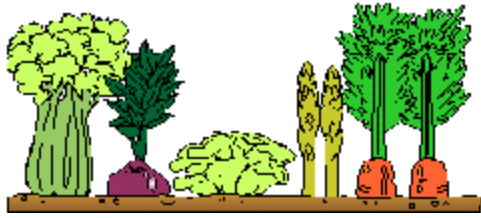


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Vegetarian Newsletter

A Vegetable Crops Extension Publication
Vegetarian 01-10
October 2001

University of Florida
Institute of Food and Agricultural Sciences
Cooperative Extension Service

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EVENTS CALENDER

COMMERCIAL VEGETABLES

- [Florida Water Conservation Initiative](#)
- [Effective Packinghouse Design for Small Operations: Planning Considerations](#)

VEGETABLE GARDENING

- ["Special Specialist" Retirement Letter](#)

[List of Extension Vegetable Crops Specialists](#)

Events Calender

Cucurbitaceae 2002 - Dec. 8-12, 2002 - Naples Beach and Golf Club, Naples, FL. Contact Donald N. Maynard at (941)751-7636 x239 or dnma@mail.ifas.ufl.edu.

The University of Florida Cooperative Extension Service
The North Florida Research and Education Center – Suwannee Valley, and
The Horticultural Sciences Department announces

The Florida Drip Irrigation School: Managing Water and Nutrients In Vegetable Production

November 13, 2001 8:15 am to 4:00 pm
North Florida Research and Education Center – Suwannee Valley
Live Oak, FL

With increased emphasis in water and nutrient management in vegetable production and continuous need to increase profitability, vegetable growers need to be aware of the latest tools and technology available to optimize water and nutrient management with drip irrigation.

Through classroom teaching and field demonstrations, the goal of this daylong educational program is to provide an update on the principles and practices of efficient water and nutrient management in drip-irrigated vegetable crops. Topics will include trouble-shooting irrigation system problems, irrigation scheduling, fertigation management, and drip system maintenance. Participation in this program will be sanctioned by a certificate of attendance.

This program is offered at no charge, but requires pre-registration. A Sponsored lunch will be provided. If you plan to participate, please notify **Bob Hochmuth** at the North Florida REC – Suwannee Valley at (386) 362-1725. (**Attendance will be limited to 20 participants**).

The program will be informal so everyone can relax and learn. No coats and ties will be allowed in the door. It will include a mix of hands-on demonstrations in the field, hands-on classroom activities, and classroom presentations and discussion. The activities will include the following:

Hands-on Activities

- * Injection of blue dye to see wetting patterns at various lengths of time.
- * Determining soil water tension using various devices (Watermarks, TDR, and tensiometers).
- * Measuring free chlorine movement in the drip line for cleaning.
- * Proper back flow prevention set-up.
- * Experiences with various filtration methods for drip systems.
- * Checking for fertilizer compatibility and mixing.
- * Determination of system uniformity.
- * Assembly of drip irrigation components.
- * Results of using drip tape for fumigant delivery.

Presentations and Discussion Topics

- * Trouble shooting system design problems.
- * Basics of drip irrigation scheduling.
- * Maintenance of drip systems.
- * Principles of nutrient management with drip irrigation.
- * Role of drip irrigation in future nutrient BMP program.
- * Microbial activity in irrigation water.

Commercial Vegetable Production

Florida Water Conservation Initiative

[Overview and 2001 Report](#) provided to DEP by the Water Conservation Initiative Working Group.

The state's February 27, 2001 Drought Action Plan called for creation of statewide water conservation "committee" as a mid-term action to increase water use efficiency. It has been decided that the Department of Environmental Protection (DEP) will lead directly a statewide water conservation initiative (rather than form a "committee"). The goal remains the same: using less water to achieve the same beneficial purposes.

This initiative is not intended to address the need for short-term water use restrictions (such as the current water shortage orders of the water management districts) but instead point the way to achieving additional permanent water use efficiencies in all water use categories in Florida. The department recognizes that there is a very broad base of parties interested and informed about water conservation and hopes to benefit from their participation and assistance. Interested parties will be asked to participate in one or more of six Work Groups:

- Agriculture
- Non-Agricultural Irrigation
- Indoor and Aesthetic Water Use
- Commercial/Industrial
- Water Pricing
- Reclaimed Water

This is an open process where DEP facilitates meetings and prepare the final report, but participation will be open to everyone. Participation in work groups by water users, local governments, and other agencies was especially encouraged. Public workshops on June 29 in Orlando and August 15 in West Palm Beach were held to work toward making written recommendations to DEP by October 1. Mike Dukes and I were the only ones from IFAS to attend the Orlando meeting.

(Simonne - Vegetarian 01-10)

Effective Packinghouse Design for Small Operations: Planning Considerations

For many small vegetable operations, field packing directly into the shipping container or consumer package is the most cost-effective means for preparing many crops for market. Larger operations also field pack extremely perishable or delicate crops, such as berries, vine-ripe tomatoes and leafy vegetables. In both cases, the harvest crew member performs multiple functions, deciding the quality of each piece to harvest and how carefully to pick and pack it. Mechanized, mobile field-packing units are miniature packing lines, continuously performing cleaning, sorting/grading and packing as the crop is harvested. These units are typically custom-designed, and are efficient for a number of crops, notably pepper, summer squashes and cucumbers ([Figure 1](#)).

One indication of successful farming occurs when the size of the operation outgrows the ability to efficiently field pack the crop, making packing at a dedicated facility a viable alternative. Many markets demand that the crop be cleaned, have more rigorous sorting/grading, and/or be rapidly cooled, often necessitating the use of a packing facility.

Packinghouses can be designed in a variety of sizes and configurations for multiple uses. When properly planned and constructed, productivity can be greatly improved and postharvest life of the crop extended, thereby allowing shipment to more distant markets. However, to be successful, the planning stage must incorporate these basic concepts – functionality of the facility, product quality and worker safety.

The goal of this article is to provide an overview of factors that should be considered in planning the construction of a packing facility for small-to-medium sized operations.

1. Packinghouse Location

The facility should be located as close to the production area as possible for several reasons. Travel to and from the field requires a lot of time to transport workers, drop off picking containers, and pickup and deliver the crop. Shorter transport distances also reduce mechanical injuries to the crop, and minimize warming by shortening the delay between harvest and packing. Field lanes and roads should be smooth to minimize bumps and vibrations during hauling. Cuts, abrasions and bruises reduce yields and are cause for rejected loads upon arrival at destination ([Figure 2](#)).

The building should be raised above ground level to facilitate drainage and minimize standing water. This will also permit the use of raised loading docks that are most efficient for unloading field wagons and loading trucks ([Figure 3a](#)).

2. Packinghouse Design and Layout

Knowledge of current and projected product volume is necessary to properly size harvest, handling equipment and shipping operations. The packinghouse should be designed to facilitate product 'flow'. In other words, for maximum efficiency, the crop should be unloaded at one end and handled toward the opposite end - the fewer the number of turns, the less likely the crop will be damaged. During packing, culls should be removed daily from the site to avoid accumulation of pathogens and insects.

The general layout below ([Figure 4](#)) incorporates several important features:

- sufficient space for receiving and unloading product ([Figure 5](#)),
- "dry" or "wet" dump, depending upon the crop, to transfer the crop to the packing line,
- a straight packing line that reduces mechanical injury during handling and avoids cross-traffic between packing line personnel and fork lifts,
- adequate lighting and stools for packing line workers,
- sample room to remove the packed crop from the packing line,
- nearby storage space for packing materials,
- a cold room with sufficient refrigeration capacity for rapid cooling ("precooling") and storage,
- a dedicated, raised loading dock at standard truck height ([Figure 6](#)), attached to the cold room for cooled crops ([Figure 3b](#)),
- disposal of waste water according to local ordinances, and
- readily available, clean restrooms and hand-washing stations for worker hygiene.

The facility can also be designed to be completed in stages. For example, the building could be constructed and used initially for receiving, packing and shipping. Later, as resources permit, more sophisticated packing equipment could be installed, hand lifts could be replaced by a fork lift to accommodate pallets, and a cold room could be added, along with a forced-air cooler or hydrocooler for rapid removal of field heat.

These guidelines are designed to provide background information that will assist growers in this critical planning process, leading to more productive and realistic discussions with commercial contractors. Then, the costs for each of these packinghouse components can be calculated to determine overall feasibility.

For further information regarding postharvest handling of fresh vegetables and sizing of packing equipment, see:

Handling, cooling and sanitations techniques for maintaining postharvest quality. S.A. Sargent, M.A. Ritenour and J.K. Brecht. Chapter 18. In, D.N. Maynard and S.M. Olson (eds.) Vegetable Production Guide for Florida 2001-2002. pp. 91-100. SP-170. Univ. of Fla. Extension/Citrus & Vegetable Magazine.

Packing line machinery for Florida citrus packinghouses. W.F. Wardowski, W.M. Miller and W. Grierson. Fla. Coop. Ext. Service. Bulletin 239. May 1987. Gainesville, Fla.



Figure 1. Delicate summer squash being washed, graded and packed on a mobile unit.

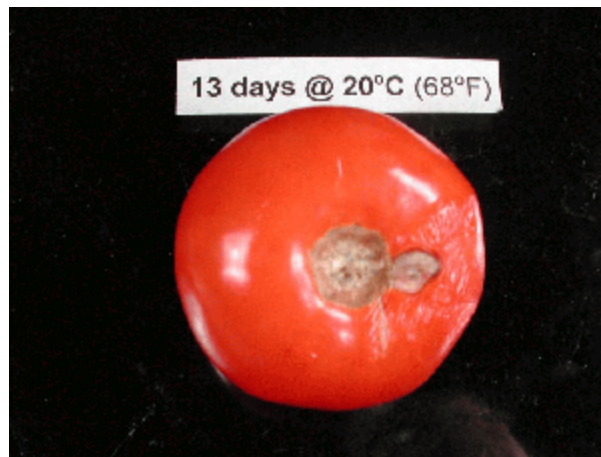


Figure 2. Injuries made during harvest and handling cause major postharvest problems. During ripening, this tomato developed shriveling and decay.



Figure 3. a) Packing facilities can be constructed out of readily available materials. This building has straight product flow, from unloading (left end) to loading (right end).



Figure 3. (b) The raised dock permits loading of cooled crops directly from the cold room.

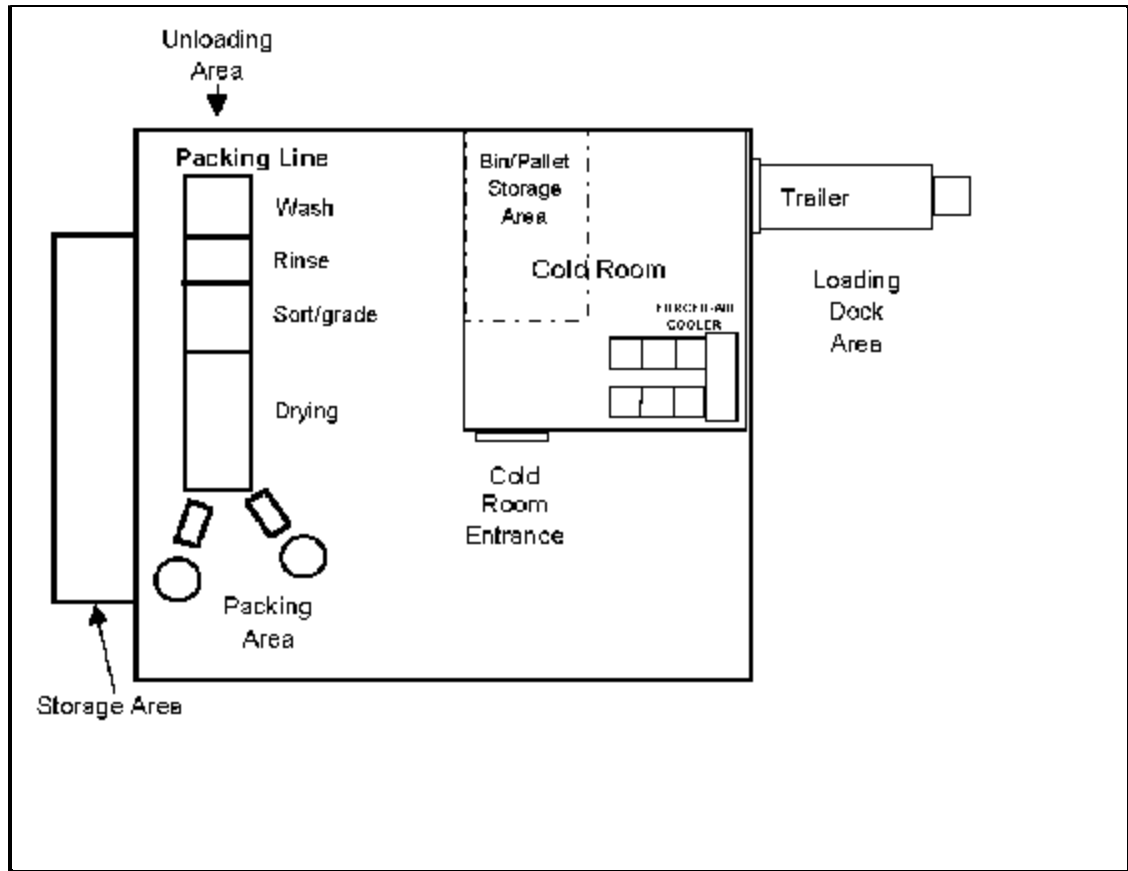


Figure 4. Generalized packinghouse layout (top view).



Figure 5. Adequate space for unloading is important.



Figure 6. Following packing, watermelons can be loaded directly into a refrigerated trailer.

(Sargent - Vegetarian 01-10)

Vegetable Gardening

"Special Specialist" Retirement Letter

Dear IFAS Faculty:

This being the last day of my forty-one years with IFAS, I take mouse in hand to say farewell and thanks for the memories!

That occasion in February 1962 when I was asked to join the faculty of the Vegetable Crops Department has turned out to be the most momentous event of my life. It led me into a most wonderful career, filled with associations, friendships, happenings, and memories too numerous to mention here.

I trust that my having been on your team has contributed in some small way to the many victories won by IFAS through the years. My only regret is that I did not take advantage of all my opportunities to do more for the gardening public.

First and foremost, my major goal was to assist all Extension county faculty who were trying to help Florida gardeners grow vegetables for home and family use. I wish to acknowledge all of your efforts on behalf of the many thousands who toiled and tilled in their tiny patches of Florida soil for the improvement of health, happiness, and financial well-being.

I said the associations were too many to mention, but I just have

to recognize a few that have been most meaningful to me: a) my Vegetable Crops and now HOS Department; b) the editorial and communications group for supporting my work on publications, radio, and television; c) the 4-H group for all the wonderful activities and projects with our youth; d) the National Junior Horticultural Association and Florida FFA; e) Jacksonville's 'Gardening Lots' Urban Gardening program; f) the Florida Master Gardener program; g) the 1890's vegetable gardening projects at FAMU; h) the association of Florida fairs; i) the Florida State Horticultural Society; j) the Florida Seed and Garden Supply Association; k) the FDACS and individual sponsors and grantors; l) IFAS administration, particularly Extension; m) all my colleagues in other departments and divisions of IFAS; n) and finally, all the county Extension personnel with whom I have worked over the years.

So, what's ahead for Jim Stephens in retirement? On October 1st, I become Professor Emeritus. As such, I have no official responsibility for programs or support for your programs. However, if you should need to get in touch with me, you can still reach me here in HOS by the usual means.

I plan to remain in the Gainesville area, with a lot of time spent on projects at Cross Creek.

May God Bless You and God Bless America
Jim Stephens

(Stephens, Vegetarian 01-10)

Extension Vegetable Crops Specialists

<u>Daniel J. Cantliffe</u> Professor and Chairman, Horticultural Sciences Department	<u>Mark A. Ritenour</u> Assistant Professor, postharvest
<u>Timothy E. Crocker</u> Professor, deciduous fruits and nuts, strawberry	<u>Ronald W. Rice</u> Assistant Professor, nutrition
<u>John Duval</u> Assistant Professor, strawberry	<u>Steven A. Sargent</u> Professor, postharvest
<u>Chad Hutchinson</u> Assistant Professor, vegetable production	<u>Eric Simonne</u> Assistant Professor, vegetable nutrition
<u>Elizabeth M. Lamb</u> Assistant Professor, production	<u>William M. Stall</u> Professor and editor, weed control
<u>Yuncong Li</u> Assistant Professor, soils	<u>James M. Stephens</u> Professor, vegetable gardening
<u>Donald N. Maynard</u> Professor, varieties	<u>Charles S. Vavrina</u> Associate Professor, transplants
<u>Stephen M. Olson</u> Professor, small farms	<u>James M. White</u> Associate Professor, organic farming

<http://peaches/hochmuth/vegetarian.htm>

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*This page is maintained by **Susie Futch**.... if you have any questions or comments, contact me at [**zsf@mail.ifas.ufl.edu**](mailto:zsf@mail.ifas.ufl.edu).*