Practical Disease Management Tips for Vegetable Growers:

Preventing and managing diseases is one of the most essential steps towards successful vegetable crop production. Consider the following management practices for controlling diseases on vegetable crops:

Early Plantings: Many commercial growers attempt to secure an early market by planting warm season vegetables such as tomatoes and peppers very early in the growing season. The problem growers have encountered is the movement of diseases from these plantings to later plantings that are planted relatively close to the early- planted fields. Many serious tomato diseases (early blight, Septoria leaf spot, and bacterial speck) are windborne, and can easily infect tomato plants immediately after transplanting. The earlier a tomato is infected with a disease, the more severe the effects on marketable yield. Therefore, I recommend that growers separate early, mid and late season plantings as much as possible to reduce the likelihood of infection. Perhaps planting subsequent plantings upwind of the early plantings will help prevent infection. Make sure there is no drainage from early- planted fields onto other fields. Efforts should be made to suppress the disease as much as possible.

Plant Spacing: Crowding plants often triggers many diseases. Densely-spaced plants do not dry out after rains, and the wet foliage activates many diseases. In addition, protectant fungicides are more difficult to apply in thick canopies. I highly recommend trellising/staking/caging vegetables such as tomatoes, peppers, eggplants and cucumbers. Pruning foliage to increase air circulation and light interception can be done. Many diseases are transmitted from rain-splashed soil. Thus, keeping plants and fruit away from direct contact with soil will prevent many diseases. Mulch the interrow area to prevent contact soil with fruit and lower leaves.

Avoid Stress: Plants that are subject to stresses such as nutrient, water, temperature or light will be more susceptible to diseases. Avoid over application of nitrogen. I do not recommend all nitrogen be applied before or at the time of planting. Rather, nitrogen should be applied in split applications throughout the growing season. Apply no more than 50% of the total required nitrogen as a preplant application.

Spray Methods: Spray fungicides on a volume basis rather than an acre basis. Smaller plants (tomatoes) need less fungicide per plant to provide protection from diseases. Thus, determine the volume of water you would use for a full-grown plant canopy (e.g., tomatoes would be 100-150 gallons/acre for a boom sprayer). Apply the maximal rate of fungicide to the tank. Start with 30 gallons of spray per acre for tomatoes and add 30 gallons each time you add a string to the stake. This method will save costs and provide an adequate level of protection from diseases.

OVER →
“Match Your Sprayer With Your Crop”: If you are growing crops that have a dense canopy (pumpkins, melons, tomatoes), you may have better results by using a mist sprayer relative to a low pressure boom sprayer. Mist sprayers are very effective in getting a fungicide product deep within the canopy.

“All In-All Out!”: One sure way to break the cycle of many diseases is a defined rotation. I suggest using a 3 year crop rotation for most vegetables. This means you will not crop that vegetable or any related vegetable for two consecutive years before returning with that same vegetable. Be careful in selecting your rotational crops. If you have had a history of bacterial diseases on tomatoes, winter wheat is not a good cover crop because this disease will over winter on wheat plants.

Sanitation, Sanitation, Sanitation!: Diseases spread and persist on decayed plant residue. At the end of each harvest cycle, clean up all residue (including roots, if possible), and remove them from the field. Don’t reuse row cover from plants that had disease symptoms. Sterilize all wooden stakes, planting trays and harvest boxes. If you use trellis for crops, sterilize it before reusing the following season. Also, make certain you are not getting drainage from any field into a pond which you are using for irrigation. Many disease spores can be transmitted via water and re-infect a crop.

Let Good Genetics Work for You: There are many new varieties that possess great disease tolerance. In fact, much of the progress in vegetable breeding within the last 15 years has been improved tolerance to diseases.

Try a row of something new…. Soon, vegetable seed catalogues will be arriving in the mailbox for the 2005 planting season. You may be interested in trying some new, promising varieties of vegetables in the upcoming year.

**Asparagus**:`Jersey Supreme`
**Beet**:'Centurion' ‘Chioqga’ (specialty type) ‘Golden’
**Broccoli**:'Triathlon'
**Carrot**:'SugarSnax 54’, ‘Mokum’, ‘Bolero’
**Cauliflower**:'Candid Charm’ ‘Citrus’ (orange)
**Chinese Cabbage**:'Jade Pagoda’
**Cantaloupe**:'Aphrodite’
**Eggplant**:'Ghostbuster’ (white)
**Lettuce**:'Oscarde’ (red oakleaf)
**Okra**:'Annie Oakley II’
**Onions**:'Candy’
**Potato**:'Carola’ (yellow), ‘Desiree’(red)
**Sweet Corn**:'Jackpot’ ‘Detectable’ (bicolor)
**Sweet Potato**:'Carolina Ruby’
**Tomato**:'Sun Brite’
**Watermelon**:'Sweet Beauty’ (small, oblong seeded)

Note: This list is not a formal endorsement of any seed company, but rather are varieties for trial.

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Develop a Market for Your Vegetables:

**Growing Growers** is a new program in the Kansas City market area that is training farmers in local food production. The goal of this program is to increase the number and profitability of small farms in the KC metro area. On December 4, 2004, the program will be hosting a conference exploring all aspects of produce marketing including:

- How to sell successfully at farmers’ mkt.
- Selling to restaurants
- Selling to state agencies
- Community Supported Agric (CSA)
- Wholesaling produce in Kansas City
- Selling processed vegetables
- Developing a cooperative
- Pick-your-own marketing
- Produce auctions (Local Wholesaling)
- Pricing your produce (how do you set price?)

Additional information can be obtained at [www.growinggrowers.org](http://www.growinggrowers.org)

Or
Growing Growers Training Program
35215 W. 135th St.
Olathe, KS  66061
(913) 488-1270

Registration Form:

**Name(s):**

**Farm or Organization:**

**Address:**

**City, State, Zip:**

**E-Mail:**

**Telephone:**

<table>
<thead>
<tr>
<th>Number Registering</th>
<th>Registration Fee</th>
<th>Cost</th>
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<tbody>
<tr>
<td>$30 advance/$33 (walk-in) (includes meal)</td>
<td>$10 table fee for business that cannot attend in person</td>
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<tr>
<td>20% discount for 3 or more people</td>
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**Total Enclosed**

Mail to: Growing Growers Training Program
35125 W. 135th Street
Olathe, KS  66061
HIGH TUNNELS –
ESSENTIAL EQUIPMENT FOR THE MARKET GARDENER
A Workshop for Beginning and Experienced Growers
Held in Conjunction with
The Great Plains Vegetable Conference
Ramada Inn, St. Joseph, Missouri

Thursday, January 6th, 2005

8:00  Registration
8:30  Introductions

9:00  Year-round high tunnel production at Sonnewald Farm, PA. – Steve Moore. A detailed overview of production and marketing of diverse crops, and sustainable management of the high tunnels.

10:30  Break
11:00  Moore (continued).

12:00  Lunch

1:00  Haygrove high tunnels: Scaling up to cost-effective, large-scale protected production of vegetables, fruits and flowers. – Ralph Kramer

2:30  Break

3:00  Grower panel presentations and discussion – Regional growers share their operations and insights
Dan and Erica Dermitzel, Trailside Farm, Calhoun, MO
Dave and Marilyn Reckamp, Wright City, MO
Brian Boeckman, Jefferson City, MO
Bob Lober, Moscow Mills, MO
Elmer Leid, Versailles, MO

5:00  Adjourn

COST: $50.00, includes lunch and coffee breaks

To Register: Please fill out and return the enclosed registration form by January 3. PRE REGISTRATION by January 3 is required for this workshop.

7 P.M.-9 P. M.: (Hyde Room: Farmers’ Market Nutrition Program Training)
This session is for those farmers in attendance who will be participating in Missouri’s WIC and Senior Farmers’ Market Nutrition Program (FMNP) for 2005. Information to be discussed will serve as annual training for the growers participating in one of the twenty-one counties with markets and farm stands authorized to accept FMNP checks. The counties scheduled to participate in the FMNP program for 2005 are: Audrain, Boone, Callaway, Cass, Cole, Dent, Greene, Howard, Howell, Jackson, Jasper, Johnson, Lafayette, Lawrence, Oregon, Platte, Ray, Scott, St. Francois, Ste. Genevieve and Washington.

Topics to be addressed are changes to the contract, length of market season, additional counties, redeeming FMNP checks and FMNP rules and procedures.
<table>
<thead>
<tr>
<th>Time</th>
<th>Room 1: Krug</th>
<th>Room 2: Bartlett</th>
<th>Room 3: Hyde</th>
<th>Room 4: Patee</th>
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<tbody>
<tr>
<td>8:00 - 9:30 a.m.</td>
<td>Registration and Exhibits Open</td>
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<tr>
<td>9:30 - 10:00 a.m.</td>
<td>Sweet Corn Production</td>
<td>Cole Crop Production</td>
<td>Organic Vegetables</td>
<td>Greenhouse Tomato Production</td>
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<td>10:00-10:30 a.m.</td>
<td>Sweet Corn Varieties and Weed Control – Vince Lawson, Iowa State Univ.</td>
<td>Broccoli &amp; Cabbage Variety Trials - Dr. Ted Carey, Kansas State Univ.</td>
<td>Growing Organic Vegetables for Baby Food Processors-Dr. Kathleen Delate, Iowa State Univ.</td>
<td>Moving Tomatoes Out of the Soil-Gregg Short, PE; Crop King Inc.</td>
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<td>10:30-11:00 a.m.</td>
<td>Break - Trade show area: Visit Vendors</td>
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<tr>
<td>11:00-11:30 a.m.</td>
<td>Sweet Corn Insect Management - Dr. Rick Weinzierl, University of Illinois</td>
<td>Quality Factors of Fresh Cabbage-Dr. Laurie Hodges-University of Nebraska</td>
<td>Successful Warm Season Vegetable Crop Production in a Hoop House-Steve Moore, Sonnewald Natural Foods (grower)</td>
<td>Troubleshooting Greenhouse Tomato Production-Dr. Rick Snyder, Mississippi State Univ.</td>
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<tr>
<td>11:30 - 12 noon</td>
<td>Sweet Corn: How We Do It – Michelle and Ray Christenson, IA (grower)</td>
<td>Cole Crop Insect Management-Dr. Rick Weinzierl, University of Illinois</td>
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<td>Marketing Greenhouse Tomatoes-Dr. Rick Snyder, Mississippi State Univ.</td>
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<tr>
<td>Noon - 1:30 p.m.</td>
<td>Lunch (featuring some locally grown produce)</td>
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<td>1:30 - 2:00 p.m.</td>
<td>Growing &amp; Marketing Specialty Peppers-Dr. Steve Salt, Kirksville, MO (grower)</td>
<td>Sustainable Weed Control Practices in Asparagus- Tom Martin, Union, MO (grower)</td>
<td>Marketing to Chefs- Bob Lober, St. Isidore Farms, Moscow Mills, MO (grower)</td>
<td>Vegetable Seeders &amp; Cultivators-Dr. Richard Parrish, Louisiana State Univ.</td>
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<td>2:00 - 2:30 p.m.</td>
<td>Growing High Sugar, Hoop House Melons &amp; Other Specialty Melons- Dr. Lewis W. Jett, Univ. of Missouri</td>
<td>Extending the Asparagus Harvest Season-Andy Thomas &amp; Dr. Lewis W. Jett, Univ. of Missouri</td>
<td>Growing &amp; Marketing Pumpkins On and Off the Farm –Becky Walters, Burns, KS (grower)</td>
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<tr>
<td>2:30 - 3:00 p.m.</td>
<td>Break - Trade show area: VISIT EXHIBITORS</td>
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<td>3:00 - 3:30 p.m.</td>
<td>Growing &amp; Marketing Heirloom Vegetables- Dean Pierson, Kansas City, MO (grower)</td>
<td>Growing &amp; Marketing Asparagus on My Farm-Charles Basye, Rochport, MO</td>
<td>To be announced</td>
<td>Vegetable Transplanter- Dan Timmer, Mechanical Transplanter Co.,</td>
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<td>3:30 - 4:00 p.m.</td>
<td>Specialty Beet &amp; Potato Varieties- Dr. Lewis W. Jett, Univ.of Missouri</td>
<td>Asparagus: What Works for Me – Jerry Moss, IA (grower)</td>
<td>To be announced</td>
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<td>4:00 - 5:00 p.m.</td>
<td>State Association Meetings</td>
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<td>Missouri - Krug</td>
<td>Kansas - Hyde</td>
<td>Nebraska - Patee</td>
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<td>9:00 - 9:30 a.m.</td>
<td><strong>Tomatoes &amp; Peppers</strong>&lt;br&gt;Season-Long Pepper Production-Dr. Hank Taber, Iowa State Univ.</td>
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<td>9:30 - 10:00 a.m.</td>
<td><strong>Sweet Corn &amp; Pumpkins</strong>&lt;br&gt;What's New in Tomato Production for 2005-Dr. Chuck Marr, Kansas State Univ.</td>
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<td>10:00 - 10:30 a.m.</td>
<td><strong>Vegetable Crop Equipment</strong>&lt;br&gt;Vegetable Seeders, Cultivators &amp; Sprayers-Dr. Richard Parish, Louisiana State Univ.</td>
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<td>10:30 - 11:00 a.m.</td>
<td><strong>Greenhouse Tomatoes</strong>&lt;br&gt;Getting Started in Greenhouse Tomatoes- Dr. Rick Snyder, Mississippi State Univ.</td>
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<td>11:00 - 11:30 noon</td>
<td>Break: Visit Exhibits</td>
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<td>11:30 - 1:00</td>
<td><strong>Tomatoes &amp; Peppers</strong>&lt;br&gt;Grower Roundtable (Tomato &amp; Pepper Production)</td>
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<tr>
<td>1:00 - 1:30 p.m.</td>
<td><strong>Sweet Corn &amp; Pumpkins</strong>&lt;br&gt;Sweet Corn Insect Management - Dr. Rick Weinzierl, University of Illinois</td>
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<tr>
<td>1:30 - 2:00 p.m.</td>
<td><strong>Cut Flowers</strong>&lt;br&gt;The Many (New) Reduced Risk Pesticides Available for Ornamentals - Jim Quinn, Univ. of Missouri</td>
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<tr>
<td>2:00 - 2:30 p.m.</td>
<td><strong>Greenhouse Tomatoes</strong>&lt;br&gt;Moving Tomatoes Out of the Soil-Gregg Short, PE; Crop King Inc.</td>
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<tr>
<td>2:30-3:00 p.m.</td>
<td><strong>Specialty Vegetables</strong>&lt;br&gt;What Makes a Tomato Taste Good?-Dr. Chuck Marr, Kansas State Univ.</td>
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<td>3:00 p.m.</td>
<td>Meeting Adjourns. Have a great growing year!</td>
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This workshop addresses the need to provide training and information to the agricultural industry to reduce human risks associated with Latino farm workers. Farmers and other employers of Latino agricultural workers will receive key information and tools to understand and address their worker’s human risks. The workshop will cover topics related to the human risks of Latino labor including an understanding of the Latino culture, their work ethics and values, Spanish language resources, labor laws and worker rights, safety in the workplace and worker health. Employers and potential employers will walk out with a better understanding of the Latino workforce and new information and resources to help increase workers well being and safety on the farm. This will lead to a more reliable and stable Latino workforce on the farm.

ROOM 5: LOTUS

AGENDA

9:30 – 9:45 Welcome and Introductions

9:45 – 10:05 An Introduction to the Latino Labor Force in West Central Missouri

10:05 – 11:05 Cultural Understanding of and Communicating with the Latino Labor Force
   • Defining “Work” and the Latino Work Ethic
   • Spanish Language Resources in West Central Missouri

Human Risk Management: Part I

11:05 – 12:00 Labor Laws and Workers’ Rights
   • Temporary Labor and Visas
   • Worker Wages and Rights

12:00 – 1:00 Lunch

Human Risk Management: Part II

1:00 – 2:45 Safety in the Workplace and Community Health Resources
   • Pesticide Safety for Farm workers
   • Ergonomics and its effects on Farm workers
   • Worker health issues and standards

2:45 – 3:00 Evaluation and debriefing

Registration fee is $35 and includes attendance to the conference trade show, lunch, and workshop materials. Scholarships are available. For additional information contact:

Jose Garcia, (573) 884-3794, GarciaJL@missouri.edu
SO YOU WANT TO BE A MARKET GARDENER – GETTING STARTED IN A NOBLE PROFESSION
A Short Course for Beginning Growers
at
The Great Plains Vegetable Conference
Ramada Inn, St. Joseph, Missouri

Saturday, January 8, 2005

Room 5: Lotus

8:00  Registration and Trade show exhibits open

9:00  **Introduction to Sustainable Local Food Production from Seed to Market.** Jim Leap, Farm Operations Manager, Center for Agroecology and Sustainable Food Systems, University of California, Santa Cruz; Kevin Loth, Shadowbrook Farm, Lincoln, NE

10:00  Break

10:30  **Introduction to Sustainable Local Food Production from Seed to Market (Continued)**

11:30  Lunch

12:30  **Figuring out farm budgets** – Jerry Jost, Kansas Rural Center

2:00  **Scaling-up your operation: markets: finances, land, labor and markets, etc. Grower round-table discussion.** Jerry Jost and Katherine Kelly, facilitators. [Note, this session will be in the Hyde Room]

To Register:  Please fill out and return the enclosed registration form by January 3.  PRE REGISTRATION by January 3 is required for this workshop.

Map of St. Joseph, Missouri.
Meeting facilities will be in the Ramada Inn, located one block west of Exit 47 (Frederick Avenue) on I-29, the N-S Interstate through St. Joseph, MO (see map). There are several hotels and restaurants in this area.

**Hotels in St. Joseph, MO**

**Headquarters Hotel is the Ramada Inn - 4016 Frederick - (816) 233-6192** ($54 per night room rate)

<table>
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<tr>
<th>Other Hotels:</th>
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<tbody>
<tr>
<td>Best Western S. 169 Hwy.</td>
<td>(816) 232-2345</td>
</tr>
<tr>
<td>Budget Inn 1328 N. Belt</td>
<td>(816) 233-3146</td>
</tr>
<tr>
<td>Days Inn 4312 Frederick</td>
<td>(816) 279-1671</td>
</tr>
<tr>
<td>Drury Inn 4213 Frederick</td>
<td>(816) 364-4700</td>
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<tr>
<td>Hampton Inn 3928 Frederick</td>
<td>(816) 390-9300</td>
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<tr>
<td>Holiday Inn, 3rd &amp; Felix St.</td>
<td>(816) 279-8000</td>
</tr>
<tr>
<td>Motel 6 4021 Frederick</td>
<td>(816) 232-2311</td>
</tr>
<tr>
<td>Super 8 4023 Frederick</td>
<td>(816) 364-3031</td>
</tr>
<tr>
<td>Comfort Suites 917 N. Woodbine</td>
<td>(816) 232-6557</td>
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</table>

The growers associations and Extension vegetable specialists for the five states are cooperating on tests and trials that will have practical value to the growers of the region. This year the program will have concurrent sessions on sweet corn, tomato, cole crops, organics, and alternative vegetable crops. Several sessions will be devoted to marketing. Many of the speakers will be producers who are associated with the topics they are explaining. Professors from the five state universities will also present topics.

There will be about 40 exhibitors available to provide information about seeds, irrigation, horticulture equipment, chemicals and other topics. There will be plenty of parking close to the Ramada Inn.

**Lunch and breaks will be included in the registration fee.** Mark your calendars and send in the pre-registration form below. For more information, contact:

Tom Fowler
Buchanan Co. Extension
4125 Mitchell Avenue
St. Joseph, MO 64507
(816) 279-1691
FowlerT@Missouri.edu

OR

Lewis W. Jett, PhD
State Vegetable Crops Specialist
Dept Horticulture, Univ. of MO
Columbia, MO 65211-7140
(573) 884-3287
JettL@Missouri.edu

**REGISTRATION FORM**

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**Great Plains Vegetable Conference - PRE-REGISTRATION FORM**

Name(s) ______________________________   ______________________________
_______________________________   ______________________________
(Please print as it should appear on your name tag)

Mailing address ______________________________________________________________________

E-Mail:________________

City ____________________________ State ________ Zip __________ Phone ___________________

*High-Tunnel Workshop (6th Only)*

_____ January 6         @     $50.00 = ______

_____ January 7           @     $35.00 = ______

_____ January 8     @     $35.00 = ______

TOTAL ENCLOSED:    $ ______________

(Registration fee of $35.00 per day includes breaks and meals)

**Registration after Jan. 3, 2005 = $40 per day**

Please make check or money order payable to:

GPVGC, University of Missouri Extension
4125 Mitchell Avenue, St. Joseph, MO 64507

Office:(816) 279-1691

Fax:(816) 279-3982

Send BY January 3, 2005