



## Prepackaging on Shelf Life Extension in Curry Leaf (*Murraya Koengenni Spreng.*)

Geethalakshmi, I.,<sup>1\*</sup> Punitha, A.,<sup>2</sup> Sumathi, T.,<sup>3</sup> Adeline Vinila, J.E.,<sup>4</sup> Vadivel, N.<sup>5</sup>

<sup>1</sup>Assistant Professor (Horticulture), Horticultural College & Research Institute, Jeenur, Krishnagiri Dt, TN, India.

<sup>2</sup>Assistant Professor (Horticulture), Rice Research Station, Tirur, Tiruvallur Dt,

<sup>3</sup>Assistant Professor (Horticulture), Horticultural College & Research Institute, TNAU, Coimbatore.

<sup>4</sup>Teaching Assistant, Horticultural College & Research Institute, TNAU, Coimbatore.

<sup>5</sup>Associate Professor (Agronomy), Department of Agronomy, TNAU, Coimbatore.

\*Corresponding author: Geethalakshmi, I.,

**ABSTRACT:** In the present study extension of shelf life in curry leaf is investigated through prepackaging with different gauge levels of polythene bags (100,200,300,400 and 500) and with different ventilation levels viz., 0, 1, 2, 3, 4 and 5 packed and the physical parameters were evaluated. Among the prepackaging treatment, curry leaf packed in 100 gauge polythene bags with no ventilation recorded a minimum physiological loss in weight (38.67 %) with a least loss of moisture content (77.00 %) and with better shelf life (16 days) compared to the leaves packed in 300 gauge polythene bags with a higher physiological loss in weight.

**KEYWORDS:** Prepackaging gauge, ventilation, polythene bags

### INTRODUCTION

Curry leaf (*Murraya konenigii Spreng*) is a perennial nutritious leafy spice crop, mostly in cultivation in southern parts of India. Besides being a spice, curry leaf plays a major role in the Ayurvedha system of medicine due to medicinal properties. A volatile oil and crystallize glycoside Koenigin and Murrayin are a few industrial products derived from the leaves of curry leaf. The leaves are highly perishable and cannot be retained fresh for more than a day. The length of the post-harvest life and maintenance of good post-harvest qualities in the leaves depends on the several factors like quality of the product, maturity at harvest, low respiration rate, water loss, ethylene production and disease incidence (Goszczyńska and Rudnicki, 1985).

Pre and post harvest handling practice have a more specific role on shelf life. The leaves enjoy good export potential, besides internal consumption. The leaves are exported to gulf countries and the aromatic oil fetches a very high premium price in the international market. Fresh curry leaf rapidly loses their moisture and get wilted or dried up due to a large surface area to volume rate. To enable cheaper involvement of shipping to other countries, which will play pivotal role in the global marketing, simpler technique for extending the shelf life during transport is wanted. The aim of the experiment is to study the prepacking and to optimize the gauge and ventilation levels for the better shelf-life retention of the curry leaf.

### MATERIALS AND METHODS

Leaves of the pink petioled cultivar maintained at the university orchard formed the basic experimental material. The leaves were harvested during the early morning hour position of the petiole is allowed along with leaflet while stripping. Leaves showing abnormalities like yellowing, malformation, diseased and leaf pest are eliminated. Polythene bags of size 25x20 cm were uniformly used for all prepackaging treatments. The gauge of the bags tested under the experiments ranged from 100 to 500.

Twenty five grams of the leaves was weighed accurately using a digital electronic balance and filled in the bags of 100 to 500 gauge thickness provided with 0,1,2,3,4 and 5 percent ventilation. The filled bags were sealed leaving a space of 2cm above using the sealing machine. The sealed bags were kept in the laboratory under ambient storage conditions. The leaves packed in the polythene bags were analyzed initially and on the 3<sup>rd</sup> and 5<sup>th</sup> after packing for different parameters viz., physiological loss in weight, moisture content and shelf life,

## RESULTS AND DISCUSSION

Pre packaging of leaves in the polythene bags proved to be the most effective technique for accomplishing a reduction in physiological loss in weight. The physiological loss in weight registered in leaves packed in 100 gauge polythene bags without ventilation was 38.67% while it was phenomenally higher, (180 per cent) in leaves kept open (Table 1) The minimum loss in weight might be due to the prepackaging maintained optimal humidity levels in the package which in turn slowed down the process of evapotranspiration. Further a notified carbon -di oxide and oxygen concentration possibly helps to slow the loss in weight (Marchal and Nolin, 1990). Similar findings were also reported by Nirmala and Reddy (1994) in Jasmine. Goszczyńska and Nowak (1984) in gladiolus. A decrease in the thickness of the polythene bag is normally associated with a reduction in the permeability to moisture leading to a concomitant reduction in physiological loss in weight.

**Table 1: Effect of prepackaging on physiological loss in weight of curry leaf (*M.koenigii* Spreng) during storage**

Treatments	Ventilation (%)	Physiological loss in weight (%)			
		Days after packing			
Gauge		1	5	10	15
100	0	5.00	16.75	35.01	38.67
	1	15.00	43.57	72.33	115.00
	2	19.34	62.02	82.55	132.33
	3	26.35	69.33	108.55	151.33
	4	29.33	69.53	112.66	172.33
	5	18.35	66.88	112.66	177.33
200	0	14.66	6.78	28.79	52.55
	1	15.35	39.95	64.96	91.93
	2	23.35	62.55	105.33	146.00
	3	19.67	64.27	107.38	150.01
	4	26.35	64.02	95.69	127.67
	5	28.34	65.31	100.98	133.67
300	0	6.35	10.02	28.33	58.33
	1	14.35	37.36	83.69	109.33
	2	18.34	54.93	95.01	132.00
	3	19.68	59.01	98.33	135.00
	4	27.68	73.33	124.02	165.00
	5	29.00	78.67	128.34	171.00
400	0	6.35	9.47	29.99	57.61
	1	14.68	32.88	58.01	81.67
	2	20.01	49.35	89.65	129.58
	3	28.00	75.60	131.57	176.42
	4	32.68	79.33	139.66	203.00
	5	36.68	75.65	118.35	161.00
500	0	2.32	9.64	21.33	44.00
	1	7.22	25.00	48.59	71.02
	2	13.22	49.35	93.69	129.63
	3	17.36	42.63	88.64	135.65
	4	22.69	59.63	98.98	141.90
	5	19.63	49.30	89.97	122.22
Unpacked CD(P=0.05)		36.00	80.00	138.00	180.00
G		0.8804	0.5756	0.4765	0.5887
V		0.9645	0.6305	0.5210	0.6449
G x V		2.1564	1.4100	1.1650	1.4421

### Moisture content

Initial moisture content in the curry leaf samples was approximately 80% and over five days of storage, the moisture loss in samples packed in 100 gauge declined dramatically to 77.00 %. (Table 2) The moisture loss was much more rapid in ventilated packs compared to non ventilated packs over a period of time. Similar findings were also reported in broccoli floret by Baeth and Zhuang (1996).

Table 2: Effect of prepackaging on moisture content in weight of curry leaf (*M.koenigii* Spreng) during storage

Treatments	Ventilation (%)	Moisture content in weight (%)		
		Days after packing		
		1	3	5
100	0	81.00	79.63	77.00
	1	71.41	70.133	69.29
	2	74.40	72.19	71.41
	3	75.33	73.38	72.29
	4	75.26	74.58	73.18
	5	76.53	74.74	73.22
200	0	82.10	80.44	81.25
	1	73.25	72.23	71.33
	2	74.51	72.33	72.22
	3	75.41	74.51	73.41
	4	76.41	75.35	74.28
	5	77.73	76.44	75.82
300	0	83.00	82.56	80.65
	1	73.41	72.07	71.33
	2	74.75	73.58	72.22
	3	75.41	74.74	73.41
	4	76.41	75.48	74.28
	5	77.73	76.40	75.82
400	0	84.00	81.53	82.50
	1	74.07	72.82	72.05
	2	74.66	74.44	73.55
	3	76.25	75.15	74.31
	4	77.41	76.41	75.45
	5	78.12	77.18	76.48
500	0	83.88	83.33	83.17
	1	74.99	74.39	72.00
	2	76.93	75.33	73.00
	3	77.80	75.36	74.36
	4	78.65	76.81	76.60
	5	79.28	78.21	77.33
Unpacked CD (P=0.05)		92.50	91.35	88.07
G		0.24836	0.48346	0.56415
V		0.27207	0.52960	0.61800
G x V		0.60836	1.18425	0.38189

### Shelf life

Wide degree of variation was observed in shelf life from 2 to 16 days as influenced by prepackaging treatment. Shelf life was at its maximum in leaves packed in 100 gauge polythene bag without ventilation followed by leaves prepacked in 500 gauge polythene bags without ventilation (table 3). Similar findings are in accordance with that obtained by Baeth and Zhuang (1996) in broccoli flower, whereas non ventilated packs was not effective for preventing moisture loss. Under prepackaging, the retention of a higher moisture level was accompanied by a lower physiological loss in weight, the freshness were retained longer

### CONCLUSION

Prepackaging treatment involving the packaging of curry leaf in 100 gauge polythene bags with no ventilation recorded significantly longer shelf life (16 days) followed by packing with 500 gauge (6 days) and was at minimum (3 days) in 300 gauge. The leaves packed in 100 gauge polythene bags with no ventilation recorded a minimum physiological loss in weight (38.67%), loss of moisture content (77.00%)

**Table 3: Effect of prepackaging on shelf life of curry leaf (*M.koenigii* Spreng) during storage**

Ventilation(%)	Shelf life (no. of days)				
	Days after packing				
	100	200	300	400	500
0	16.00	3.33	3.33	3.33	6.00
1	3.00	2.33	2.66	3.33	2.66
2	2.66	2.66	2.66	2.66	3.33
3	2.33	2.66	2.66	2.66	4.00
4	2.66	2.33	2.00	1.33	2.33
5	2.66	2.33	2.00	1.00	2.33
Unpacked	1.00	1.00	1.00	1.00	1.00
		SEd	CD		
G		0.22498	(P=0.05)		
V		0.24646	0.45003		
G x V		0.55109	0.49299		
			1.10235		

**REFERENCES**

- Barth,M. and Zhuang. 1996. Packaging design affects antioxidant vitamin retention and quality of broccoli florets during post harvest storage. *Post Harvest Biology and Technology*, 9:141-150
- Goszczyńska, D. and M.Rudnicki. 1998. Storage of cut flowers. *Hort.Rev.*, 10:35-36
- Marchal,J. and J.Nolin. 1990. Fruit quality, pre and post harvest physiology. *Fruits (paris)*, special Issue.pp.119-122
- Nirmala Srinivas and T.V. Reddy.1994.Shelf life of *Jasminum sambac* flowers and influenced by packaging and ventilation. In: J. Prakash and K.R.Bhandary(eds.) *Floriculture. Technology,Trades and Trends*. Oxford and IBH Publishing Co.Pvt.Ltd. New Delhi.P.546-554
- Nowak,J. and M.Rudnicki. 1984. Cold storage of cut gladiolus spikes. *Rolling Ozdobneser*, 9:67-72