GreenariA
Go Green, Learn Green
An Agricultural Monthly e-Magazine

Volume 02, Issue 05, 2024
e- ISSN: 2584-153X
Article ID: G-24-0512

METHODS OF PROVIDING ETHYLENE IN THE FRUIT RIPENING ROOM

Chendhuran V S[1*], P Swetha[1] and C Venkatesh[2]

[1] *B.Sc. (Hons.) Agriculture, J.K.K. Munirajah College of Agricultural Science, T.N. Palayam, Erode.*

[2] *Assistant Professor, Department of Horticulture, J.K.K. Munirajah College of Agricultural Science, T.N. Palayam, Erode.*

***e-mail:** chendu1482003@gmail.com

INTRODUCTION

The only gases hormone responsible for fruit ripening is ethylene. After the maturation of fruit, ethylene is synthesized for fruit ripening. Fruit ripening done by transcription and involvement of multi-single pathway.

Ethylene causes fruit ripening by breakdown of starch into simple sugars, fruit softening and skin colour changes.

EFFECTS OF THE ETHYLENE IN FRUIT RIPENING

1. Phenolics such as tannins acts as astringency in ripe banana
2. Enzyme activity drops at 30 degree Celsius
3. For every 10 degree Celsius temperature increases the metabolisms also increases

WORKING PRINCIPLE OF COMMON ETHYLENE SYSTEMS

1. The gaseous hormone ethylene is generated from sachets, ethylene cylinders, ethylene generators and ethylene cartridges.
2. When the gaseous hormone ethylene generating materials exposed to air the ethylene is released throughout the transportation area or storage
3. The released ethylene gas interacts with fruits, then gaseous hormone ethylene serves us a ripening agent, creating the biochemical changes in fruits and stimulates the ripening process
4. To adjust the ethylene release rate and measure ethylene to maintain optimum ripening conditions by using sensors.
5. To avoid everyone to ethylene gas like ventilation system, gas detectors and certain storage of ethylene source.

ETHYLENE PROVIDING METHODS

1.ETHYLENE RELEASING SACHETS

Works by slow release of ethylene gas into required environment

KMNO4 +CaCO3 (in presence of air) Heat + ethylene gas (by product)

Then the ethylene gas from sachets released into required environment

ADVANTAGES

- It is useful is small scale ripening of fruits.
- Flexibility in packaging, storage and transportation.
- It is directly placed in ripening containers.
- It promotes uniform ripening.
- It increases the shelf life of fruit.
- It is cost-effective.
- Helps to maintain freshness of fruits and quality.

2.ETHYLENE CYLINDERS

In ethylene cylinder storing of ethylene gas by pressure condition. The cylinder contains valve, when the ethylene gas is needed the valve opened, allow gas to flow out. The ethylene gas interacts with fruits and causes the ripening. In controlled environment the cylinder are used.

ADVANTAGES

- It is easily to carry and transported to different places because of flexibility.
- It is available in different size hance it is used for multipurpose like small scale and large scale.
- For fluctuating ripening needs it is cost effective either can purchased or rented.
- The ethylene gas improves colour, flavour, texture of fruits, hence quality is improved and high marketability.

3.ETHYLENE CARTRIDGES

It is also called as sachets or ethylene generators. It contains KMNO4 or calcium carbide.

Cartridges (in presence of air) ---> Ethylene gas produced

Then ethylene gas spreads out of cartridges into required environment causes fruit ripening

ADVANTAGES

- It is easy to carry and light weight ideal for small scale ripening process during transportation.
- It is used as widely due to simple to use and no requirement of special equipment.
- It is flexible in fruit ripening.
- It ensures uniform ripening by controlled release of ethylene gas. This equipment is designed for longevity in storage.

4.ETHYLENE GENERATORS

Generators converts liquid precursor into ethylene gas with the help of catalyst. Then ethylene gas interacts with fruits and cause ripening.

ADVANTAGES

- The controlled release of ethylene gas causes uniform ripening of fruits.
- Ripening of fruits by induced ethylene extend shelf life of fruits and reduce premature
- The texture, flavour and colour of fruits improved by ethylene gas, hence the quality improved.
- It is cost effective and offers flexibility in ripening.

CONCLUSION

Ethylene is a natural hormone choosing the right method to provide ethylene in fruit ripening rooms is essential for uniform ripening. Optimal selection and usage can enhance fruit quality, shelf life and profitability while reducing waste and resource use.