EFFECT OF POSTHARVEST CHEMICAL TREATMENT ON LONGEVITY OF CUT ALSTROMERIA FLOWERS

F. SICORA

Public Services Department of Iassy City
"Moara de vant" Green house

In this study was evaluated the effect of post harvest treatment with two different conditioners on keeping quality of Alstromeria hybrida, cv. Orange Beauty, grown in a glass-covered green house. Flowers were harvested during morning hours when the primary florets were two days before opening. Immediately after harvest, the flowers stem was recut at 60 cm and 24 hours pulse treatment with three variants. The control variant was distilled water which has been used to prepare the second and the third variant. The second variant was a solution containing dextrose, like energetic substrate and pounded ember to prevent the attack of bacterium. The concentration of dextrose was 2% and ember 1%. The third variant of experimental conditioner was a solution containing 8-hydroxychinoline citrate, to delay the senescence, dextrose like nutritious substrate and gibberellic acid to prevent the early leaf yellowing. The concentration of HQC was 0.2%, dextrose 2% and GA 0.02%. The whorled inflorescence of each flower consisted five or six cymes included two or three florets. The length of cymes for all variants was about ten centimeters. When flowers were placed in water harvest the development of secondary florets was delayed and the tertiary florets – if it had it, did not grow or open. At all variants florets within the whorl opened synchronously and senescence of primary florets occurred a day before the secondary florets open. Post harvest pulse treatment with HQC + D + GA extended the vase life of all inflorescence, increased the petal length of both primary and secondary florets. Moreover, such treatment completely inhibited foliar yellowing.

***Keywords**: postharvest, chemical treatements, Alstromeria cut flowers.*

MATERIAL AND METHOD

It has been used Alstromeria hybrida flowers of cv. Orange Beauty, grown under standard technology to "Moara de vant" glass-covered greenhouse. They was planted at the end of September, 2006 in the greenhouse soil, a basic manure with 7 kg/mp and weekly 0,3% Florimo. Flowers ware harvested at the May 27, 2007, early morning, when the primary florets were colored and unopened. Before treatments the flower stems were re-cut to 60 cm.

It was chosen three study variants:

V0 – distilled water;

V1 – dextrose 2% + pounded ember 1%;

V2 – 8-hydroxychinoline citrate + dextrose 2% + gibberellic acid 0,02%.

It was used dextrose, to substitute glucose, like energetic substratum and the ember to disinfect the water; HQC to protect flowers against ethylene and bacterium and GA to prevent the leaves from premature yellowing. All solutions were prepared with distilled water, which was also used for control variant.

The experimental solutions were applied as 24 h pulse treatment. It was been used ten flower stems each variant, placed in three l glass jars containing 1 l of tested solutions. The flowers observations were held at 24° C at light and 20 ° C at night, 70% relative humidity and 12 h photoperiod.

The effect of treatments was evaluated by measuring and recording : petal length, longevity, first signs of leaf yellowing. Longevity of inflorescences was recorded from the time of the primary florets were opening until wilting the secondary florets occurred.

The results were subjected by comparing with control variant.

RESULTS AND DISCUSSIONS

In the preliminary experiment, the harvested flowers were evaluated by quality and quantity – Table 1.

The whorled inflorescences consisted of 5 or 6 cymes, with two or three florets each. The length of cymes was between 10 and 11 cm. the secondary florets opened a day before the primary florets wilted. The inflorescence vase life was almost two weeks, more with 3 – 4 days at the chemical variant. The first signs of leaf yellowing following treatment with HQC + D + GA occurred at the end of experiment.

Table 1

Evaluation of harvested flower quality

Cultivar	Number of cymes (buc)	Length of cymes (mm)	Length of primary floret (mm)	Number of flowers with tertiary floret (%)
Orange beauty	5,6	104	40,5	43

Table 2

Evaluation of flowers quality held in water - Vo

Cultivar	primary florets		secondary florets			Inflorescences vase life Days
	Petal length (mm)	Vase life days	Days antill open days	Petal length (mm)	Vase life days	
Orange beauty	48,3	6,7	5,8	44,1	7.8	13.6

Table 3

Evaluation of flowers quality held in D+E – V1

Cultivar	primary florets		secondary florets			Inflorescences vase life Days
	Petal length (mm)	Vase life days	Days antill open days	Petal length (mm)	Vase life days	
Orange beauty	51.1	8.2	6.3	48.1	10.4	16.7

Table 4

Evaluation of flowers quality held in HQC+D+GA – V2

Cultivar	primary florets		secondary florets			Inflorescences vase life Days
	Petal length (mm)	Vase life days	Days antill open days	Petal length (mm)	Vase life days	
Orange beauty	51.3	8.2	64	482	10.6	17.0

Table 5

Effect of different preservative solutions of petal length

Preservative solution	Primary florets	Secondary florets
V_0	48,3	44,1
V_1	51,1	48,1
V_2	51,3	48,2

Table 6

Effect of different preservative solutions of vase life and first signs of leaf yellowing

Preservative solution	Vase life	First signs of leaf yellowing (days)
V_0	13,6	9,7
V_1	16,7	13,3
V_2	17,0	16,4

Table 7

Differences between control variant and V1 – V2

Variant	primary florets	Secondary florets	Vase life (days)	First signs of leaf yellowing (days)
	Petal length (mm)	Petal length (mm)		
V_0	48,3	44,1	13,6	9,7
V_1	+ 5.9 %	+ 9,1%	+ 22,8 %	+ 37,2 %
V_2	+6,3%	+ 9,3%	+ 25 %	+ 69 %

CONCLUSIONS

It was evaluated the effect of post harvest chemical treatments with dextrose and pounded ember, on the one hand and with a solution by 8-hidroxychinolein citrate, dextrose and gibberellic acid, on the other hand. The pulse treatment with HQC+D+GA had the best effect, both on the length of petals and vase life; the petal yellowing was almost zero.

Although cut Alstromeria flowers has a long vase life – two weeks, the proper post harvest treatment is necessary to improve the quality of secondary florets, prolong vase life of whole inflorescence and prevent yellowing of leaves – a frequent deficiency of cut Alstromeria flowers.

BIBLIOGRAPHY

1. Dumitru D. Beceanu, 2000 - *Valorificarea in stare proaspata a fructelor, legumelor si florilor*.
2. Healy, W., and Lang, D., 1999 - *Postharvest handling of Alstromeria. Hort Science* 24:641-643.

3. Halevy, A.H., and Mayak, S., 1981 - Senescence and post harvest physiology of cut flowers, Hort. Rev. 3 : 59-143.
4. Lisiecka , A., and Szczepaniac, S., 1992 - *Factors influencing the yeld of Alstromeria.* Acta Horticulturae 325.
5. Michalczuk, B., 1992 - Storage of cut Alstromeria flowers, Acta Horticulturae 325 : 207-213
6. Nowac , J., 1985 - *The response of cut flowers to inhibitors of ethylene action*. Acta Hort. 167.
7. Sanso, A. M., and Camargo de Assis, M., 2005 - Alstromeria: a charming genus, Acta Horticulturae 683 : 63-77.
8. Zizzo, G.V. , and De Vita, M.,1992 - Alstromeria response to different shading levels, Acta Horticulturae 325 : 223-227.