From Field to Vase: Postharvest Care of Fresh Cut Flowers

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Postharvest care of fresh cut flowers should be a consideration at every step of production: (1) selection of flower species and cultivars, (2) selection and preparation of the production site, (3) crop scheduling, (4) field production, and (5) actions taken after harvest to maintain high quality. This paper includes specific recommendations for that fifth step: how to harvest, process and store cut flowers to maintain high quality.

Stage of development for harvest varies by type of cut flower, and by marketing strategy. See web-based references on the next page for species-by-species recommendations. Consider what your customers want: for direct sales, harvest slightly more mature flowers than for wholesale sales. For longest vase life, cut most flowers in bud, as they start to show color, except for daisy-type flowers (cut when open and just starting to show pollen), and spike flowers (cut when the one-to-two lowest flowers are open).

Time of day for harvest requires some compromise. Flowers have their highest water content early in the morning, but their highest level of sugars at the end of the day. Cut most flowers in the morning, when they are cool and turgid, and when you have enough light to do the job. Cut after the dew dries, to avoid gray mold. Avoid cutting during the heat of midday. If you must cut late in the day for next-day sales, cool the flowers as soon as possible after cutting.

Temperature is important, because flowers age faster when warm. Harvest in morning when both air and plants are cool. Remove field heat as needed, before packing or bunching. Transfer cut flower to a cooler (see web-based references on the next page for information about cold storage facilities. If no cold storage is available, put cut flowers in the shade or a ventilated shed. If possible, maintain high relative humidity to reduce water loss from cut flowers.

Water must be provided, immediately to fully hydrate cut stems. Take a bucket of cold water into the field when you harvest. To open buds faster, use warm water (100-110F). To rehydrate wilted stems, use eight-inch-deep warm water. If any flower types tend to wilt, recut their stems under water to eliminate air bubbles. Buckets and water must be clean and bacteria-free. Acidify water to pH 3.5 for best uptake by stems … always test your water before trying to change it.

Ethylene causing plant tissues to age. It is produced by aging and damaged tissue. Do not harvest stems with diseased or badly damaged tissue. Remove lower leaves and damaged leaves. Use clean buckets. Cool flowers quickly to slow ethylene production. Ventilate your holding area if possible to remove ethylene from the area. Do not store cut flowers and fruits together; many fruits produce a burst of ethylene as they mature.

Postharvest solutions can greatly extend vase life. Rehydrate cut stems in the field; take a bucket of water (pH 3.5 is desirable) to the field when you harvest. Grade and bunch, and then pulse stems by placing them in a 1.5-2.0% sugar solution (add 13 ounces sucrose to 10 gallons water for a 1% solution). Use acid water and a bactericide to control bacteria. Commercial floral

preservatives contain sugar, acid and bactericide. Sugar provides energy for plant processes, acid helps water enter stems, and bactericide helps reduce organisms that clog water-uptake tissues. BUT … the most important component of cut flower solutions is clean water, changed daily.

Web-based Cut Flower References With an Emphasis on Postharvest Care

http://www.ascfg.org/
Website of the Association of Specialty Cut Flower Growers

http://www.oznet.ksu.edu/library/hort2/mf2261.pdf
Site of publication: "Postharvest Handling of Fresh Cut Flowers and Plant Material"; includes information on handling, grading, precooling, storage, temperature, storage life and vase life.

http://www.oznet.ksu.edu/library/hort2/mf2323.pdf
Information for retail florists, on care and handling of over 40 kinds of fresh flowers.

http://www.oznet.ksu.edu/library/hort2/MF1174.PDF
Site of publication: *Cold Storage for Specialty Cut Flowers and Plant Material.*

http://www.uvm.edu/pss/ppp/coh29ph.htm
Good introduction to the factors that affect cut flower longevity.

Websites that address postharvest care of specific cut flowers:

http://www.oznet.ksu.edu/library/hort2/srp840.pdf
Covers helenium, cosmos, sunflowers, beebalm and others.

http://www.oznet.ksu.edu/library/hort2/MF1034.pdf
33-page publication: *Specialty Cut Flowers: a Commercial Growers Guide*.

http://www.oznet.ksu.edu/library/hort2/srp805.pdf
Addresses care of autumn sedum, cardinal flower, sunflowers and others.

http://www.oznet.ksu.edu/library/hort2/SRP751.PDF
Addresses care of sunflowers.

http://extension.umass.edu/floriculture/fact-sheets/crops
Website from which you can access fact sheets that cover:
1-Postharvest care of spring flowering bulbs;
2-Postharvest care of astilbe, gladiolus, helianthus, liatris, lilies, zinnia; and
3-sugar and acidity in preservative solutions for cut flowers.

http://www.ncsu.edu/project/cutflowers/postharvest/index.htm
Extensive list of field trials and postharvest trials of specific cut flower cultivars.

http://nesare.org/
Website of the USDA-SARE (Sustainable Agriculture Research and Education) program. Do you have an idea for an applied research project, to investigate postharvest care of cut flowers (or any other aspect of cut flower production)? SARE provides research funding to innovative growers.