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Technology for dry flower production of calendula (*Calendula officinalis)* flowers

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ABSTRACT

Present study was undertaken to standardize the technology for dry flower production in calendula flowers. The experiment was conducted with twelve treatment combinations consisting of three drying temperature and four embedding media during year 2005. Observations were recorded at an interval of four hours starting from 4th hours to optimum drying (constant weight) during drying process. Per cent weight loss, per cent moisture loss and reduction in size (cm)of flower was significantly highest at higher temperature and silica gel during entire process of drying from 4th to 16th hours of drying. Moisture content was higher under low temperature and sand from 4th to 16th hours of drying. The temperature revealed that the Low temperature with borax exhibited well maintained flower shape, smooth petal texture, less mechanical damage during handling and acceptable colour (aesthetically acceptable).

Key words : Drying temperature, Embedding media, Calendula.

Calendula (*Calendula officinalis*) is one of the most popular seasonal flower. It is also known as pot marigold because its petals were used in England in the earlier days for flavoring soups. Calendula is useful for bedding, cutting, potting as well as for window boxes but its potential use in dry decoration has not been exploited widely. Dry flowers are gaining popularity amongst floriculturists and buyers, as it is an inexpensive, everlasting and ecofriendly product. Therefore, a study was under taken to study the technology for dry flower production in calendula.

MATERIALS AND METHODS

The experiment was conducted in the laboratory of Department of Horticulture, College of Agriculture, Junagadh Agricultural University, Junagadh (Gujarat), during the year 2005. Which is situated at altitude of 60m above the MSL and 80 kms away from the Arabian sea coast and 21.5^{0}N latitude and 70.5^{0}E longitude. In the study, twelve treatment combinations, consisting of three drying temperature *viz*. 50^{0}C (T_1), 55^{0}C (T_2) and 60^{0}C (T_3) and four media *viz*. Sand (M_1), Sand:Borax (1:1) (M_2), Borax (M_3) and silica gel (M_4), were evaluated in factorial completely randomized design with three replications. Observations were recorded every four hours upto constant weight (dry flower) during drying process. The data were statistically analysed as per the method described by Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

Weight loss and Moisture loss :

Per cent weight and moisture loss were recorded significantly higher under higher temperature 4th hours to 16th hours of drying (Table 1 and 2). At higher temperature, rate of moisture loss from flower tissues (transpiration) was more due to more conduction and convection of heat. Brandenberg *et al.* (1961) and Singh *et al*. (2003) also observed similar type of effect in case of seed and Zinnia flower drying, respectively.

Further, it was found that media had also significant effect on per cent weight loss and moisture loss (Table 1

Table 1 : Effect of temperature and embedding media on per cent weight loss calendula flower

Treatments	4th h	8th h	12th h	16th h
Temperature (T)				
Drying at 50^{0}C (T_1)	45.64	63.89	71.20	79.61
Drying at 55^{0}C (T_2)	52.81	68.22	74.59	81.41
Drying at 60^{0}C (T_3)	66.24	77.82	81.54	86.02
S.E.±	0.59	0.64	0.53	0.40
C.D. (P = 0.05)	1.73	1.87	1.56	1.18
Embedding media (M)				
Sand (M_1)	42.68	62.58	70.25	78.49
Sand:Borax (M_2)	50.52	67.45	73.88	80.88
Borax (M_3)	59.44	72.24	77.55	83.60
Silica gel (M_4)	66.94	77.63	81.42	86.40
S.E.±	0.68	0.74	0.62	0.46
C.D. (P = 0.05)	2.00	2.17	1.81	1.36
Interaction (T x M)				
S.E.±	1.18	1.28	1.07	0.81
C.D. (P = 0.05)	NS	NS	NS	NS
C.V.%	3.75	3.19	2.46	1.71