

## OSU Extension - Auglaize County Weekly Horticulture Newsletter – 2-21-20

### Late Blight of Potato and Tomato



Late Blight of potato and tomato is a very devastating disease. This disease is what caused the Irish potato famine. Late blight is caused by *Phytophthora infestans*, an oomycete or water mold (not a true fungi). *Phytophthora infestans* needs a living host to survive from one season to the next, usually infected potato tubers. Sporangia of *Phytophthora infestans* travel through the air for several miles, maybe up to 30 miles, to infect living potato or tomato foliage. Within a few hours after the sporangia lands on the foliage it begins to germinate if free moisture (dew, fog, or rain) is present. Within three to four days small irregular-shaped water-soaked colored lesions appear. The lesion can turn brown and be surrounded by a yellow halo at first or water-soaked halo as the lesion grows. The necrotic (brown) lesion may only be 1 to 2 mm in diameter at first. As the disease sporulates a white growth can be seen in the lesion. The lesions become larger and eventually the leaves turn brown and shrivel. Lesions on tomato fruits appear as greasy and in a circular pattern. Lesions usually develop where water pools such as the point of attachment of the leaflet to the petiole or on the leaf margin. Sporulation can occur within four to six days after infection when the environment is favorable (leaf wetness for more than 10 to 12 hours at 60 to 70° F). Sporulation does not occur under dry conditions. Leaves, stems, and fruits of tomatoes and tubers of potatoes and leaves and stems of the weeds hairy nightshade and bittersweet nightshade can be infected. Stem lesions produce sporangia for a longer time than leaf lesions.

Late blight can spread very quickly in a field or garden because of the high reproductive potential of the pathogen. A single lesion can produce 100,000 to 300,000 sporangia per day. If the disease is left unchecked it can defoliate a field or garden within three weeks of the first visible lesion.

An integrated management approach to late blight is critical to reducing the development of the disease. One strategy is to plant resistant varieties. Planting resistant varieties of potatoes and tomatoes can be useful in reducing the disease, however this is not complete because of the presence of many different races (strains) of *Phytophthora infestans*. Therefore no single variety will prevent infection from all strains. There are few potato varieties and several tomato varieties with some level of resistance. The potato varieties, Defender from Irish Eyes Garden Seeds, Elba from High Mowing Organic Seeds, and Jacqueline Lee, Redsen and Ozette from unknown sources have the greatest resistance to late blight. The following potato varieties have some level of resistance: Kennebec from many different sources; Satina and Strawberry Paw (only root resistance) from Johnny's; Red Luna from Burpee; Cheiftan and Cranberry from E&R; German Butterball, Burbank Russet, and Yukon Gem from High Mowing Organic Seeds; and Buffalo Red Ruby, Redsen, and Red Lady from unknown sources.

The following tomato varieties have good to excellent resistance to late blight: Plum Regal from Totally Tomato and Johnny's; Mountain Magic from Johnny's, Gurney's, Jung's, and Territorial; Defiant PhR from Johnny's, Gurney's, and Jung's; Mountain Merit from Johnny's, Jung's, and Totally Tomato; Jasper from Johnny's and Jung's, Iron Lady from High Mowing Organic Seeds and White Flower Farm; Legend from Territorial Seed Company, Reimer Seeds, and TomatoFest; Matt's Wild Cherry from Johnny's, High Mowing Organic Seeds, White Flower Farm, and Peaceful Valley; Lemon Drop from Totally Tomato, Mr. Stripey from Burpee, Jung's, and Totally Tomato; Pruden's Purple from Johnny's, High Mowing Organic Seeds, and Peaceful Valley; Wapsipinicon Peach from Totally Tomato and High Mowing Organic Seeds; and other varieties from Totally Tomato and Johnny's Selected Seed. Jasper was voted as having the best taste and most likely to be purchased. Mountain Merit, Matt's Wild Cherry, and Mountain Magic also scored well with taste. Rugged Boy from Totally Tomato and Cherry Bomb from Johnny's were new varieties for 2016 and are reported to have resistance to late blight, but I could not find any research to prove the level of resistance. Other varieties with slight resistance or resistance to one or two races include Red Pearl and Juliet from Johnny's, Lizzano and Legend from Territorial Seed Company, TomatoFest, and Reimer Seeds, and Cloudy Day from Burpee.

## Local Observations

Good afternoon! I pray you are well.

We received precipitation only 2 days this past week. Rainfall on Monday, February 17th ranged from 0.21" near Valley and Idle roads and Lock 2 and Tri-Township Roads to 0.4" near Bloody Bridge and County Road 66A and St. Rt. 66. Rainfall on Tuesday ranged from 0" near County Road 66A and St. Rt. 66, near Lock 2 and Tri-Township roads, and near Lowes to 0.17" near Bloody Bridge. Total rainfall for the week ranged from 0.21" near Lock 2 and Tri-Township roads to .57" near Bloody Bridge. The average rainfall for the week was 0.34", 1.1" below last week.

The average high temperature now is 38 degrees F. Temperatures were above normal for 3 days and below normal for 4 days! The average high temperature for the week was 35.6 degrees F, 1 degree F more than last week and 2.4 degrees below normal!

With the cold weather I did not check my bees this past week.

## VegNet

### Pumpkin & Squash Growers Wanted for On-Farm Mustard Biofumigation Trial

February 18, 2020



Plectosporium blight on fruit and handle.



Plectosporium blight on petioles and leaf veins.

In 2019, research was conducted into the use of mustard cover crops as a biofumigant to reduce a specific soil borne disease in pumpkins, Plectosporium blight, also known as white speck or Microdochium. The signs of this disease start out as spindle shaped lesions on the petioles, vines and back of leaf veins potentially killing the plant. If the disease progress, it can infect the handles and turn immature and mature fruit white.

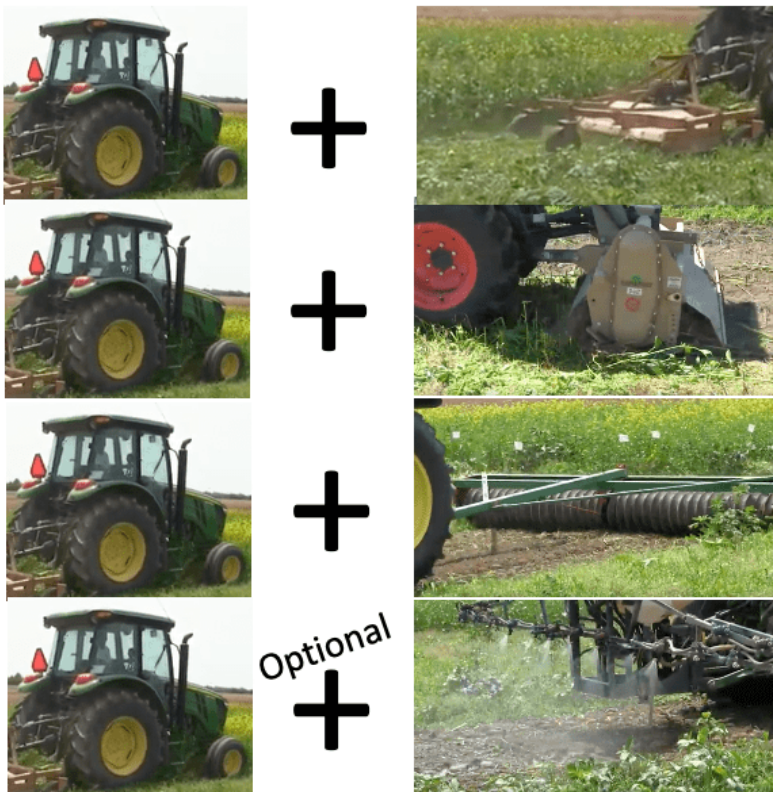
Although our trial in 2019 was planted in a Plectosporium infested field, very little disease developed due to the near drought like conditions at the research station in South Charleston. In wetter locations around Ohio this disease was seen last year and we still think there is potential for this cultural technique to reduce disease

in pumpkin and squash fields. To accomplish this on a wider scale in 2020, we plan to replicate and expand our mustard cover crop (MCC) biofumigation study to include on-farm trials with growers.

We are looking to recruit 4-6 growers preferably in the central or southern part of the state to put out a mustard cover crop biofumigation trial to reduce soil borne disease pressure with the following guidelines and conditions.

**Growers requirements and general protocol:**

-Growers must plant in field known to have a Plectosporium blight infestation. Growers with fields infested with Fusarium or Phytophthora will also be considered.



Equipment needed to successfully manage a mustard cover crop.

-Growers need to have equipment to seed the cover crop, chop (bush hog or flail), incorporate (rototill), pack the soil (culti-mulcher) and possibly seal the soil using a sprayer or irrigation system. These steps will be done in rapid succession so 3-4 tractors are ideally needed, each hooked to an implement.

-Growers will put out 4 strips of MCC and 4 strips without a MCC.

-Strip sizes will be up to 0.1A for a maximum of 0.8A needed for the entire on-farm study.

-Growers will plant Caliente Rojo, currently the highest yielding glucosinolate mustard cover crop available.

**OSU will provide:**

-The MCC seed, the fertilizer (urea + granular ammonium sulfate) and 1K seeds of the pumpkin hybrid Solid Gold (Rupp).

-Also evaluate each grower site for disease incidence on foliage three times during the season, plus a harvest where mature fruit are weighed and graded for disease.

**Study Timeline:**

-The MCC strip plots fertilizer will be disked into the soil prior to seeding to ensure high biomass production.

-The MCC planting date will be between March 30 and April 30 based on soil conditions and weather forecasts.



Mustard cover crop at full bloom.

-Approximately 50-60 days later, the MCC will be at peak flowering and will be chopped, rototill incorporated into the soil and then packed using culti-mulcher. If irrigation is available, water will be applied to help seal the soil and create a better environment for biofumigation.

-Within 10-14 days of incorporation, Solid Gold pumpkins will be transplanted into those strips at roughly 4ft spacing between plants. Note that transplants are preferred at each site instead of direct seeding, but if this is not possible, we can discuss options. Transplants will lead to an earlier harvest.

#### **Plot Care:**

Each farm will follow their own standard weed, insect and disease control and fertility practices on the 8 strips. The fungicides used on the crop will need to be discussed ahead of time so we can limit the use of fungicides that might help control Plectosporium blight. These fungicides are Flint, Cabrio, Quadris, Inspire Super and Merivon.

Disease ratings of incidence on vines, foliage and fruit will be taken at 14-21 day intervals from vining until fruit maturity. Sections of all strips will be harvested and fruit will be weighed and graded for disease.

#### **The Big Picture:**

By expanding the number of sites for this research through on-farm trials, we expect to see the potential MCC may have to reduce the soil borne disease complex affecting cucurbits. By recruiting growers into this process at a small scale, we hope to gain their valuable feedback as to the feasibility and challenges of using MCC on their farm. If successful, growers will spread the news to other growers who might be willing to try MCC on their farm. In addition to the potential biofumigation benefit, growers will be enhancing their soil organic matter levels and provide premium although brief pollinator habitat during flowering.

If growers want to see a video detailing the steps and processes involved with planting MCC as a biofumigant, check out the work we did in 2019 at <https://youtu.be/Taz-PhDphhA>.

#### **Sign up:**

If interested in participating in this project or have questions, please contact me at 937-484-1526 or [jasinski.4@osu.edu](mailto:jasinski.4@osu.edu) by **March 7**.

This project is being funded by the **Ohio Vegetable and Small Fruit Research and Development Program** and the **IPM Program**.

## Midwest Vegetable Production Guide Now Available

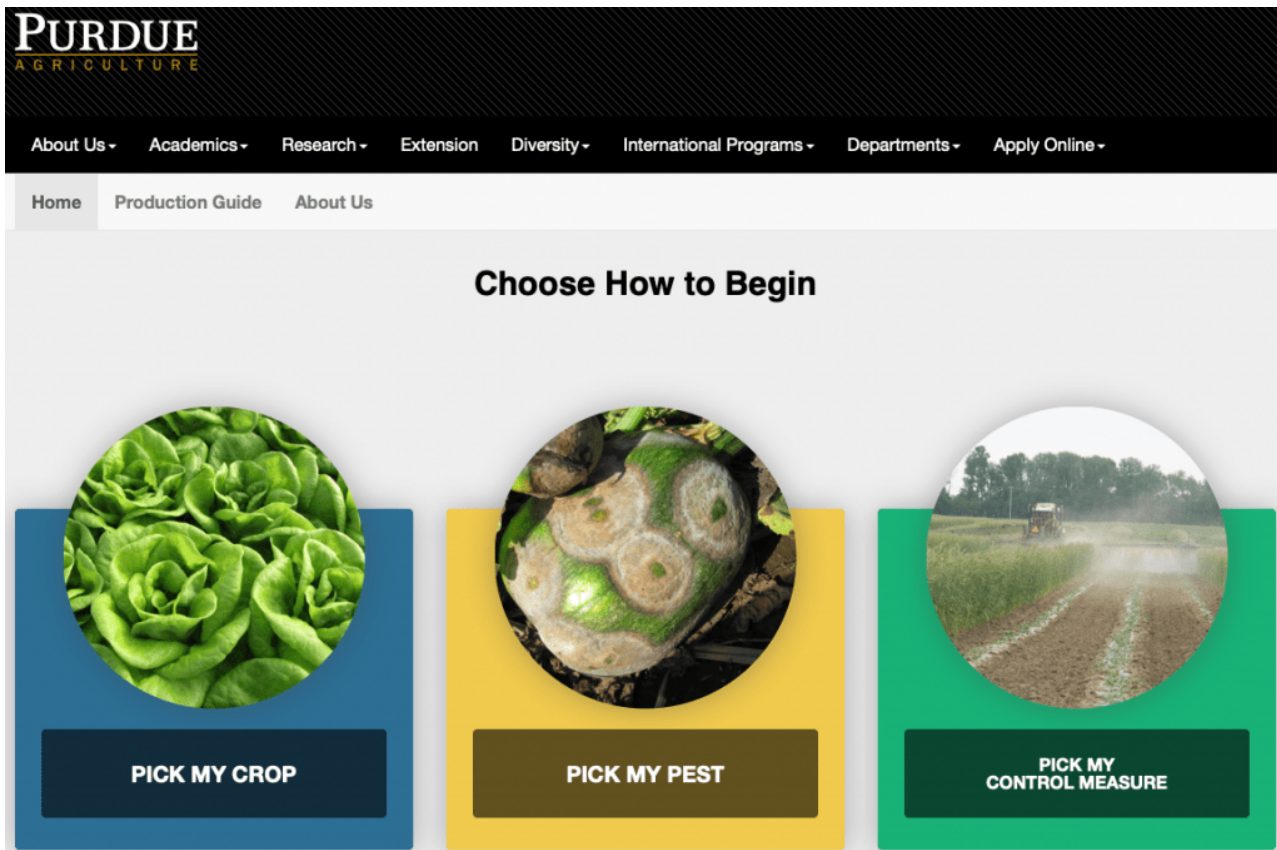
February 17, 2020

If you are a vegetable grower in Ohio, the **Midwest Vegetable Production Guide**, is an essential resource to keep on top of the latest fertility, horticultural management, and pesticide recommendations for your operation. Each year the guide is edited and updated by specialist's in eight states to bring you the most current information possible at the time of printing.

What's new to the guide in 2020? Within the 262 spiral bound pages there is an updated Organic Production section plus updated sections on disease, weed and insect management on 45+ vegetable crops, from Asian vegetables to Zucchini.

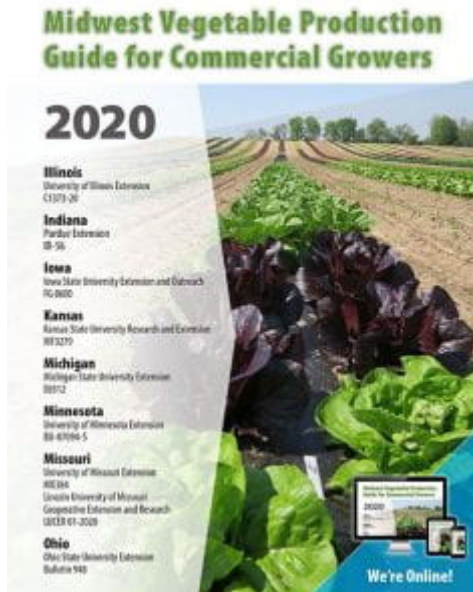
The MVPG is also more mobile friendly now with an improved interface designed to get your crop production question addressed quickly. Enter your crop and pest information and receive cultural and pesticide recommendations matching your request. Try it out on your computer, tablet or smart phone at <https://mwveguide.org>. The site will default to the new interactive mobile friendly interface but if you want to access individual pdf chapters of the guide, click on the drop down and select "Production Guide."





MVPG new and mobile friendly interface.

To get a traditional hard copy of the guide, contact your local Extension office and they can order a copy from main campus. Cost will be around \$15.



MVPG cover for 2020.

If you want to order a guide online through the new Extension publications website, here is the link <https://extensionpubs.osu.edu/2020-midwest-vegetable-production-guide-for-commercial-growers/>. If you order the guide online and have it mailed to your house, it will cost \$21.25 plus shipping. Be sure to purchase your guide soon, there are only 90 copies left in inventory at OSU! Best of luck for a productive season!

## BYGL

No news this week.

## Other Articles

### Washington Hawthorn Suits Small Gardens

February 17, 2020 | [Meghan Shinn](#)

Source: <https://www.hortmag.com/plants/plants-we-love/washington-hawthorn-suits-small-gardens>



**Virtues:** Washington hawthorn (*Crataegus pharopyrum*) is a US-native tree that offers white spring flowers, bright fall foliage and bright red winter fruits, which attract birds. This tree grows just 25 to 30 feet tall, making it a choice for smaller spaces, though one must be mindful of its thorns when positioning it.

**Common name:** Washington hawthorn

**Botanical name:** *Crataegus phaenopyrum*

**Exposure:** Full sun

**Flowers:** Clusters of white flowers appear in late spring to early summer, when they feed the bees. Fruit develops and ripens in the fall, persisting into winter, when it feeds songbirds.

**Foliage:** The toothed leaves emerge in the spring with a red-purple color before deepening to green. The fall foliage color can be orange, red or purple. The branches of the Washington hawthorn are lined with three-inch thorns.

**Habit:** Washington hawthorn is a smaller tree, reaching just 25 to 30 feet tall with a crown spread of about 20 feet.

**Origin:** Open woods and stream banks of the Mid-Atlantic states, the Southeast and the lower Midwest of the USA. Its common name, Washington hawthorn, came about because it was first introduced from Washington DC as material for hedging in the 1800s.

**How to grow it:** This tree is fairly adaptable. It is not picky about soil type or moisture level, tolerating wet soil as well as times of drought. It does require full sun. Plant it where its thorny branches won't cause trouble. USDA Zones 4–8.

## Blueberry growers can use updated, UF/IFAS web-based tool to fight fungus

Source: <https://www.hortidaily.com/article/9189876/blueberry-growers-can-use-updated-uf-ifas-web-based-tool-to-fight-fungus/>

Instead of spraying every two or three weeks, Florida blueberry growers can use an updated web-based tool to fight anthracnose fruit rot (AFR) with more precision, thanks to work by UF/IFAS experts.

Blueberries grow throughout much of Florida between December and April. When their flowers and fruit are developing, many farmers use a calendar-based method to spray their plants to protect against AFR, said Doug Phillips, UF/IFAS blueberry Extension coordinator.

Under this method, farmers spray fungicide at regular intervals, typically every 14 to 21 days, which over the course of a season can be costly, Phillips said. UF/IFAS researchers do not know yet how much money farmers might save by using the web tool. That depends on farm size, the products used, and other factors, Phillips said.

The weather-based [Blueberry Advisory System](#) (BAS), released on Jan. 31, sends growers alerts that tell them when environmental conditions favor the development of AFR, a fungus that can severely damage blueberries.

“This system allows growers to target their fungicide sprays to those periods when the development of infection is more likely,” Phillips said. “In many cases, this system will decrease spray applications in a given season, while achieving a comparable level of disease control.”

Growers can also use the risk assessments to choose whether to use a less-expensive fungicide when they encounter moderate disease risk, or a more expensive product that may be more effective during high-risk periods, Phillips said.

UF/IFAS tested BAS on nine blueberry farms during the 2018 and 2019 seasons, and results were good. BAS notified growers to spray fungicide when AFR was more likely to develop, and in most cases, they didn’t need to apply the sprays as often, Phillips said.

Data for the AFR risk models come from the Florida Automated Weather Network (FAWN), which has weather stations throughout the state.

UF/IFAS experts have rated the risks for AFR development as “low” (less than 15%), “moderate” (15-50%) or “high” (greater than 50%). Growers who sign up for notifications will receive a text message and/or email when the risk is moderate or high, Phillips said.

The new advisory system works similarly to the Strawberry Advisory System, developed several years ago by Clyde Fraisse, a UF/IFAS agricultural and biological engineering professor, and Natalia Peres, a UF/IFAS plant pathology professor. With the Strawberry Advisory System, growers of that crop spray when they get alerts that anthracnose may be developing.

Fraisse developed the website for the Blueberry Advisory System, Phillips said. Peres evaluated the system in the field trials.

Blueberries are most susceptible to AFR in warm, wet weather, with temperatures between 59 and 81 degrees. Combine those conditions with 12-hour periods of leaf wetness, and you get ideal conditions for AFR to develop, Phillips said.

Rainfall or overhead irrigation can compound the problem by spreading the pathogen to healthy fruit and plants, creating additional opportunities for infection.

The pathogen can also be spread by fruits touching each other and from harvesting machinery and sorting equipment.

Thus, growers can help control the disease primarily by timely application of fungicides.

“Good practices can also help reduce the risk of developing anthracnose fruit rot,” Phillips said. “They include periodic pruning to open the plant canopy, harvesting frequently to avoid overripe berries, and rapid cooling of fruit following harvest.”

For more information, contact Phillips at [dal64372@ufl.edu](mailto:dal64372@ufl.edu).

Source: [University of Florida \(Brad Buck\)](#)

*Ellepot GrowBag and AIR Tray*

## **Plastic bags no longer needed in propagation**

Source: <https://www.hortidaily.com/article/9192145/plastic-bags-no-longer-needed-in-propagation/>

Following on their success within the fruit and nut segments, the company has developed the Ellepot GrowBag, which along with their AIR Tray technology, eliminates the requirement for plastic bags in propagation. "With the new GrowBag and AIR tray system, growers can eliminate the need for plastic bags in their production and put an end to root circling and transplant shock," the team explains.



### **No more plastic bags**

The Ellepot GrowBag is designed for crops currently propagated in plastic bags due to their robust root systems, for example fruit and nuts, as well as species such as avocado, coco, coffee and indigenous plants. When propagated in the Ellepot AIR Tray, growers can eliminate using plastic bags in their production.



"The Ellepot GrowBag is an alternative to plastic bags for fruit and nut producers. Growers can choose to have the flexibility of producing their GrowBags on-site with the Ellepot GrowBag machine (with automatic filling) or have the option to purchase pre-made Ellepot GrowBags in various standard sizes", says Regional Sales Manager, Darran Stone.

"With successful customer trials around the world, growers are excited to move away from the conventional plastic bags and offer a sustainable solution to their customer. After switching to our AIR Trays and substituting the plastic bags with the sustainable and degradable Ellepot GrowBag, growers are reporting improved root quality, significantly reduced propagation times and greater labour efficiencies".

### **The Ellepot GrowBag Machine**

Designed and manufactured in Esbjerg, Denmark, the Ellepot GrowBag machine is an example of Danish innovation and quality.



"The automatic filling of the GrowBags improves efficiencies, and the Ellepot AIR Trays have been designed with automation in mind. On-site production allows flexibility and reliability and the Ellepot GrowBag machine is capable of using a wide variety of growing media and substrates, from materials such as peat moss and coir to composted pine bark which gives growers a greater choice in their propagation decisions."

**Uniform drying, air pruning of roots and improved efficiencies**





The Ellepot AIR Trays are designed with no horizontal surfaces which limits the circling and constriction of roots usually found at the bottom of the conventional plastic bag.

Air pruning is at the core of the Ellepot GrowBag system, and customers experienced healthy root tips growing out or down through the Ellepot paper even after months of being in the same Ellepot AIR Tray. “The Ellepot AIR Tray promotes air circulation around the Ellepot GrowBag along with excellent drainage, which enhances root architecture,” adds Darran. “This system provides propagators with the opportunity to create optimal microclimate conditions with improved wet-dry cycles for rapid and efficient root development. Air pruning of the roots stimulates the plant to produce secondary and tertiary roots resulting in a larger, more fibrous root system”.

Through air pruning plants become more efficient in the use of available container volume, and as a result, many species can be grown in a smaller volume Ellepot GrowBag. This smaller volume GrowBag has many additional benefits such as a reduction in substrate cost, more efficient use of available nursery propagation space, reduced transport cost and faster in-field transplanting amongst others.



**Transplanting benefits**



Once transplanted in the field, air-pruned root tips continue growing in the same direction resulting in a more natural root architecture without the deformations that have been observed from plastic containers.

Growers have reported faster root growth after transplanting and as the degradable Ellepot GrowBags do not need to be removed at planting, transplant speed is greatly increased, and transplant shock is virtually eliminated.

With mortality rates reduced and yields on the rise, the successful trials of the Ellepot GrowBags have shown that this new technology can help customers grow smarter too.

For more information:  
Darran Stone



**Ohio State University Extension**  
**Auglaize County**  
Top of Ohio EERA  
208 South Blackhoof Street  
Wapakoneta, OH 45895-1902

419-739-6580 Phone  
419-739-6581 Fax  
[www.auglaize.osu.edu](http://www.auglaize.osu.edu)



**Ellepot**

[dst@ellepot.dk](mailto:dst@ellepot.dk)  
+45 76147676  
[www.ellepot.com](http://www.ellepot.com)

**Prepared by Jeff Stachler**  
**Ohio State University**  
**Agriculture and Natural Resources Extension Educator, Auglaize County**