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Dr. Steve Johnston.

Dr. Steve Johnston

It was with great sadness that we said our final goodbye to Steve, our valued colleague extension specialist, on Saturday April 19. Steve was involved in a tragic accident while cutting down a tree. Steve's specialty was vegetable pathology and he was well known for his tireless efforts to help vegetable growers in New Jersey and in neighboring states. Steve was always there for anyone who needed help or advice. I remember how, just after I started my job at Rutgers, Steve took me into his office and gave me a few words of advice on how to best deal with the challenges of our jobs at the university. Later, when I started attending the vegetable working group meetings, Steve would always ask me how things were going and he showed a genuine interest in my progress. I will very much miss seeing him at the Rutgers Agricultural Research and Extension Center, and I will always remember his dedication, excellence, and good nature as an example of how to be a better member of our extension family. Our thoughts are with his family who are dealing courageously with this tremendous loss.



NEW JERSEY AGRICULTURAL CROP PROTECTION CONTAINER AND NURSERY POT RECYCLING PROGRAM SCHEDULE FOR 2003

New Jersey pesticide applicators and nurserymen may recycle their empty, plastic crop protection containers and nursery pots at four regional collection sites in Spring 2003 for FREE. Plans are already underway for a Fall 2003 collection program. The agricultural product container-recycling program is a collaborative effort between the New Jersey De-

partments of Agriculture (NJDA) and Environmental Protection (NJDEP), Burlington County Solid Waste, Cumberland County Improvement Authority, Pollution Control Financing Authority of Warren County, Sussex County Solid Waste, the Ag Container Recycling Council (ACRC) and USAg Recycling, Inc. The collection of the plastic nursery pots is an additional service being provided by USAg. This FREE statewide program is being facilitated by the NJDA to collect and recycle plastic (High Density Polyethylene – HDPE #2) agricultural product containers used by agricultural, professional and commercial applicators of crop protection and other pesticide products and HDPE #2 nursery pots used by nurserymen. Non-refillable HDPE #2 containers up to 55 gallons will be accepted at the collection sites.

2002 marked the first statewide pesticide container and nursery pot recycling program for New Jersey. During the three-day collection in September 2002, New Jersey-licensed pesticide applicators and nurserymen recycled almost 26,000 pounds of High-Density Polyethylene (HDPE) plastic pesticide containers, nursery pots, flats used to transport bulbs and five-gallon plastic buckets. This included approximately 450 pesticide containers ranging in size from quart containers to 55-gallon drums; 26,000 nursery pots; 750 flats; and 165 five-gallon buckets. New Jersey's program was so successful other states are using it as a model when structuring their own programs. In Fall 2003, the four sites that sponsored the Spring collection will also hold a Fall collection (details are still being developed). A new partner for the Fall collection will be the Atlantic County Utility Authority (ACUA). The ACUA will hold its Fall collection on Saturday, September 27, 2003, from 9 a.m. – 2 p.m. at the Hammonton Public Works Department on 11th & Egg Harbor Road (Rt 561). Cumberland County also has committed to a Fall collection that will be held on October 3 from 8 a.m. to noon. The NJDA is working with the other collection sites for a Fall collection date, so growers who miss the Spring collection should hold their pesticide containers for the Fall program. There was some question about storage of empty, clean pesticide containers and classification as hazardous waste. To address this concern, the NJDA secured from NJDEP a letter stating that properly rinsed, empty pesticide containers are not regulated as hazardous waste. Any pesticide container generator who would like a copy of this letter for their records should contact the NJDA.

Since 1992 ACRC (www.acrecycle.org), a non-profit organization, has supported agricultural product container collection programs nationwide and in 2002 recycled 7.3 million pounds of plastic. Companies that produce, package and distribute crop protection and other pesticide products fund the recycling program. Applicators and nurserymen bring their properly rinsed HDPE #2 crop protection containers and nursery pots to the collection sites where they are inspected and accepted FREE of charge. USAg (www.usagrecycling.com), based in Texas, and the ACRC-approved contractor for New Jersey will have a mobile chipping and bagging machine at the regional collection sites. USAg has been a subcontractor for ACRC since the early inception of the program. It will collect and take ownership of the containers and pots, then grind them, bag the flakes and ship them to its recycling facilities. The recycled products made from the flakes stay in the chemical industry – agricultural product containers and pots are morphed into products such as plastic pipes and irrigation pipes, speed bumps, fence posts, marine pilings or more plastic pesticide containers.

As an incentive for pesticide license holders to participate in the agriculture pesticide container recycling program, the NJDEP's Pesticide Control Program will issue recertification credits of one unit of Core credit. To receive credit, the participant MUST bring his/her pesticide license to the collection site AND MUST follow all of the nine processing steps below. The pesticide license holder must drop off the containers and present his/her pesticide license so NJDEP can issue the Core credit. Pesticide credits WILL NOT be issued for recycling of nursery pots.

PLASTIC PESTICIDE CONTAINER PROCESSING STEPS:

1. All pesticide containers MUST be either triple rinsed or pressure rinsed and drained;
2. All pesticide containers MUST be free of residue (other than stains);
3. Lids MUST be removed;
4. Plastic labels with MSDS sheet MUST be removed;
5. Paper labels MUST be removed (the best of your ability);
6. Only non-refillable pesticide containers will be accepted – drill a ¼-inch hole in the bottom of the container OR with a utility knife make a 6-inch slit in the bottom of the container so the container will not hold liquids;
7. ONLY pesticide containers embossed with HDPE and the recycling #2 will be accepted;



8. Pesticide containers up to 55 gallons in capacity will be accepted; and
9. Pesticide containers must have originally held an EPA registered pesticide.

ITEMS THAT WILL NOT BE ACCEPTED AND WILL BE RETURNED TO THE PARTICIPANT:

1. Pesticide containers with dried formulation on the container, pour spout or the spout threads;
2. Pesticide containers with ANY liquid residue;
3. Pesticide containers where the insides are caked with dried residue;
4. Mini-bulk, saddle tanks and nurse tanks, which can be made of fiberglass;
5. Pesticide containers with lids or lids by themselves; or
6. Pesticide containers that originally held veterinary products, consumer products or home and garden pesticides.

Any agricultural, professional and commercial applicator of crop protection and other pesticide products who generates large quantities of crop protection containers may contact USAg Recycling at 1-800-654-3145 for direct service. USAg will come to your site and there is no charge for the service.

Nurserymen who have HDPE #2 nursery pots to recycle MUST follow the three processing steps below.

PLASTIC NURSERY POT PROCESSING STEPS:

1. All soil MUST be knocked free from the nursery pots and then the pots MUST be rinsed;
2. All nursery pots MUST be free of soil and plant material; and
3. ONLY nursery pots embossed with recycling #2 or HDPE will be accepted.



NURSERY POTS THAT WILL NOT BE ACCEPTED AND WILL BE RETURNED TO THE PARTICIPANT FOR PROPER DISPOSAL:

1. Nursery pots not embossed with # 2 or HDPE
2. Nursery pots with soil residue; and
3. Nursery pots with plant residue.

To gauge potential participation levels at the regional collection site, the NJDA requests participants to contact the collection site to be used or the NJDA and provide an estimated vol-

ume of pesticide containers, nursery pots, etc., that will be dropped off for recycling. This will enable the site to better determine the number of staff needed to handle the materials during drop-off.

For additional information, contact Karen Kritz, NJ Department of Agriculture, at (609) 984-2506 or by email at Karen.Kritz@ag.state.nj.us.

**NEW JERSEY
HDPE AGRICULTURE PESTICIDE CONTAINER & NURSERY POT
SPRING 2003 COLLECTION SCHEDULE**

SOUTHERN REGION

COLLECTION SITE: Cumberland County Solid Waste Complex
169 Jesse Bridge Road (located off Route 55 Exit 29)
Deerfield, New Jersey
DATE: Monday, May 19, 2003
TIME: 8:00 am to Noon
CONTACT: Dennis DeMatte, Jr. (856) 825-3700

CENTRAL REGION

COLLECTION SITE: Burlington County Resource Recovery Complex
Burlington-Columbus Road (Route 543)
Mansfield, New Jersey
Located off I-295 Exit 52A (Columbus Exit)
DATE: Tuesday, May 20, 2003
TIME: 8:00 am to Noon
CONTACT: Anne Moore (609) 499-1001

NORTHERN REGION

COLLECTION SITE: Warren County Fair Grounds
Route 519 & Strykers Road
Harmony Township, New Jersey
DATE: Wednesday, May 21, 2003
TIME: 8:00 am to 11:00 am
CONTACT: William Carner (908) 453-2174, Pollution Control Financing Authority of Warren County

COLLECTION SITE: Sussex County Solid Waste
Sussex County Solid Waste Facility
34 South Route 94
Lafayette, New Jersey
DATE: Wednesday, May 21, 2003
TIME: 12:30 pm to 3:30 pm
CONTACT: John Cannata (973) 579-6998

Construction of High Tunnels

The following pictures show the various phases of the construction of six high tunnels that are part of a research project conducted by members of the Rutgers Vegetable Working Group. The first production trials will be with heirloom tomato varieties and are scheduled to start the last week of April. The construction of the high tunnels was supervised by June Sudal and Eugene Reiss, who received help from various co-workers and students. For more information and updates, please visit the newly created web site: <http://www.rutgerstomato.org>.



The high tunnels measure 17 feet wide by 36 feet long. The position of each foundation posts is carefully marked by strings, and the distance between the posts is 4 feet. The foundation posts are hammered into the ground. A large bolt is temporarily placed on top of the hollow post to protect it from deformation during placement. Four high tunnels are installed at the Rutgers Agricultural Research and Extension Center (South Jersey) and two at the vegetable research farm on Cook Campus.



A total of 10 bows for a 17 by 36 feet high tunnel are installed. Cross braces will be installed to give the structure extra strength. Such high tunnels are mainly intended as season extenders: because the plastic covered structure and the plastic mulch can protect a crop (to a certain degree) from adverse weather conditions (especially cold temperatures), a grower is able to start earlier and continue longer in the season. Hopefully, a better market price will offset the cost of the structure.



Wood pieces are bolted to the end wall bow to allow for a place to attach the plastic film. Where the wood starts to curve, two pieces of plywood are lapped and glued together to make for the same thickness as a 2 by 4. All other wood connections are also lapped and glued. This is a little more time consuming, but makes for a stronger and more durable connection. Pressure treated wood is used where the wood is in contact with the soil.



Pressure treated sideboards are installed along the sidewalls of the high tunnel.



Construction detail.



One of the frames of the large hinged end wall doors is installed. These doors (at both ends) allow for a small tractor to drive through the tunnels while preparing the soil and making the raised beds. Note that the door extends beyond the surface of the soil. Therefore, the doorframe is made of pressure treated wood and some soil will have to be removed when the doors need to open for the infrequent soil preparation with the tractor.



Finished structure of one of the high tunnels. A single layer of 6 mil polyethylene (4-year film) covers the entire structure. Roll-up side walls can be raised and lowered depending on the need for ventilation. A lattice of rope prevents the roll-up sides from damage due to high winds. A single person entry door (not visible) allows access throughout the growing season. Two of the high tunnels are outfitted with thermostatically controlled roll-up sides (requiring electric motors).



Inside view of the high tunnel structure. The soil will be tilled and the four slightly raised beds will be covered with a black plastic mulch. The plants will be irrigated using drip tape. A fertilizer injector will be used to provide the plants with the required nutrients. For more information on crop production in high tunnels, please visit the following web site:

<http://plasticulture.cas.psu.edu/>

Insect Screening

It's the time of year again to start worrying about insect infestations in the greenhouse. Insects generally enter the greenhouse in three different ways: on infested plant material, on clothing, and through the ventilation inlet openings. Therefore, it is very important to inspect any plant material entering the greenhouse operation, even if the material comes from a reliable source. By rejecting any infested plant material, you can make sure the insects stay out of your greenhouse. If insects are entering the greenhouse on clothing, employees can be required to change clothing before they start work. As an additional precaution, the locker rooms should be continuously vented (mechanically) to prevent flying insects from entering the greenhouse.

In order to prevent insects from entering the greenhouse through ventilation openings, we can do the following. First make sure that there are no other openings except for the ventilation opening (usually the vent window). This means that all cracks in walls and glazing materials need to be sealed carefully. Next, now that we are sure the ventilation air enters only through the vent opening, we can install an insect screen in the opening. Different insect screen materials are available and generally, the smaller the opening size, the smaller insects that are excluded. Table 1 shows some recommended screen sizes for several insects to be excluded.

However, the smaller the screen opening size (i.e., mesh size), the more difficult it is for air to pass through the screen, because more of the total screen area is taken up by the threads making up the screen. Thus, as the total opening area decreases, less air is able to pass through the screen. This can have a significant effect on the cooling capacity of the ventilation system. Therefore, when using the smaller screen mesh sizes, the total screen area is usually enlarged to make sure enough air is able to pass through the screen. A good example of an insect screen installation with an increased screen area is shown in Photos 1 and 2.

The smaller the screen mesh size, the easier it is for dust particles to collect on the screen surface. The dust particles can further reduce the airflow through the insect screen, and

therefore it is usually recommended to regularly clean the screen material.

Table 1. Recommended mesh sizes

Insect to be excluded:	Recommended mesh size:
Leafminer	40
Whitefly	52
Aphid	78
Thrip	132

Mesh size = threads per linear inch



Photo 1. NCSU, the new teaching and research greenhouses with insect screening. An enclosure was constructed along the sidewall with the ventilation inlet opening.



Photo 2. NSCU, inside the screening enclosure with the insect screen on the right and the ventilation inlet opening on the left (with evaporative cooling pad).

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Retractable Roof Greenhouse with Shade Curtain

HORTICULTURAL ENGINEERING

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Horticultural Engineering Web Site

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Upcoming Meetings, Shows, etc.

United States Botanic Garden
Washington, DC
year-round
<http://www.usbg.gov/>

Royal Greenhouses
Brussels, Belgium
April 16-May 4, 2003
http://www.monarchie.be/site/nl/visites_serres.html#visite (site in Dutch)

Ohio Short Course
Columbus, OH
July 12-16, 2003
<http://www.ofa.org>

HortiFair (NTV)
Amsterdam, the Netherlands
November 5-8, 2003
<http://www.hortifair.nl>

New Tomato Website
<http://www.rutgerstomato.org>

1998 Greenhouse Glazing Workshop
The text of the lectures presented during this workshop is now available on our web site: click on Presentations and follow the link to the Workshop. This workshop was supported by Rutgers's Center for Controlled Environment Agriculture (CCEA).