EFFECT OF DIFFERENT DRYING TECHNIQUES OF FLOWERS AND FOLIAGES AND ITS VALUE ADDITION

Abstract

The present investigation the effect of differentdrying techniques of flowers and foliages and its value addition wascarried out at the postharvest laboratory of Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (UP) during 2022.The experiment was laid out in Completely Randomized Design comprising of two different methods of flower drying i.e. microwave oven drying with silica gel and microwave oven drying with sand and replicated three times containing six flowers per replication for six different flowers and foliage i.e. Rose, Gerbera, Jatropha, Dracaena, Fern and Thuja. Maximummoisture loss was obtained in (T3) Jatropha embedded in silica gel and dried in microwave oven (77.13%). Best score in sensory evaluation in terms of colour, shape and texture was found highest in (T5) Dracaena embedded in silica gel and dried in microwave oven (scores- 4.18, 4.38, 4.03). So, the best drying technique considered was microwave oven drying with silica gel as an embedding medium. Add the background of the study

***Key words**:flowers and foliages, drying, silica gel, microwave oven the keywords should be in alphabetical order*

INTRODUCTION

Flowers and foliages have long held a special place in the hearts and minds of humanity. Throughout history, these botanical wonders have been cherished for their beauty, admired for their resilience, and utilized for their practicality. From the delicate petals to the lush green leaves, flowers and foliages have played a significant role in shaping our environments, cultures, and daily lives.

The dry flower industry was brought to India by British and is almost five decades old. In India, dried flower industries are mostly concentrated in Tamil Nadu, West Bengal, Andhra Pradesh and Karnataka. Exporting companies in Kolkata in West Bengal, Thoothukudi in Tamil Nadu, Mumbai in Maharashtra and Hyderabad in Andhra is earning 10-15 times higher returns than domestic markets. (**Verma*et al.*, 2012**).

Dry flowers and foliages offer a unique and captivating way to preserve the beauty of nature long after the blooms have faded. These delicate treasures, carefully dried and preserved, retain their original form, providing a lasting reminder of the natural world's splendor. Whether used in floral arrangements, crafts, or home decor, dry flowers and foliages lend an enchanting touch to any setting.

Dry flower market has grown exponentially as consumers become “eco-conscious” and choose dried flowers as the environment friendly and biodegradable alternative to fresh flowers. Dried flowers are exported either as assortments or value addeditems. Dried flowers are commonly known as “everlasting flowers” or “dehydrated flowers”. They are nature's treasures, beautiful and ever lasting and make a perfect gift, which can be treasured over the years.**(Datta, 2016)**

Numerous methods are practised for dehydration of different flowers or its plant parts. In these methods, removal of moisture is done artificially either by using desiccants or controlled temperature, humidity and airflow. The principle involved in all the techniques is that the plant material is exposed to a vapour pressure deficit, which induces water vapour to move by transpiration or evaporation from the plant material (source) into the surrounding environment (sink). The techniques are Air drying , Water drying , Sun drying , Press drying , Hot air Oven drying , Microwave drying ,

Embedding , Freeze Drying andGlycerine drying.(**Kumar *et al.*, 2021).** This experiment aimed to evaluate the drying techniques of Rose, Gerbera, Jatropha, Thuja, Fern and Dracaena.

Materials and methods

Study on "Effect of different drying techniques of flowers and foliages and its value addition" was carried out at the Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj.

The experiment was laid out in Completely Randomized Design(CRD) which has twelve different treatments and was replicated thrice, number of flowers per treatment weresix.

Drying method which was used for drying of flowers and foliages was microwave oven drying with two different embedding media i.e, sand and silica gel. The observations were recorded on basis of physiological and quality parameter. Add the methodto score the results

Table 1. Treatment details:

Treatment Symbol	Treatment Combinations
T_1	Rose + Silica gel
T_2	Gerbera + Silica gel
T_3	Jatropha + Silica gel
T_4	Fern + Silica gel
T_5	Dracaena + Silica gel
T_6	Thuja + Silica gel
T_7	Rose + Sand
T_8	Gerbera +Sand
T_9	Jatropha + Sand
T_{10}	Fern + Sand
T_{11}	Dracaena + Sand
T_{12}	Thuja + Sand

Results and Discussion

Data revealed that microwave oven drying with silica gel as a drying media noted maximum percent ofmoisture loss (77.13%) recorded in Jatropha (T3). Similar results were observed by **Acharrya*et al.*,(2012), Hemant*et al.*,(2016)**and **Kumari*et al.*,(2017)**

Utmost score for colour (4.18), shape (4.38) and texture (4.03) was found in microwave drying with silica gel in dracaena (T5). So on basis of qualitative character which includes colour, shape and texture of flowers and foliages similar results were observed by **Aravinda*et al.*,(2012),Renuka *et al.*, (2017)** and**Sharma *et al.*, (2017) .**

Table 2. Moisture loss of flowers and foliages in different embeddingmedia

Treatments		Moisture loss of flowers andfoliage (%)
T1	Rose + Silica gel	35.25
T2	Gerbera + Silica gel	45.71
T3	Jatropha + Silica gel	77.13
T4	Fern + Silica gel	56.38
T5	Dracaena + Silica gel	61.66
T6	Thuja + Silica gel	48.97
T7	Rose + Sand	21.49
T8	Gerbera + Sand	26.08
T9	Jatropha + Sand	57.61
T10	Fern + Sand	41.22
T11	Dracaena + Sand	39.70
T12	Thuja + Sand	34.53
F test		S
SE(d)		6.064
C.D.		12.591
C.V.		16.331

● Maximum ● Minimum

Table 3. Score for colour of flowers and foliages in different embedding media:

Treatments		Score for colour of flowers and foliages
T1	Rose + Silica gel	3.68
T2	Gerbera + Silica gel	3.90
T3	Jatropha + Silica gel	3.93
T4	Fern + Silica gel	4.10
T5	Dracaena + Silica gel	4.18
T6	Thuja + Silica gel	3.70
T7	Rose + Sand	3.38
T8	Gerbera + Sand	3.45
T9	Jatropha + Sand	3.28
T10	Fern + Sand	3.36
T11	Dracaena + Sand	3.30
T12	Thuja + Sand	2.88
F test		S
SE(d)		0.088
C.D.		0.184
C.V.		3.012

● Maximum

● Minimum

Table 4. Score for shape of flowers and foliages in different embedding media:

Treatments		Score for shape of flowers and foliages
T1	Rose + Silica gel	3.78
T2	Gerbera + Silica gel	4.13
T3	Jatropha + Silica gel	4.16
T4	Fern + Silica gel	4.15
T5	Dracaena + Silica gel	4.38
T6	Thuja + Silica gel	4.23
T7	Rose + Sand	3.53
T8	Gerbera + Sand	3.61
T9	Jatropha + Sand	3.58
T10	Fern + Sand	3.31
T11	Dracaena + Sand	3.36
T12	Thuja + Sand	3.45
F test		S
SE(d)		0.071
C.D.		0.147
C.V.		2.283

● Maximum

● Minimum

Table 5. Score for texture of flowers and foliages in different embedding media:

Treatments		Score for texture of flowers andfoliages
T1	Rose + Silica gel	3.78
T2	Gerbera + Silica gel	3.95
T3	Jatropha + Silica gel	3.86
T4	Fern + Silica gel	3.88
T5	Dracaena + Silica gel	4.03
T6	Thuja + Silica gel	2.53
T7	Rose + Sand	3.45
T8	Gerbera + Sand	3.63
T9	Jatropha + Sand	3.13
T10	Fern + Sand	3.18
T11	Dracaena + Sand	3.26
T12	Thuja + Sand	2.18
F test		S
SE(d)		0.084
C.D.		0.174
C.V.		3.004

● Maximum ● Minimum

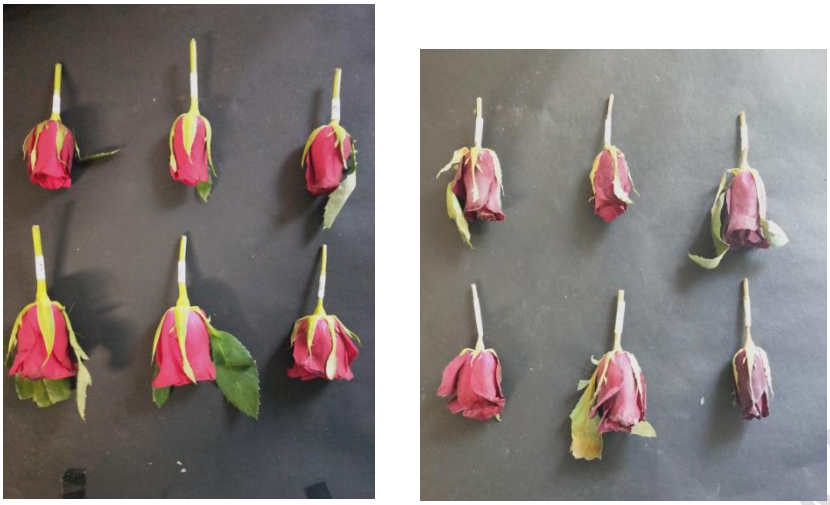

Fig. 1 Before and after drying photos of rose in silica gel embedding media dried in microwave oven

Fig.2 Before and after drying photos of thuja in silica gel embedding media dried in microwave oven

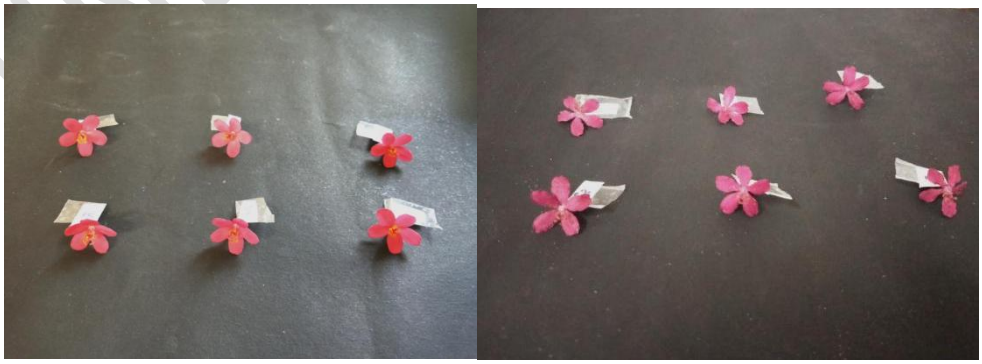

Fig. 3 Before and after drying photos of jatropha in silica gel embedding media dried in microwave oven

Fig. 4 Before and after drying photos of gerbera in silica gel embedding media dried in microwave oven

Fig.5 Before and after drying photos of fern in silica gel embedding media dried in microwave oven

Fig.6 Before and after drying photos of dracaena in silica gel embedding media dried in microwave oven

More reference will get better discussions

CONCLUSION

From this investigation it was concluded that silica gel was better desiccant compared to sand in terms of higher moisture loss and in retaining colour, shape and texture of flowers and foliages.

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