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Row Covers – Do they Work?

Mike Orzolek, Department of Horticulture

I transplanted my squash (zucchini and straightneck) variety trial (14 items) in 2004 on 18 inch blue plastic mulch beds on May 27, 2004. However, since temperatures in early 2004 had been cooler than normal, I decided to place a row cover over 9 of the 15 plants in each row using metal hoops (#9 wire) placed 6 ft apart in the row. A row cover from Amoco Fiber and Fabrics (0.5 oz./sq. yard) was placed over the 9 squash plants/variety/rep immediately after transplanting. The 6 uncovered squash plants/variety/rep served as the control or check. The row cover was removed from the zucchini squash varieties on June 16, 2004. Zucchini plants that were under the row cover were twice the size as the check plants and had no cucumber beetle feeding damage. The earliest yield from the zucchini varieties was harvested from plants under the row cover (about 10 days earlier). For the first 7 harvests, three zucchini varieties (Cashflow, Golden Dawn, and Spineless Beauty) doubled the number of fruit from plants that were covered with the row cover compared to plants with no row cover. Also, fruits from plants covered with a row cover were also larger compared to plants with no row cover. On the average, zucchini plants that were not covered with a row cover had 25% less yield compared to plants that had row covers. I also observed that all varieties did not respond the same to the use of row covers. Spineless Beauty had the highest response of the 3 varieties analyzed to date and Golden Dawn the least response. While no one can predict very accurately weather in Pennsylvania, row covers appear to be a good insurance policy for guaranteeing a marketable harvest in the spring and fall.

North American Strawberry Growers Association Meeting in New Orleans Jan. 29-31

Kathy Demchak, Department of Horticulture

The NASGA annual meeting and conference will be taking place January 19-21, 2009 in New Orleans, Louisiana. The meeting will be held at the Hotel Monteleone, a historic hotel in the French Quarter. Scheduled speakers, from across the U.S. and Canada, The Netherlands, and Australia, will be covering topics such as varieties, disease control, soil revitalization, plant nutrition, and growing on substrates in the EU. A tour of Louisiana strawberry farms is included in the registration fee, which ranges from \$295 for early-bird (registration postmarked by Dec. 29) NASGA members to \$450 for non-members after Dec. 29. The cut-off date for hotel reservations to get the block room rate (\$155) is December 29. A complete program, information on the farm tour, and registration form can be found at www.nasga.org. Questions – call NASGA at 613-258-4587, or email info@nasga.org.

Web Sites for Berry Producers, and More

Kathy Demchak, Department of Horticulture

If there's a time of year when you're likely to have time to read, this is probably it. Here are some Web sites that have a fair amount of berry production information, along with information on obtaining PSU's printed sources of reading material.

First, PSU's berry site, which had been inaccessible for a while, is now back in a slightly reorganized fashion at <http://smallfruits.psu.edu>. Please update your bookmark. From here, you can get the MidAtlantic Berry Guide (as a pdf, or ordering info if you just want a printed copy), PSU's Fruit Production for the Home Gardener, the small fruit Ag Alternatives publications, and ordering info for NRAES guides. You can also access current and archived issues of on-line newsletters including PSU's Vegetable and Small Fruit Gazette and Fruit Times, Cornell's New York Berry News, Purdue's Facts for Fancy Fruit, and Rutgers' Blueberry Bulletin. You can also find contact information for each PA county office and for a whole bunch of grower organizations. By clicking on "Other Resources", you can get to other information at Penn State, such as the soil testing lab or Pesticide Education (you can check your own pesticide applicator's license recertification status there to help plan attendance at winter meetings). From "Other Resources", you also can link to other Universities' extension information on berry crops.

Speaking of other Universities, Cornell has a Berry Resources page that is excellent. Go to <http://www.hort.cornell.edu/extension/commercial/fruit/berry.html>. Of particular interest at this time of the year is the "Nursery Guide for Berry Crops", which shows up once you click on "General Information". You can choose the crop you're interested in, and a listing of available cultivars will come up along with nurseries that carry each cultivar. Once you click on the nursery, you'll get contact information for that nursery. There's also a diagnostic tool at <http://www.hort.cornell.edu/diagnostic> to help with diagnosing problems. You can click on various pictures or descriptions of symptoms your plants might have, and get to possible diagnoses. The blackberry part of this tool is maintained at North Carolina State University, so our thanks to the fine folks there as well.

If you don't have Web access, or want a printed copy of the current 248-page Mid-Atlantic Berry Guide for Commercial Growers, you can order a copy from Penn State's Publications Distribution Center by calling 814-865-6713. \$18 per copy plus tax for PA residents, plus \$5 shipping and handling per order. Since the \$5 shipping and handling fee covers the entire order, if there are other publications you want, you may as well get them at the same time. You can go to

<http://pubs.cas.psu.edu/Publications.asp> and browse the listing of all 1594 publications (most can also be downloaded for free), or browse subject areas. I can't always find the publication for which I'm looking when I use the search tool, so if you have that problem, you may want to browse the listings.

If you grow other crops also, if you go to <http://horticulture.psu.edu> and click on "Extension", you can choose from other commodity areas to peruse on the right side of the screen.

Recycling and Recovery of Energy Stored in Used Plastics

William J. Lamont, Department of Horticulture, and James W. Garthe, Department of Agricultural and Biological Engineering

At Penn State University there is a team dedicated to solving one of the world's major environmental problems – what to do with the increasing volumes of plastic waste generated by the world population. Although our efforts have been focused on agricultural plastics, we also view the large consumer plastic waste stream as a potential fuel source. This team has been working on this project since 1995 and is on the verge of making a major contribution to solving this problem. A little background on recycling is in order.

The recent fuel crisis has certainly spurred an interest in Plastofuel which we call the "Right Fuel for Right Now". Often recycling programs don't take materials that are available in large enough numbers to make reusing them profitable". The plastic code is typically identified as triangle of chasing arrows surrounding a number depicting the plastic resin type, such as #1, polyethylene terephthalate or PET, used for making soda and water bottles. The best market for recyclables is the #1 and #2. The demand for these products is insatiable at this point. The bottle caps used on these products are not recycled but removed and enter the trash stream. Yogurt cups or containers where the mouth is wider than the base are often not recycled. These are a valuable source of fuel for us.

Although there is strong demand for recycling PET, a soda bottle can be recycled into, for instance, carpet which unfortunately cannot be recycled. The article mentions garden garbage generated when you buy plants for the garden. But you ask "What does it come in?" The answer is that it comes in a plastic pot or plastic six-pack, and if you buy enough, it also includes a plastic tray or flat to hold the six-packs. You can reuse the pots yourself, of course, and sometimes garden clubs or conservatories need them for plant sales, but most recycling programs do not accept them.

So what are we doing to help solve this problem? We're recovering valuable energy from non-recyclable waste plastic items used in agriculture and the consumer marketplace. Dirty, used or non-recycled plastics can be converted to energy to generate electricity in coal fired power plants or other buildings requiring an environmentally clean, yet safe, fuel.

Plastofuel

A simple process was invented at Penn State University in 1995 to densify waste plastics into a fuel nugget, called Plastofuel. The process, developed in the Department of Agricultural and Biological Engineering, aims to reduce waste plastic buildup on farms around the world. It works by forcing film plastic items, rigid plastic items, or both, through a heated die, thus melting a thin jacket that encapsulates the pieces of plastic and dirt within the extruded material exiting the die. A hot knife cuts the extrudate into dense fuel nuggets that can be easily conveyed, stored and shipped.

The nuggets were originally designed to be co-fired 5-10 percent with coal in existing boilers, allowing the high temperature of coal (around 2000 °F or 1100 °C) to sustain clean combustion, free of noxious smoke. The end-use is for agricultural boilers or small community boilers designed to burn coal. Plastofuel can be made either on the farm or in small industrial settings, thereby consuming the energy close to the source. The benefit of the system is that it converts an annoying waste into a valuable fuel, with a minimum of energy expended in the process. Non-recycled consumer plastic food and beverage containers can also be used in the process. Many of the plastics not currently recycled can be used a raw material for the Plastofuel.

At the time of this writing in 2009, the Penn State team is scaling-up the 4th prototype Plastofuel process to a machine that will produce 500 lbs/hr. (227 kg/hr.). It will be powered by electricity and a hydraulic power unit, all mounted in a trailer to provide mobility. From an energy perspective, calculations reveal that less than one percent of the heat energy contained in the nugget (when combusted) will be used in the process to form the nugget. This system is being instrumented to measure actual energy expenditures, which will better define the economics of the process compared with competing fuels. This pilot-scale system will also provide Plastofuel in quantity for farm-scale tests and demonstrations.

Please contact us if you are interested in supporting this program or being a part of the program. Bill Lamont, wlamont@psu.edu or James Garthe, jwg10@engr.psu.edu

Upcoming Meetings –If you have a meeting you would like to announce, please send the meeting title, date, location and contact information to esanchez@psu.edu.

Local

- ✓ January 10-17, 2009. **Pennsylvania Farm Show**, Harrisburg, PA. For more information visit www.agriculture.state.pa.us/farmshow.
- ✓ January 23, 2009. **Susquehanna Fruit & Vegetable Meeting**. Location TBA. For more information contact Jeff Mizer at (570) 963-6842 or jwm5@psu.edu
- ✓ January 19, 2009. **New Holland Vegetable Day**, New Holland, PA. For more information contact Tim Elkner at (717) 394-6851 or tee2@psu.edu.
- ✓ January 22, 2009. **Crops Conference**, Warriors Mark, PA. Contact Tom Ford at (814) 940-5989 or tgf2@psu.edu Tom Butzler at (570) 726-0022 or tmb124@psu.edu.
- ✓ January 27, 2009. **Northeast Regional Vegetable Growers' Meeting**, Newton Fire Hall, Clark Summit, PA. For more information contact John Esslinger at (570) 963-6842 or cje2@psu.edu.
- ✓ January 30, 2009. **Crops Conference**, Altoona, PA. Contact Tom Ford at (814) 940-5989 or tgf2@psu.edu Tom Butzler at (570) 726-0022 or tmb124@psu.edu.
- ✓ February 13, 2009. **Vegetable Growers Meeting**, Fleetwood, PA. For more information contact Andy Beck at (570)-622-4225 or awb123@psu.edu or Mena Hautau at (610) 378-1327 or mmh10@psu.edu.
- ✓ February 16, 2009. **Tri County Vegetable, Small Fruit and Greenhouse Growers' Meeting**, Shippensburg, PA. For more information contact Steve Bogash at (717) 263-9226 or smb13@psu.edu.
- ✓ March 4, 2009. Lehigh Potato Meeting. Schnecksville, PA. For more information contact Bob Leiby at (610)-391-9840 or rel5@psu.edu.
- ✓ March 5, 2009. **KPA Study Circle**, Fleetwood, PA. For more information contact Andy Beck at (570)-622-4225 or awb123@psu.edu or Mena Hautau at (610) 378-1327 or mmh10@psu.edu.
- ✓ March 5, 2009. **Southeastern Pennsylvania Vegetable Day**. For more information contact Scott Guiser at (215) 345-3283 or sxg6@psu.edu.
- ✓ April 2, 2009. North Central High Tunnel Meeting. Warren, PA. For more information contact Andy Muza at (814) 725-4601 or ajm4@psu.edu.

- ✓ November 2009 (tentative date) **Western Pennsylvania Vegetable & Berry Seminar**, Butler, PA. For more information contact Eric Oesterling at 724 837 1402 or reo1@psu.edu or Lee Young at (724) 228-6881 or ljs32@psu.edu.

Regional

- ✓ Jan 13-15, 2009. **2009 Atlantic Coast Agriculture and Mid-Atlantic Direct Marketing Conference** at the Taj Mahal in Atlantic City. For more information contact Mel Henninger at henninger@aesop.rutgers.edu.
- ✓ Feb 3-5, 2009. **2009 Mid-Atlantic Fruit and Vegetable Convention**, Hershey Lodge and Convention Center, Hershey, PA. For more information contact William Troxell at 717-694-3596 or visit www.mafvc.org
- ✓ Feb 6-7, 2009. **Pennsylvania Association for Sustainable Agriculture (PASA) 17th Annual Farming for the Future Conference**. Penn Stater Conference Center, State College, PA. For more information visit www.pasafarming.org.

National

- ✓ July 14-16, 2009. **Plasticulture 2009**. Ramada Inn and Penn State University, State College, PA. For more information visit www.plasticulture.org
- ✓
- ✓ July 25-28, 2009. **Annual Meeting American Society for Horticultural Science, St. Louis, MO**. For more information visit www.ashs.org

International

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The newsletter is also posted within three days on the Department of Horticulture Vegetable program website at: <http://hortweb.cas.psu.edu/extension/veg crops/newsletterlist.html>.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied. Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.