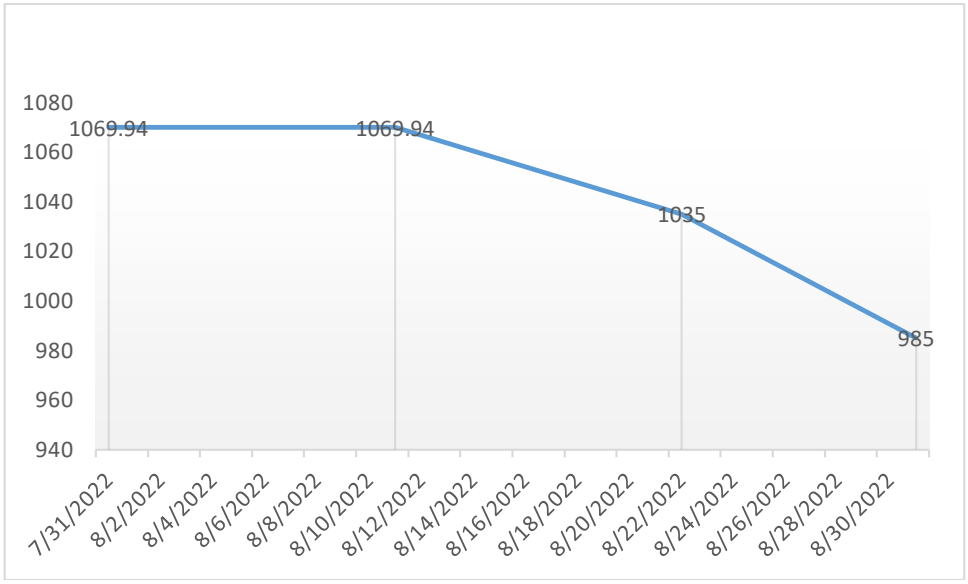

fig.3: onion storage on Sutali twine mesh

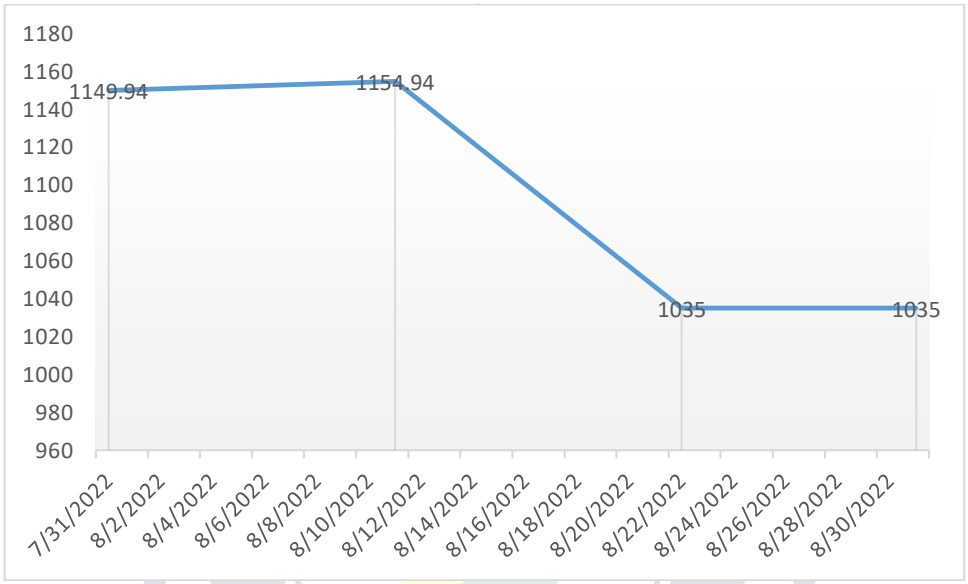

fig.4: onion storage on fiber mesh

1. Onion weight loss spread on cotton mesh is 9.7%.Fig. 1 shows moderate speed of quantitative loss of onion.
2. Onion weight loss spread on nylon mesh is 11.16%.Fig.2 shows moderate speed of quantitative loss of onion
3. Onion weight loss spread on sutali mesh is 7.85% .Fig.3 shows comparatively slow speed of quantitative loss of onion.
4. Onion weight loss spread on fibre mesh is 9.99%.Fig.4 shows comparatively high speed of quantitative loss of onion.
5. Black fungus and sprouting and rotting were not observed. In this experiment Sutali and Nylon shown best storage capacity

IV. Conclusion:

It is suitable to use Sutali twine mesh or bags to pack or store Panchganga onion at indoor condition.

V. Acknowledgement

I would like to express deep and sincere gratitude to my research supervisor, Dr.L.B.Dama professor and head of Department of Zoology, D.B.F. Dayanand College of Arts and Science, Solapur for providing me support and guidance. I am very much thankful to School of earth science Department of Environmental science Punyashlok Ahilyadevi Holkar Solapur University Solapur, for providing technical support.

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