

Missouri Produce Growers Bulletin

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WHO'S WHO

James Quinn
Lead Organizer
MU Horticulture
573-634-2824
QuinnJa@Missouri.edu

Sanjun Gu State
Vegetable Specialist
LU Extension
573-681-5524
Sanjun.Gu@LincolnU.edu

Dave Trinklein State
Floriculture Specialist
MU Extension
573-882-9631
TrinkleinD@Missouri.edu

Jaime Pinero State
IPM Specialist
LU Extension
573-681-5522
PineroJ@LincolnU.edu

MU county offices,
specialist & phone

Daviess— Tim Baker
660-663-3232

Greene— Pat Byers
417-881-8909

Harrison- H. Benedict
660-425-6434

Henry— Travis Harper
660-885-5556

Morgan— Joni Harper
573-378-5358

Vernon— Pat Miller
417-448-2560

Webster— Bob Schultheis
417-859-2044

Outreach Update for 2012...by James Quinn

Two different workshops are being offered with financial support from the EPA Region 7. However, the project is winding down and activities held the past couple of years during the growing season at the produce auctions will be up to the local specialist to conduct 'on their own'. The project will not be able to pay for submission of plant samples to a diagnostic clinic. Your local specialist is, as always, available to assist you with problems. One additional challenge this year is that the MU Plant Diagnostic Clinic has closed for the foreseeable future.



Jim and Valerie Duever are the main presenters for the beekeeping workshops. He is the President of the Boone Regional Beekeepers Assn, and Valerie is the Secretary.

- There are 3 workshops titled 'Growers Workshop on Vegetable Production and Safe Handling of Fresh Produce' being held around the state. The first was held in Jamesport on Dec. 5th. For the Southwest part of the state, one will be held in Lamar on Jan. 11th. One is anticipated for the Central Region at the end of Jan. or early Feb.
- Four full day honeybee workshops are also occurring. The first was held in Kirksville on Dec. 2nd. The 2nd will be held in Lamar on Jan. 14th. Southwest Missouri will hold another on Jan. 28th. Morgan County Seeds will be the location for the central region on Feb. 18th.
- We'll continue to direct mail 4 newsletters in 2012.

Do Produce Auctions Need More Fruit Growers.....by Patrick Byers

Successful produce auctions offer a diversity of crops to potential bidders. The situation at Missouri produce auctions is generally good with regards to vegetables, particularly as growers use high tunnels to expand crop options and lengthen the growing season. The situation with fruit, however, appears to be quite different. The general impression is that most auctions would benefit from both greater amounts of fruit and a greater diversity of fruit types. To follow up on this, the managers of 5 produce auctions in Missouri, Kentucky, and Ohio were

contacted, and asked about the fruit situation, including the types of fruit sold, the amount of fruit, and prices received. The response from each auction manager highlighted the need for more fruit. The need for berries in particular was mentioned.

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“Vine ripened tomato fruits should never be stacked more than 2 or 3 deep in the flats or lugs in which they are harvested.”

Tomato Fruit Firmness.....by David Trinklein

Fruit firmness is an important aspect in the production of quality tomatoes. Tomatoes that have firm fruit can be allowed to ripen more fully on the vine thus imparting greater flavor and higher consumer demand. Indeed, fruit firmness is used by consumers as an indicator of high quality and often is the last test before selecting a tomato for purchase. Conversely, soft fruit are prone to injury during harvesting, grading and marketing. Additionally, since tomatoes continue to ripen (and soften) after harvest, tomato fruit that are inherently soft have a relatively short shelf life for both the retailer and consumer.

Ultimately, anything that influences cell wall structure and strength affects fruit firmness of tomato. Genetic (hereditary) factors have been

identified that cause certain varieties to bear firmer fruit than others. For example, “meatier”, beefsteak types, because of their internal structure, are likely to have firmer fruit than conventional types. Additionally, environmental factors such as temperature, relative humidity, fruit shading, soil fertility and soil salinity all have been shown to affect fruit firmness. Of the preceding, temperature seems to be the most frequent cause for soft fruit.

Tomato is a warm-season vegetable that is susceptible to chilling injury. The latter term is used to describe physiological changes (damage) that occurs in some plant species in response to cool (non-freezing) temperatures. Chilling injury in tomato fruit has been associated with cell wall degradation and is usually

classified in one of three levels according to its severity:

Level 1: Loss of fruit firmness and non-uniform color development.

Level 2: Translucent, water-soaked patches and/or yellow, mealy spots on (otherwise) red fruit.

Level 3: Large green areas on (otherwise) red fruit along with uneven fruit surface due to tissue collapse.

Chilling injury and the associated loss of fruit firmness are most often encountered late in the growing season or in the winter greenhouse. While no “benchmark” temperature has been established for chilling injury to occur in tomato, suffice to say the cooler night temperatures are the more likely associated symptoms will develop.

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Quality plastic lugs good for picking tomatoes into.

An important consideration for blueberry production is keeping birds away. Netting is the most effect method, but there are other effective approaches as well.



Need for Fruit (continued)by Patrick Byers

So, what does this mean for farmers who are interested in selling fruit, particularly berries, at a produce auction? First of all, check with your auction manager and learn which fruits are particularly in demand.

Second, growers should carefully examine the cost of production relative to the price received for fruit at auction. Find out what the bid prices were for fruit at your auction. Many of the planning budgets cur-

rently available for small-scale fruit production assume direct market pricing for fruit, which is generally higher than the price received at auction. Next, realistically consider the place that fruit production may have on your farm, especially if you are a diversified farmer. Finally, consider high tunnel fruit production, which can increase productivity; improve fruit quality, handling and shelf life; protect the crop from adverse weather; and extend the production season earlier and later than field production. These advantages will greatly influence profitability.

Update on the Food Safety Modernization Act...by James Quinn

Lloyd Schrock provided an update at the Western Produce Auction's Annual Meeting on November 11, 2011 (yes he was talking on the 11 hour of the 11 minute too...). Lloyd is the manager of the Lincoln County Produce Auction in Kentucky. He has been involved for 2 years with this food safety issue, serving on an 8 to 10 person committee representing produce auctions. A well-known fellow also on this committee is Raymond Yoder (Ohio).

Lloyd first reviewed why food safety seems more important than it was some years ago. He cited two main reasons, that the public gets immunized for so many common infectious diseases and are not exposed (when young) to these more environmentally originating ones. Thus the general public is more susceptible to the latter, and they aren't used to getting sick like in the past. The implications for the produce auctions are:

Accountability- growers will need to practice food safety in case an outbreak is traced back to that auction.*

Marketing- big markets are demanding food safety is practiced, or else they won't buy.*

* Both these can be addressed by growers choosing to participate in a voluntary third party certification program, called 'Good Agricultural Practices', or GAPs.

The current situation

The FDA and USDA were more lenient than expected towards produce than to meat, dairy and eggs. But now produce is being impacted by a new law, the Food Safety Modernization Act (FSMA). While the law passed, the rules to enforce it are only being written now. The origin for the needs for the FSMA can be traced back to some outbreaks that occurred with large scale leafy green production on the west coast. Producers there grouped together to adopt food safety changes under the Leafy Greens Marketing Order. The standards were very strict and not applicable to production typical with smaller farms in the Eastern US. So when standards were being considered for other produce and the rest of the US, many of the proposed rules were questioned. Both Lloyd and Raymond Yoder testified in Federal Hearings, the first in October of 2009. In the last two years the produce auction committee has been involved in many meetings. He pointed out that many of the rules were

being considered for 'large growers', which are growers with more than \$500,000 in annual sales. The USDA made the law and asked the FDA to write the rules. Cornell University (New York) is lead of universities assisting with the process. The final rules will undoubtedly give the FDA the authority to go to problem areas, quarantine product, and require improvements.

How will produce auctions be impacted?

Under the framework of FSMA any grower selling thru a broker would be required to become GAP certified. If strictly interpreted this would mean anyone selling at a produce auction. But Lloyd feels some exceptions will be granted to produce auctions when the final rules are written, as follows:

- The auction facility will have to become a GAP certified facility; it will certainly be inspected.
 - The auction facility will accept responsibility for its growers;
 - Growers selling at an auction facility will be required to undergo some training in safe handling of fresh produce.
- ◇ For the Lincoln County Produce Auction this training was a minimum of one hour training by their Department of Ag. Upon comple-

tion the growers received a GAP training certificate of completion.

- ◇ Their facility also carries some version of product liability insurance, with a group of growers assuming the risk typical of an insurance company.

The enforcement of the FSMA will be phased in. The first impacted will be large growers. Smaller growers will likely not be impacted until 2014 or 2015. But Lloyd pointed out that the change is coming, and the various auction facilities and their growers should be proactive, get educated, and be willing to make necessary changes. Many of the changes are quite reasonable; while documentation will definitely be dramatically increased, production, harvesting or packaging changes may be fairly minor. The combination of increased documentation and changes in produce production/handling, this will REDUCE risk, but not ELIMINATE risk.

He also noted that some large buyers at some auctions may only be willing to purchase from GAP certified growers. If this is the case, there may be a pricing benefit for growers to become GAP certified. Lloyd Schrock does return phone calls, and can be reached at:
450 Al Wyler Road
Crab Orchard, KY 40419

Fruit Firmness (continued)....by David Trinklein

Any discussion of tomato fruit firmness would not be complete without the mention of calcium as a plant nutrient. Calcium is used by the plant for the manufacture of new cell walls and is especially important in maintaining proper cell wall structure. Calcium deficiency in tomato has been associated with fruit cracking, blossom-end rot and soft fruit. Since calcium is immobile in the plant it is important to supply adequate amounts as a mineral nutrient during all stages of plant growth. It is important to remember that excessive magnesium in the soil is known to antagonize (block) the uptake of calcium by plants. Therefore, the prop-

er calcium:magnesium ratio is needed for proper calcium nutrition. Generally, plants need two calcium ions for every one magnesium ion they uptake.

Finally, the way tomatoes are harvested and handled can also affect fruit firmness. Tomato fruits allowed to vine ripen should be harvested in flats or lugs and stacked no more than two to three fruits in deep in the container. Deeper or taller harvesting containers (e.g. a five-gallon bucket) tend to put excessive pressure on the lower fruit, causing soft spots or splitting.

Editor's note— tomatoes developing soft spots in the wall was a problem of a number of growers in August at the North Missouri Produce Auction.

UNIVERSITY OF MISSOURI

M Extension



We'd like to thank the following agency for their financial assistance with our outreach activities, such as this newsletter and travel costs associated with educational activities.

EPA Region 7 Strategic Agricultural Initiative 901 N. 5th Street Kansas City, KS 66101 913-551-7003 or 800-223-0425

About this mailing list

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James Quinn

Cole County Extension

2436 Tanner Bridge Road

Jefferson City, MO 65101



You Can't Always Tell By Looking...by Patricia Miller

This fall there were problems in several fields of cucurbits. Now I was pretty sure that they were virus problems. On the zucchini field I was pretty sure it was insect spread, based on the scattered pattern of problems in the field. Looking in the Penn State book Identifying Diseases of Vegetables, I guessed it was watermelon mosaic-2 (WM-2). On the two cucumber fields, I didn't have a clue what the problem was but my best guess would have been virus. Since MU's plant diagnostic clinic was closed this summer, I sent the samples to Kansas State's diagnostic lab. They, too, thought the three samples had virus problems so they offered to test them for four common cucurbit viruses. The three samples came back negative

for the four tests. Kansas State then recommended sending samples to Agdia where they could screen them for twelve viruses.

The zucchini sample tested positive for papaya ringspot virus (PRSV or WMV-1) and the potyvirus group (POTY). Both are spread by aphids so insect control would be the way to help



Zucchini plant with PRSV and POTY

control them. Weeds can be a reservoir for the virus with insects transmitting it from the weeds to the vegetable plants. There are squash and cucumber varieties with resistance to PRSV. See Cornell's charts of resistant vegetable varieties: <http://vegetablemndonline.ppath.cornell.edu/Tables/TableList.htm>

The two cucumber samples tested positive for tobacco ring-spot virus (TRSV). It is typically spread by dagger nematodes in the soil, occasionally by insects and rarely by seed transmission.

More information on cucurbit viruses can be found at Cornell's webpage: http://vegetablemndonline.ppath.cornell.edu/factsheets/Viruses_Cucurbits.htm