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Weight Loss Analyses and Quality of Dragon Fruit after Harvesting

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Abstract: ***Aim of this study is to analyse the percentage of weight loss in dragon fruit by keeping at different physical condition. We need to store fruits and vegetable at particular optimum physical condition because it is highly Vanishable. Vanishable means they can spoil very easily, because of high moisture content transpiration rate is also very high and since they are living commodity they undergo respiration. In this experiment a case study is conducted at different temperature of 12°C,8°Cand 4°C. As the weight is decreased the firmness of fruit also decreases.***
Keyword: Dragon Fruits; Firmness; Post-Harvest; Ripening; weight loss.

I. INTRODUCTION

Modern horticulture crop production chains must not only meet consumer needs, but also improve product quality and postharvest shelf life (Wills et al., 1998). The harvested products, on the other hand, are alive biological stuff that begins to deteriorate as soon as it is harvested. The rate of deterioration is dependent on the horticultural product (fruit, vegetable, or ornamental) as well as pre– and post–harvest handling and storage procedures (Crisosto and Mitchell, 2007). (Mpelasoka et al., 2000). The greater FWL is associated with fruit size (Mpelasoka et al., 2000) and cuticle alterations (Crisosto et al., 1994; Maguire et al. 1999). The average fruit sizes (LSD = 29.0 g) were 206.4, 199.4, 198.0, and 190.1 g for the 12RB, 8RB, and 4RB treatments, respectively. Our data indicates no association between FWL and fruit size (r=–0.2; p=0.159)

II. LITERATURE SURVEY

S.NO	TITLE	YEAR	DISCIPTION
1	G U I D E PACKAGING FRESH FRUIT AND VEGETABLES (Danish Technological Institute Packaging and Transport)	2008	According to this guidelines it can be concluded that if the fruit and vegetable are stored at right storage condition shelf life can be increased by 300% to 800%. Respiration of plant tissue it leads to ethylene Liberation and accelerate the refining process. Vegetable and fruit kept at low temperature it slowdown repairing.
2	STORAGE TEMPERATURE AFFECTS FRUIT QUALITY ATTRIBUTES OF BER (ZIZIPHUS MAURITIANA LAMK.) IN ZIMBABWE	2008	In this research Ber kept at different storage temperature 5 degree centigrade, 15 ℃ and 22 ℃ for the different duration 3,6,9 and 12 weeks. By this experiment they determine the appropriate storage condition of fruit for maintaining freshness .Weight loss is also determined.
3	THE IMPACT OF STORAGE TEMPERATURE ON FRUIT QUALITY AND CHILLING INJURY OF 'OKUBAO' PEACHES	2018	This research article is kept at four different temperature level that is 0 ℃, 2 ℃, 5 ℃ and 8 ℃ for 28 days. It is concluded that it shows good result (best quality) at 0 degree and bad quality of fruit at 8 ℃. This shows that decay rate is higher at high temperature.

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A. Storage

We can control the spoilage of fruits and vegetable by maintaining them at low temperature. If the temperature of storage and humidity is maintained properly we can extend fruit life and we can prevent them from spoilage. If temperature and humidity not properly maintained it undergoes some undesirable changes like change in colour, routing smell, shivillage and change in the microstructure of fruits. This simply due to changes in shelf or break down tissue. If we meant proper humidity and temperature and appropriate storage structure its life is extended.

B. Shelf Life of Fruits

1) Shelf Life: Shelf life is defined as the recommended time duration or fresh (harvested) products can be kept.

Fruit	Shelf life in the room	Shelf in fridge
Apple	4 days	1 month
Banana	2-4 days	Don't refrigerate
Grapes	3-5 days	2weeks +
Strawberries	1-2 days	3days
Citrus	1-2 weeks	2weeks +

2) Reduced Transpiration: if the transpiration rate is reduced, it will also reduce the respiration rate at low temperature. When the respiration rate is low it also reduces the ethylene production. But if the temperature is below optimum temperature off any fruit it may cost chilling injury chilling refers to the effect of plant and their product result in reduced quality and loss of product utilization when exposed to lower temperature below optimum temperature

C. Post-Harvest Management

Fruits have different morphological structure such as root, stem, leaves, flower fruits etc. Physiology like transpiration, respiration ripening etc are the factors for post harvesting. High moisture content and soft in texture are subjected to to damage, mechanical changes and dying. something it is filed by bacteria and fungi (i.e Pathological damage).

1) Post harvest operation and treatment Aims to

a) Uniform size
b) Uniform shape
c) Package
d) More shelf life, so that safe from quality parameter.

This post harvesting operation include

- Cleaning
- Selection
- Sorting
- Grading
- Packaging

the post harvesting result in increasing attractiveness of fruit and maintaining quality it also increase the storage life of fruit.

2) Post-harvest Factor: Once the fruit and vegetable are harvested after their harvesting a lot of heat is produced within the fruit it is known as field heat. This field is important to be removed; the process by which we remove the field heat is PRE-COOLING**.**

D. Pre- Cooling Types

1) Cooling in Room: It is a very common system for pre-cooling the commodity put in a room this room is equipped with a cooling unit for the refrigeration unit. Is a very simple system of pre-cooling.
2) Forced air Cooling: This System of Pre Cooling is the same as room cooling, only when is used to force air into production because it packed into a package when help into forcing air directly to the product.

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3) *Hydro Cooling:* In this cold water is put directly into production. It is only suitable for some commodities like big fruits and vegetables. Such as broccoli carrot corn flour leafy green vegetable. And this can be also used for DRAGON FRUIT.
4) *Hyperbaric Cooling:* It is an expensive system, comedy put in vacuum only used in those which are leafy vegetable
5) *Ice Cooling:* Sometimes crushed ice is used for cooling of a commodity (Broccoli).

III.MATERIAL AND METHOD

The Weight loss rate was determined according to the following formula:
The weight loss= {(W1-W2)/W1}X100%

Where,
W1 is original weight
W2 is weight after storage.

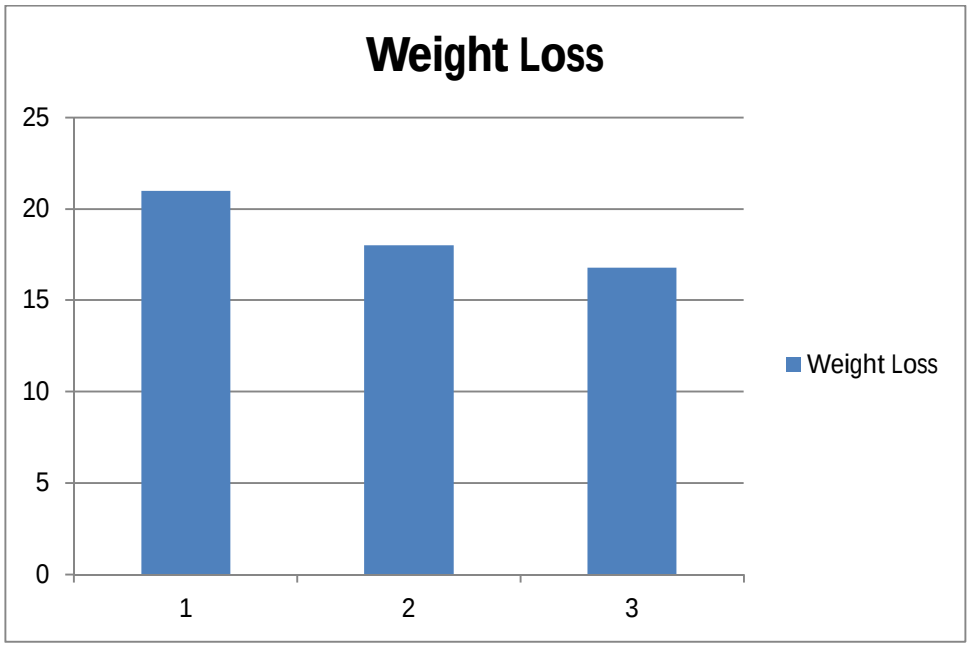
IV. RESULT AND DISCUSSION

The results obtained are as discussed below

A. Measurement By weight machine

S.No	Sample	Initial Weight(Gram)	Final Weight(Gram)	Diffrence	Percentage
1	12℃	334	313	21	6.1 %
2	8℃	340	322	18	5.2 %
3	4℃	352	335	16.8	4.8 %

Graphical Representation
X axis= samples (12℃,8℃,4℃)
Yaxis=weight loss(in grams)



B. Optimum Result Obtained In Sample-3(4℃)

From the above experiment it is observed that Dragon fruit of Sample-3, has minimum weight loss of 4.8% which I equivalent to 16.8 grams.

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V. CONCLUSIONS

We can conclude that from this case study that dragon fruit kept at 12℃ lost 21 grams that is equal to 6.1% which was greater than weight loss at 8℃ that is 18 grams equal to 5.2%.from this experiment it is observed that minimum weight loss was obtained at lower temperature that is 4℃ which is equal to 4.8%. If dragon fruit kept at low temperature we can get several benefits like

1) No loss in Nutrition level
2) Commodity can be kept fresh for several days.
3) Color and Constituent does not change.
4) Safe from pest attack

So because of above advantages shelf life is longer.

A. Future Scope

We can increase the shelf life of DRAGON FRUITS **.**Retain freshness of commodity**.** Hence, it will help the farmers as well as traders to boost business. By this productivity rate and storage quality will be increased.

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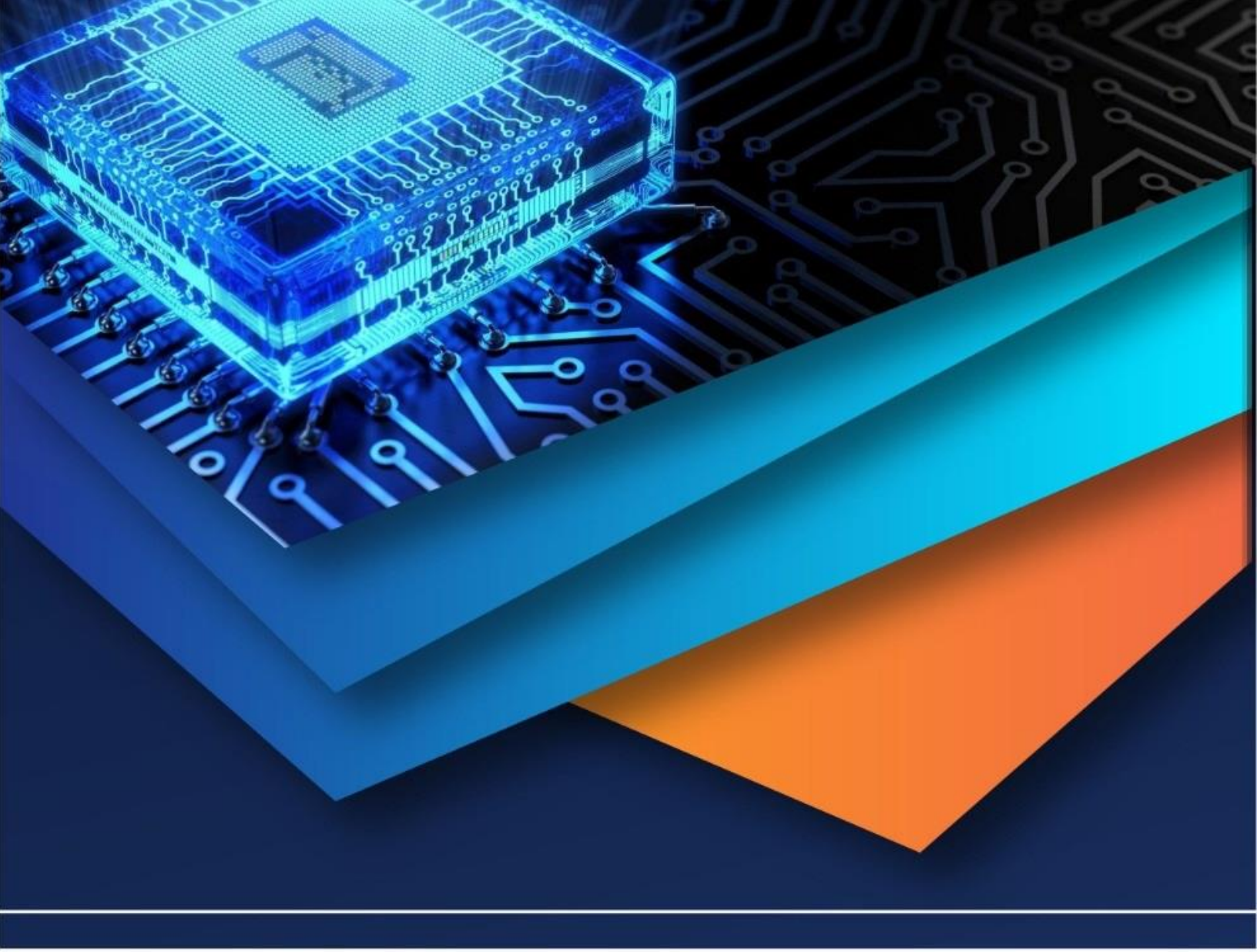

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