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Grant Project Final Report

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Expanding Floral Markets Across Wisconsin Fair Field Flowers Grant Final Report

What did you want to accomplish with the grant?

In 2003 several cut flower growers in the Dane County area got together because they felt that by pooling their products, and by learning more about professional cut flower growing with a sustainable bent they would be able place themselves in a position to find and sell to markets in the Milwaukee area. Producers selling through Fair Field Flowers would be able to grow more flowers or start a cut flower business with the prospect of having new markets that would otherwise be unavailable to them. By growing sustainably Fair Field Flower growers anticipated adding value to their flowers and improving environmental practices of all members and others who wished to emulate this project.

The growers paired with the UW Center for Integrated Agricultural Systems in order to enhance their own knowledge and promote the growth of the cut flower farmers in Wisconsin. The (UWCIAS) became a powerful ally in fulfilling the education portion of the growers' aims.

What Steps did you take to reach your goal?

With a grant from Dane County in 2002 a long time cut flower grower had reached out to area growers to find individuals who were interested in finding new markets for their flower products. With this initial grant interested growers were identified and met for 9 months to hammer out a business initiative. At the beginning of the ADD grant the group had a business phone and cards, a printer/fax/copier/scanner, and a manager, a driver and Quickbooks for accounting purposes.

Shortly after the cut flower growers organized they registered with the State of Wisconsin as a Limited Liability Company with the name, "Fair Field Flowers" (FFF). This type of business organization is a partnership with the protection usually afforded to corporations. All members signed the agreement which included several components they felt were important. These were:

1. An explicit growing agreement which assured our consumers all members grow sustainably. EX: Organic standards are used for pesticide herbicide and fertilizers used by the group.
2. A non-competition agreement that bound the group to forgo individual selling in several counties that were reserved for FFF business only.
3. Clear guidelines for bringing in new members and termination of membership.

The cost to join was a reasonable \$200.00. At the start of the 2003 growing season the LLC consisted of seven partners who spanned Dane and Iowa Counties. Some of the growers had many years experience growing and selling flowers for cuts and others were coming in new to the field. Two of the partners had grown vegetables for market but had minimal experience growing and marketing cut flowers.

We were lucky that a member/grower had a truck which was retrofitted with refrigeration and this vehicle was leased one day a week. Several prospecting trips to Milwaukee and surrounding area paid for by the initial Dane County grant had produced a basic list of florists interested in FFF products.

Weekly runs to Milwaukee began in late June 2003. Initially everything that growers could cut went on the truck. One member who was already selling to florists in the Dane County area supplied a majority of the product we had on the truck each week. This imbalance continued in the 2004 season as well but other growers are gaining experience and have an increased share of product sold. * see attached graph.

The ADD grant was awarded in July of 2004 supplying FFF with cash to begin working with John Hendrickson from the Center for Integrated Agricultural Studies (UWCIAS). With the help of John Hendrickson FFF members worked hard to prepare a series of workshops to enhance each partners work with production, selecting varieties and equipment, learning about greenhouse growing, calculating costs and handling flowers after harvest. The time working and learning together really solidified the group due to the openness to share knowledge. Most of these workshops were held at individual farms or homes. John was able to take much of our prepared material and begin to develop a “School for Beginning Cut Flower Growers” much like the popular ‘School for Beginning Market Growers’ already available to growers in the State of Wisconsin.

What worked?

- FFF created a market for partners to expand sales of their cut flowers. While the number of florists visited each week remained constant, the first year necessitated changes to recruit new florists and drop florists who were not interested in our product. These changes continued somewhat in 2004.
- A refrigerated van used for transport allowed FFF to deliver an excellent product to our consumers because the chain of cold kept the product in prime condition. Using refrigeration allowed unsold material to be held by growers for other outlets on subsequent days.
- 6 of the 8 members of FFF in 2004 have realized profit from their involvement with the project. One of the members has not marketed flowers through FFF yet and the other had a particularly rough year due to start up and flooding problems.
- The LLC partnership agreement worked when two incidents happened. 1. An original partner dropped out in July 2004. The agreement allowed this to happen in an orderly fashion with no hardship to the partnership. 2. FFF recruited 2.5 new members (.5 was a partner with the entity that resigned from membership). Welcoming new membership was easily accomplished due to the steps spelled out in the LLC partnership.
- The workshops enhanced the fellowship as well as the knowledge base of the LLC. New members were recruited by opening the workshops to invited guests of the partners.
- The driver of the van became the primary marketer during the growing season. She took opportunities to stop at new florists and pursue other avenues to sell FFF cut flowers.
- Market potential is noted for our product in ‘natural’ or ‘health food’ stores. FFF sells to one of these types of stores at the moment and potential is there for expansion in the light of some market research.

- Our best customers value 'local' and the uniqueness of our product.
- Having members ride the truck or visit florists when prospecting gave them a better idea of the quality and consistency needed by florists.
- Assessing demand for our products at the end of the 2003 season and concentrating on High Value – High Demand crops helped the 2004 season sales total. Growers responded to prioritizing flowers which had the highest return and the highest demand.
- Having one or two members who are familiar with the market and have growing experience was very good for the partnership.

What did not work?

- Surprisingly, it was difficult to market our flowers as sustainable. This label did not seem to have the value we had assumed it would have in the floral market. Only one florist responded directly to that attribute when approached. It would seem that our product fills only a small segment of regular florist's purchases and most of the flowers florists use are grown conventionally. It was neither practical nor realistic for a florist to advertise to the consumer that they have sustainably grown flowers. In the floral industry as a whole branding of floral products has just begun in earnest and this branding is not commonly known to the end consumer who neither asks nor expects to know how flowers are grown.
- The business was under funded by participants. Because of the deficit of initial funding by members the partnership raised the percentage of the total sale price that FFF receives to pay for expenses from 19% to 25%. In 2004 an additional 6% surcharge on each grower's receipts was also collected, making 31% a total cut for FFF of gross sales.
- Raising prices in the middle of the 2003 to reflect our costs more accurately appeared to make customers more cautious about our pricing and questions about how much each item cost were more prevalent.
- The cost of transportation continues to be the biggest impediment to a better FFF outlook. With the cost of the truck, driver and fuel FFF struggles to reach profitability. The cost of transportation is easily the most costly expense of FFF.
- Approximately 20%- 30 % of the flowers sent each week on the truck are unsold at the end of the run. This 'shrink' contains the value needed to reach profitability. FFF needs a way to sell 90% or more of the product consigned to it each week. Setting up sales at the end of the day with a wholesaler in Milwaukee has not worked up to this point. Also, working with a Milwaukee wholesaler would be competing against ourselves in that regional market.
- FFF has a few systems problems that are hindering sales. Because the growers are used to growing and then selling 'what there is available' most are not efficient in knowing when products will be available for sale or the accurate volume of products. Therefore it is not always possible for florists to know what will be coming on the truck and sales are

forfeited because FFF cannot communicate ahead of time the volume of what is coming or even what is coming. A florist cannot plan or sell our product to a customer beforehand. Pre orders are sold products and are highly desirable but FFF is not able to readily impart the needed information to facilitate pre-orders.

What would you do differently?

- Organize and communicate with the growers to ensure that information is easily available to the consumers so they can make convenient and informed decisions on what to preorder.
- More carefully calculate expenses vs. income for a more realistic price.
- Work with more marketing models rather than just one. For example: Develop 'health food' bouquet market, shipping to other regions and route sales to florists – all at the same time.
- Advertise more to reach florists who value our local grown sustainable product rather than try to call or visit each florist in the Madison – Milwaukee corridor and in Milwaukee proper.

What were you able to accomplish?

- We were able to bring cut flower growers in this region together for a new venture.
- We were able to take a local agricultural product and open a new market for them in our region.
- We brought money to local agricultural workers through this new market and in doing so allowed local farmers to continue to stay on the land.
- Our company created employment for 2 part time contract workers, the FFF manager and driver, and provided income for the member who leased their truck to FFF. Because of increased sales of at least 3 other workers were hired by the members operations.
- Our growing practices assured that the 8 members of FFF farmed ecologically responsibly.
- FFF provided the opportunity to our customer's customers to purchase sustainable local products rather than similar products which have been shipped long distances and grown under unknown conditions.

What challenges did you face?

- Our product is unique - Not only are our flowers competing against many many other venues where florists could buy flowers but our flowers are, generally, an unknown quantity to many of them. Our best customers were knowledgeable about specialty cut flowers or were attracted to their unusual nature. However, many florists were unable to take the leap to using these 'unknown quantity' flowers rather than the tried and true imported flowers they were used to using.
- Communication - Because FFF is a new venture and all the partners are spread out over a large area the challenges to meeting and working through problems is difficult. Meetings are erratic and not all partners can attend each meeting. This problem is very challenging

when concerns and questions need to be worked out or specific directions need to be consistently practiced by all members.

- Cost - Transportation costs are really high and tough to reduce.
- Energy - Our manager and driver was also a member. Having the energy to grow flowers, direct the business and drive the van left little energy for expanding the business.

What do you plan to do in the future as a result of this project?

The partners feel that the company is viable and that opportunities to expand and make a profit are possible. Plans are in the works to address several issues:

- In the plans for this year is a postcard advertising campaign to florists in several target Wisconsin areas. FFF is seeking florists who value local, unique and, hopefully, sustainably grown specialty flowers. FFF is willing to work with them to add them to the route or ship to them weekly.
- FFF will advertise 2 xs in the Wisconsin and Upper Michigan Florist Association (WUMFA) newsletter. Our ad will also be in their member directory. Since our best customers value the localness of our product we hope to attract these florists with our ads.
- A meeting is planned for growers to discuss who grows what and in what quantities. Hopefully, we can work out keeping records and communicating availability and volume to our customers.
- We intend to develop markets where we ship to our customers rather than deliver. We plan to contact the Chicago wholesale market and work with other growers to share transportation expenses.
- Look into selling to more 'natural' and/or 'health food' stores. This includes attending the Sustainable Expo in Chicago in February and contacting these types of stores in our target areas.
- Members want to develop a photo album of all the flowers we grow to show florists the variety and uses of our flowers. This album would be available on our web page www.fairfieldflowers.biz or on a c.d.
- In order to reach consumers and have them request our sustainable flowers one of our very talented members will be writing article(s) for publication in newsletter(s) to encourage customers to know about our product and to ask for it.

How should the agricultural industry of the State of Wisconsin use the results from your grant project?

- Our report can be put on your web page.
- People who are interested in cut flower production can be referred to our business for information and problem solving.
- Other growers can be referred to our group if they want to start a group of their own or if they would be interested in joining our group.
- Note that our economic impact in 2003 and 2004 is over \$50,000.00 in direct payments to the company, approximately \$20,000 in direct wages were paid to hired agricultural workers and Fair Field Flower contract workers. This is a win for State Agriculture and state agricultural workers.

Fairfield Flowers ADD Grant Final Report

Education and Outreach Activities

John Hendrickson

One of the goals of the Fairfield Flowers grant project was to engage in a self-education process for members of Fairfield Flowers LLC. Through a series of workshops held by and for the members of the group, the group sought to improve and expand their own knowledge of flower growing methods, with an emphasis on sustainable production practices. By “sustainable” they mean production methods that enhance, rather than deplete or degrade natural resources as well as those that are profitable for growers. In order to ensure that the impact of this project extended to other growers in the state, the group decided to partner with the Center for Integrated Agricultural Systems (CIAS) at the University of Wisconsin. CIAS is a state and national leader in programs that support the development of more sustainable farming practices and food systems. One highly successful CIAS program is the Wisconsin School for Beginning Market Growers, an intensive workshop designed to expose beginning vegetable farmers to the full range of knowledge and skills required to start and operate a successful business growing and selling vegetables. As coordinator of this program, I have been receiving numerous requests for a workshop on flower growing and the chance to develop a program in collaboration with Fairfield Flowers was a welcome opportunity. So, an objective of the project became developing a “Wisconsin School for Flower Growers.”

The internal workshops conducted by and for members of Fairfield Flowers LLC became a testing ground for topics, content, materials, and speakers. I worked with Fairfield Flowers coordinator Carol Larson to establish the topics for a series of six workshops. Originally, eight workshops were proposed but due to the difficulty in scheduling meetings, it was decided to combine some topics into single workshops. The workshops topics were as follows:

1. Soils and compost
2. Variety selection, propagation, and succession planting
3. Marketing and profitability
4. Harvest and post harvest handling
5. Hoophouse management
6. Insect and disease management

These workshops were held between November 2003 and June 2004. Most took place at the farms of Fairfield Flower members and lasted 3-5 hours. Most were taught by a Fairfield Flower LLC member with the exception of the first and last workshops for which the group wanted to invite outside expert speakers. Former UW soil scientist Leslie Cooperband taught the soils workshop and Phil Pellitteri, UW Department of Entomology—Insect Diagnostics Lab and Brian Hudelson, UW department of Plant Pathology—Plant Disease Diagnostics Clinic, led the group on an afternoon insect and disease “tour.”

In between these bookends were a series of workshops prepared and presented by growers. Fortunately, the Fairfield Flowers group features several savvy, knowledgeable growers to serve as instructors and mentors for others in the group. The series was a successful exercise in grassroots networking and community self-improvement. It also mirrored the Wisconsin School for Beginning Market Growers which features grower-instructors but also includes presentations by University personnel. This mix of presenters and the information and styles they exhibit has

been an unequivocal success in the past and will be continued in the Commercial Flower Growers School when it is fully developed and offered to the public.

The series of workshops also represented a trial in terms of a new format for educational programming. The Wisconsin School for Beginning Market Growers has always been offered as a consecutive three-day class. The flower workshops were held more-or-less monthly with the exception of the last two which were scheduled during the spring and early summer so that things could be seen growing in hoopouses and real live insect and diseases could be observed and identified in the field. Such a schedule has the advantage of not forcing people to reserve consecutive days—and often take extended time off from an off-farm job—to attend a workshop. It also allowed for longer and more concentrated time on a single or related set of topics than a consecutive 3 day workshop. It also featured in-season visits to working farms that allowed people to see things like hoopouse flowers and associated tools and machinery rather than just hearing about them or viewing pictures. Conversely, the Wisconsin School for Beginning Market Growers has always been restricted to winter months given the intensive use of growers as instructors.

On the negative side, the monthly meetings lacked a strong sense of continuity and cohesiveness. If participants did not already know one another, there would likely be less of an opportunity to develop a sense of camaraderie and resulting networking in a workshop series that was spread out over several months. This was not a significant issue for this group given that most knew each other well prior to the workshop series. Although some aspects of scheduling monthly meetings may be more convenient for some participants, asking people to reserve days and times over several months also has challenges and pitfalls. It is certainly true that for participants traveling from afar, one trip lasting several days is more likely to be desirable than many shorter trips. A final decision on whether the Flower School will follow the Market Grower School pattern and be held on consecutive days or be held following a monthly schedule has not yet been made.

The workshops varied greatly in terms of presentation style. Some growers obviously spent considerable time typing up notes and compiling resources, while others relied on their experience and questions from participants. Some of the workshops involved tours, visual aids, and simple, short “experiential learning” exercises such as a soil aggregate test or having the opportunity to handle various tools. Not surprisingly, the use of visual aids and being able to see things during farm tours was a tremendous asset to the workshops, especially for the newer, less experienced growers. The workshops yielded a number of resources and handouts that will be adapted and expanded for use in future, public workshops. One resource is an excellent Power Point presentation on documenting costs of production, setting prices, and measuring profitability prepared by one of the Fairfield Flower members. See Appendix A for additional examples.

Overall, several valuable lessons were gleaned from the workshops. These included:

- Beginners need advice on varieties, especially “can’t miss” standard varieties that are relatively easy to grow. They also need advice on how much to plant. Lynn Byczynski’s “½ acre flower plan” is one good example of this but other examples need to be gathered.
- Many beginners are unfamiliar with basic farm machinery and tools and need a primer on tractors, implements, and the fundamentals of sustainable soil preparation as they shift

from a garden scale to a small farm scale. This type of information is being compiled into a publication/handout that will serve both the Flower Growers School and the Market Growers School.

- The topic “succession planting” needs to be framed as an effort to achieve an adequate progression of *successive blooms* so that the grower has adequate variety in flower shapes, colors, etc, throughout the season.
- Sample planting and harvest calendars are extremely useful tools and examples are being gathered from experienced growers in various parts of the state.
- Several excellent “flower charts” are available that list varieties, planting method, light and soil requirements, spacing, harvest tips, vase life, etc. but need to be compiled, expanded, and edited.
- Given the tremendous variety of flowers and their different requirements, it is difficult to balance “standard” techniques and processes and the specific details and idiosyncrasies of particular flowers. For this reason, it is likely best to have growers share the nuances of several flower varieties within the context of a workshop. This tactic has proved effective in the Wisconsin School for Beginning Market Growers. Each time the workshop is offered, the grower-instructors select 6 vegetable crops on which to focus. For the Flower Growers School, this number may need to be increased and should include a balance of annual and perennial flowers.
- As with small-scale vegetable farming, there is a relative lack of information about the economics of such enterprises and beginning growers struggle with setting prices for their flowers and bouquets. Information and perspectives on this will need to be gathered directly from growers and compiled into printed materials for the Flower School just as they have been for the vegetable-focused Market Growers School.

A final outcome of working with the Fairfield Flowers on this series of workshops was that I became far more familiar with flower growing and will, therefore, be better able to coordinate a Flower Growers School. In addition to the time spent on the workshops themselves, I spent time visiting farms, attending other meeting of the Fair Field Flower LLC, gathering and reviewing resources (books, periodicals, and Internet) and creating materials that will be used when the course is offered. Many of the latter are still in the process of being written and edited. The collaboration with Fairfield Flowers has laid a strong groundwork to develop and offer a Commercial Flower Growers School in the future. The Flower School will first be offered in early 2006.

Hoophouse Flowers: Introduction and Construction Overview

Wisconsin Commercial Flower Growers School—DRAFT

Why Hoophouses?

- Extend production and marketing season, early and/or late
- Maintain markets
- Avoid competition and achieve higher prices
- Achieve a more even season in terms of sales (improve cash flow)
- Achieve a more even season in terms of quality of life (?)
- More value and income from less land
- Keep farm assistants employed year-round

Hoophouse Site Selection Considerations

- Length (ridge) runs east-west
- Avoid shade (objects typically shade 2 times their height.
-Approximately 20' between hoophouses is typically required.)
- Windbreaks are nice as wind is a significant threat to structure and plastic
- Drainage (depends on slope, elevation, and soil type)
- Electric (for inflation fans or heat) and water lines (frost free hydrants)
- Propane line (heat)
- Access (people, vehicles, access during winter)
- Consider possible future expansion (extend existing house or add houses)
- Soil quality and preparation

Soil Preparation and Fertility

- If area is already cultivated and soil is healthy, little preparation is required
- If area is in weeds or sod start a year in advance of building the hoophouse.
- A soil test will reveal fertility levels and pH.
- Prepare an area several times large that the footprint of the hoophouse
- Cultivate deeply--8-14 inches--with a chisel plow
- Apply compost and grow green manures to build organic matter and add fertility
- Finish with irrigation and a shallow tillage to stimulate weed seed germination
- With frequent crop rotations maintaining fertility is important
- Excess fertility, however, can lead to insect damage, less cold tolerance, excess nitrate in leafy greens, and soluble salt build-up.
- Use mature, low N compost if available. Most flowers do not require high amounts of nitrogen.
- Use alfalfa meal or other purchased fertilizers if needed.
- Broad forks, 3-prong cultivation claws, and bed rakes are useful hand tools.
- Between crops, broad fork before applying nutrients to allow aged organic matter to fall deeper into soil. Apply and mix added fertility shallowly so as to not over-stimulate microorganisms

Bed Layout

When planning the size of your hoophouse, keep in mind that 60-70% of a hoophouse will typically be used for growing, the rest for access paths and other workspace.

Long rows versus keyhole (side to side) layout

- Long rows
 - Easier drip irrigation and covering with frost fabric
 - Longer plots better for some seeders
 - Narrow aisles can be awkward for multiple workers
- Keyhole
 - Easier access with wheelbarrow, harvest crates
 - 3% more space utilized for growing
 - Easier to water with hose (center access)
 - Easier to keep track of rotations
 - Easier to clean up a bed, add fertilizer, and replant
- High sidewalls will allow greater flexibility in terms of access. Paths can be along walls (where the coldest soil is) and tillage equipment can be more easily used.
- A 1' or less aisle is usually adequate
- A 2.5' (30") wide bed works well for most people and equipment
- Remember to consider space to work (especially harvest) and space needed for possible crop support structures (trellis).
- Intercropping can greatly increase productivity and profits

Hoophouse Structures

- Movable or stationary? Movable structures bring advantages in terms of soil management, crop scheduling, pest and disease management but there are additional construction considerations that may add to the total cost.
- Quonset and Gothic arch are dominant shapes. Gothic is better in terms of light and sheds snow better.
- Typical widths range 14' to 30'. Wider houses experience less edge freezing and provide more space and options for larger doors, and end-wall ventilation.
- End-wall construction options. Endwalls and doors take more wind stress so design and build them well. (need to add diagrams)
- Attach plastic in 60-70 degree, windless weather. If too cold (<40F), plastic will be loose during the summer and move in the wind. If too warm (>85F) will stretch during winter when plastic contracts. It is *not* necessary to pull really tight and remove all wrinkles.
- Ventilation options—endwall, roll-up sides, peak vents
- Peak vents are very effective but expensive and not required
- Roll-up sides can be purchased (\$300-400 for 96") or made yourself. These are very effective for ventilating but some growers get by with only end-wall ventilation.
- Always use ground posts and anchors

Construction Costs

- As low as \$1.50 per square foot (materials only)
- As high as \$5 per square foot.

Post Harvest Handling of Cut Flowers

Wisconsin Commercial Flower Growers School—DRAFT

Consider post harvest handling to be a primary element of your marketing efforts. Having quality flowers is vital for sales and brings repeat customers.

Challenges to keeping flowers fresh after harvest: overview of plant physiology

- Respiration
- Food
- Bacteria
- Water

Post Harvest Procedures and Flower Care. Prepare thoughtfully and carefully!

- φ Maintain clean buckets, and cooler. Use a cleaning product such as Floralife's DCD™ or a mild bleach solution.
- φ Keep knives, shears and other tools clean and sharp.
- φ Harvest water and aides – hydro solution, water temperature.
- φ Water Quality. At a minimum, test your water pH and adjust as necessary. Alkaline water and high salinity are characteristics that decrease the vase life of flowers. A few tests comparing your water with de-ionized water will reveal if your water is a significant factor. Floral preservative companies will test water for you (minimal or no fee) and then make recommendations for improvements.

Field Harvesting—Timing is Important

Time of day. It is best to not work in wet fields and with wet plants to avoid soil compaction and disease transfer. This is unavoidable at times to meet market deadlines, however. You also have to balance waiting for the fields and crops to dry versus harvesting when the temperature is cooler. Some growers place flannel sheets on benches to absorb water from cut stems if there is heavy dew or rain.

Some species do better when harvested at different times of day. *Examples:*

Late: cottage yarrow

Early: Ammi, Salvia, Veronica, Early Veronicastrum, Godetia

Timing of flower stage—Very important!

Farmers Market vs. Florist/wholesale standards. Farmers' market customers typically want open flowers, even though they do not last as long. Different flowers perform best when harvested at different stages of bloom, from bud to fully open. For advice on when to harvest different varieties, see the "Circle of Life" web page www.chainoflifeflora.org (membership required) or Lynn Buczynski's book, The Flower Farmer. *Examples:*

Sunflower—Harvest when petals are just about to unfurl.

Zinnia—Harvest when fully open.

Ammi—Harvest when nearly all florets are open but before they shed pollen.

Dephniiums, Larkspur, Snapdragons—Harvest when partially developed, when only 1/3 or 1/4 of flowers on spike are opening.

Harvest Tips

Use a knife to harvest versus pulling the plant to harvest. With a sharp knife and the right technique, harvesting is much faster than with shears (scissors). Tips:

- Cut stems the same length
- Strip leaves in the field
- Carry a bucket with you down each row; pick directly into water
- Use buckets that have handles
- Take advantage of any shade available to keep flowers cooler and out of direct sun

- Work quickly and efficiently
- Don't be afraid to sacrifice buds

Cooler Issues

Flowers should be placed in a cooler as soon as possible after harvest.

1. Cleanliness. Keep your cooler clean. Old plant debris and unsold flowers should be removed as they can give off ethylene gas which has many deleterious effects on flowers. Another source of ethylene gas is vegetables and fruits, especially apples. Therefore, do not store produce in your flower cooler, even employee lunches.
2. Temperature. Lower temperatures reduce respiration and thus conserve carbohydrates, thereby prolonging quality and vase life. 34°F is optimum although there are exceptions, such as Zinnias which dislike temperatures below 45°F.
3. Humidity. Maintaining high humidity (80-90%) is important to reduce water loss and stress. However, to avoid diseases such as botrytis, keep cooler clean and ensure adequate air circulation.
4. Length of time flowers can be held in the cooler. Given optimum conditions and practices, it is possible to hold flowers for 1 to 3 weeks (depending on the species). However, most small scale growers cannot maintain optimum conditions and a prime selling point to retail customers and at farmers market is "just-picked" freshness. Therefore, it is best to keep storage time at the absolute minimum by harvesting flowers just before they are marketed at a farmers market or delivered to florists. It is advisable, however, to pick most flowers such that there is adequate time for flowers to be carefully handled, processed, bunched, re-hydrated (flower stems fully turgid), supplied with a preservative solution, and cooled so that they can better handle the time spent at an open air market or in your delivery vehicle.

Floral Preservatives

Floral preservatives are standard in the industry and add valuable vase life (often double) for your customers. Preservatives typically perform three functions: they provide sugar (carbohydrates), supply a bactericide, and acidify the water. Most contain 8-hydroxyquinoline citrate (8-HQC) and sucrose (table sugar). The 8-HQC is both a bactericide and an acidifying agent. Slow release chlorine compounds (DICA and DDMH) are also often used in the industry as bactericides. Note, however, that synthetic bactericides and chlorine are not allowed in organic farming systems. The company Vita Life markets a preservative and other solutions for organic growers (see resource section below). Regardless of what solutions are used, keep buckets clean and label them for use with only one type of solution.

Bunching

1. Set up your station carefully and purposefully. Your bench should be at elbow height for ease of working. Keep all supplies near at hand and neatly organized so that you can work quickly and efficiently. Use old flannel sheets or comforters to cushion flower stems.
2. Underwater cutting. Gloeckner/floral program management
3. Cooling time before bunching. Make sure your flowers are adequately cooled before bunching. If you bunch immediately after harvest the flowers will suffer. You also lose valuable harvest time in the field as bunching can take place later, in the heat of the afternoon or in the evening.
5. Bunching – for FM / For Florist
 - a. Lay flowers on counter
 - b. Value determines count/ consistency of bunch
 - c. Wrapping with rubber bands.
 - d. Sleeves
 - e. Depth of water in the bucket- depends on storage time. With experience, you

will be able you will be able to judge how much water is needed.

Shipping and Marketing

Ideally, flowers are kept cool during deliveries by using a refrigerated truck. This is not always economically possible for the small producer. A small van with the air conditioner on full can be used effectively. Much of the heat in an un-refrigerated van or truck comes from below. Witness this for yourself by feeling the bottom of boxes and buckets after being hauled around town on a hot summer day. A layer of Styrofoam insulation and a piece of plywood is an inexpensive and effective way of keeping this heat away from buckets of flowers. This also give you a platform on which to make a 2x4 grid that can help keep buckets upright and separate. Minimize the time flowers spend in an un-refrigerated vehicle by making deliveries during times of low traffic and try to develop accounts in a tight geographic area.

At the farmers' market, protect flowers from sun and heat at your market stand. Use shade tents. The appearance of your tables, signage, and buckets can attract or detract customers as much as the individual flowers themselves!

Handling problem flowers

1. Problem Flowers at initial cut
2. Problem Flowers at Farmers Markets
3. Problem Flowers for Florists

Resources

- Current flower prices to retail florists www.ams.usda.gov/fv/mncs/fwires.htmflorists
- Association of Specialty Cut Flower Growers : www.ascfg.org
To enter the members only area use ASCFG as your password and log in.
- Univ of Maryland Post – Harvest Paper: www.agnr.umd.edu/users/ipmnet/cutpost.htm
- Univ of Mass. Floriculture site: www.umass.edu/umext/floriculture
- Appropriate Technology Transfer for Rural Areas (ATTRA): free publications.
www.attra.org/attra-pub/cutflower
- Chain of life network: <http://www.chainoflifenet.org/>
- OMRI approved brand name products list: http://www.omri.org/crops_alpha.pdf

KNIFES/SLEEVES /FLORALIFE HARD WATER/

Bill Dorn Company, 4710 Pflaum Rd, Madison, WI
608 223-0247

UNDERWATER CUTTER

Floral Program Management, 2224 Evergreen Rd. No.6, Middleton WI 53562
800 599-9434 OR 608 836-8506

BUNCH CUTTER

Gloeckner Wholesale Catalog
800 345-3787

NOP APPROVED PRESERVATIVE:

Vita Products: Vita Flora 2000, Vita Hydra 2000, Vita One Step, and Vita One Step Pro
PO Box 565, Chandler AZ 85244
800 874-1452