

CHECKPOINT

NEWSLETTER FOR PENNSYLVANIA SOYBEAN PRODUCERS

COVER CROPS NOT JUST FOR COVER ANYMORE

By John Rowehl, Penn State Extension

Although the term “cover crop” implies serving the purpose of protecting the soil from erosion, cover crops also play a role in enhancing soil productivity and crop production.

As many successful no-till farmers have shown from experience, cover crops are not necessarily required for no-till systems to work. However, many successful no-till farmers utilize cover crops and believe they improve the productivity of their fields.

Depending on the type of cover crop, benefits include:

- Addition of organic matter
- Addition of nitrogen to the soil
- Scavenging excess nitrogen not utilized by the main crop or from fall manure application. This nitrogen will become available to the next year’s crops only after being released as the plant residue breaks down in the soil.
- Maintenance or improvement of soil structure
- Remediation of soil compaction
- Reduction in surface evaporation
- Enhancement of soil life

If you’re considering incorporating cover crops into your agronomic management consider:

- Seed cost
- Herbicide carryover
- Potential pest complications
- Burn-down herbicide selection and timing
- Seeding equipment
- Soil preparation
- Residue management





Lebanon County farmer Randy Ziegler is one of dozens of farmers who participate in the On-Farm Network, managed by Penn State Extension and funded by the Pennsylvania Soybean Board.



Cover crops not only protect soil from erosion, they are also important players in enhancing soil health and crop production.



In Ziegler's fields with cover crops, there are plenty of worm castings, which increase soil health.

Photos: John Rowehl, Penn State Extension

ENTHUSIASM FOR COVER CROPS

Randy Ziegler, a soybean grower in northern Lebanon County, is a staunch proponent of no-till. He's also become an enthusiastic supporter of cover crops.

Ziegler is part of a group of farmer/cooperators who are participating in research projects through the On-Farm Network. One of the research projects on his farm, now in its fourth year, is research into the use of cover crops.

"I've been trying to do all my ground no-till for probably the last 10 or so years," says Ziegler. "It's a little hard to start, but the more you use cover crops, the more mellow the ground seems to get. There's a definite change in organic matter and it also seems like when you get a little time of drought, it holds on a little longer than before we were using cover crops."

As a cover crop, Ziegler uses cereal rye. "I basically stick with cereal rye and have seeds readily available at all times. When I first started no-till, there were times where I felt like I couldn't get the planter ready in time and the ground would get hard if you didn't plant it at exactly the right time. Now, I find that it's more the norm to be able to go out and have a tender seedbed. It works real well with the no-till system."

Ziegler says that after four years into the cover crop study, "You can actually feel a difference in the equipment. It feels spongier where the cover crops were verses where we didn't have any for four years. When digging we're finding a lot of worm castings, which is what you want to find in your soil."

REAL WORLD RESEARCH

The On-Farm Network takes soybean research studies out of the lab and small test plots into the fields of Pennsylvania soybean growers to see which management practices have an appreciable impact on production. Now in its eighth year, the On-Farm Network is a program funded by checkoff dollars through the Pennsylvania Soybean Board.

The Network works by conducting research in real-world conditions on test plots planted by farmer/collaborators throughout Pennsylvania on their own farms with their own equipment. This year, research is being conducted at 30 different locations in 15 counties throughout Pennsylvania.

ON-FARM SOYBEAN FIELD TRIAL



Working with Farmers.

FARMERS FROM BRAZIL VISIT THE GARDEN SPOT OF AMERICA



Bill Beam hosted a group of 15 Brazilian farmers and ag professionals at his Chester County farm. The Brazilian group had plenty of questions about agricultural practices in the United States. Francisco Silva from Missao, a Brazilian company specializing in agricultural tours, served as interpreter and organizer of the trip.

A group of 15 farmers and ag professionals from southern Brazil traveled to the United States to compare and contrast agriculture in the Garden Spot of America with the agriculture in their own country.

Brazil, currently the second largest soybean producing country in the world after the U.S., is seeing strong growth in agricultural production. With a tropical climate, where winter temperatures rarely sink below 40° F, farmers enjoy conditions where two crops are routine, and three can be attained with irrigation.

The group, from Frisia Cooperative in the state of Parana in southern Brazil, included farmers who are directors, board members, and agriculture and livestock committee members at the Cooperative. Representatives from the finance and agronomic sectors of the co-op and from FMC Corporation, the sponsor of the trip, also took part in the tour.

Parana is considered the Garden Spot of Brazil. The climate is warm, the soils are fertile and crops receive adequate rainfall. In addition to these natural resources, this area is also home to farmers with extensive experience. Many of the farmers are of Dutch ancestry, descendants of families from the Netherlands who arrived in the region in the 1940s.

At Beam Farms in Elverson, Pa., Bill Beam hosted the group and fielded questions ranging from the cost of land and inputs, to credit and financing opportunities, and research priorities. Beam

serves on the Pennsylvania Soybean Board and the United Soybean Board. He traveled to Brazil earlier this year with other United Soybean Board soy checkoff farmer-leaders to see firsthand the advancements that are being made in Brazil's infrastructure to better compete in the global market.

As the group walked a field of high oleic beans and inspected the crop, the conversation turned to the incidence of insects and disease. Although the tropical climate of Brazil affords many benefits to farmers, it is host to an array of pests as well as Asian rust, the perennial enemy of soy. The high pressure of pests and diseases require agronomists to make weekly visits to scout



the crops and farmers to attack their fields with insecticides, herbicides, and fungicides.

One of the most significant differences between the U.S. farmers and their counterparts in Brazil is the co-op system. Brazilian farmers are members of well-established co-ops, which provide agronomic inputs, technical support, research, and other resources. The group was surprised that producers in Pennsylvania do not have the support of co-ops and had many questions for Beam about the research sponsored through the checkoff program, and how the farmer-leaders on the Boards determine which projects to fund.

EUROPEAN UNION APPROVES THREE BIOTECH SOY TRAITS

The U.S. Soybean Export Council (USSEC) has announced the long awaited European Union approval of three biotech soy traits for import and processing: Monsanto's Xtend, Monsanto's Vistive Gold and Bayer CropScience's Balance GT.

"The EU's approval of these events is welcome news for U.S. soybean farmers," said USSEC chairman Laura Foell, a soybean grower from Schaller, Iowa. "We're happy that we can supply our European customers with a reliable supply of safe food."

Europe is one of the largest customers

of U.S. soybean farmers.

The U.S. Soybean Export Council aims to maximize the use of U.S. soy internationally by meeting the needs of global customers that use U.S. soy in human food and feed for poultry, livestock and fish. The organization uses a global network of stakeholder partnerships, including soybean farmers, exporters, agribusinesses, agricultural organizations, researchers and government agencies, to accomplish that mission. USSEC programs are partially funded by the United Soybean Board (USB).

KNOW WHAT'S IN YOUR SOYBEANS IT'S TIME TO LOOK AT PROTEIN AND OIL, NOT JUST YIELD

You know your soil. You know your climate. But do you know the protein and oil contents of your soybeans? All farmers should, says Bill Beam, a check-off farmer-leader from Chester County, Pa., and Chairman of the Pennsylvania Soybean Board.

“We’re not growing pounds of soybeans,” he says. “We’re growing pounds of protein and pounds of oil that our end-users need.”

Demand for soybeans is based on those pounds of protein and oil being harvested from your fields. For example, poultry and livestock farmers want protein to feed their chickens, turkeys and hogs.

Unfortunately, the protein content in U.S. soybeans has been slowly declining over the years. And buyers are aware of this trend.

“We go to great lengths to buy and source some of the highest-quality soybeans available,” says Gary Cordier, senior vice president of domestic soy processing at Perdue AgriBusiness. “But nationwide, there’s been a slow deterioration in soybean protein.”

Competing for demand

U.S. soy has many advantages, but end users have other options.

“Some international regions are growing soybeans with higher protein than here in the U.S.,” says Beam. “If those higher-protein soybeans are priced competitively, we’re going to lose valuable sales.”

The industry’s main focus has been on yield, but it’s time to look at the quality elements. And the first place to start is with your own soybeans.

“There’s a gap between what end-users want and what we as soybean farmers are growing,” says Beam. “We need to know what we have, and then we can start making changes.”

From farmers to crushers to processors, those changes could lead to increased profit and opportunities for the entire value chain.

“Moving forward, bushels per acre yield won’t be the only important factor,” says Cordier. “The constituents – oil and protein – will enhance the value to the soybean farmer.”

Numbers don’t lie

Some elevators and crushers have near-infrared (NIR) machines that can measure the protein and oil contents of soybeans. The next time you deliver soybeans, ask to see your numbers to get an idea of your meal and oil quality.

Even if your local elevator can’t provide an analysis of your soybeans, all farmers can take the next step toward quality.

Ask your seed representative which varieties will perform well with yield and quality, and take that information into consideration when making your final seed purchases.

“Moving forward, bushels per acre yield won’t be the only important factor.”—Gary Cordier, Perdue AgriBusiness

SOYBEAN QUALITY MATTERS

HOW CHOOSING HIGHER QUALITY SEED AFFECTS YOUR PRICE

SELECTING BETTER QUALITY VARIETIES

Growing seed varieties with higher protein content can increase soybean demand and value and ultimately impact your price per bushel.



HIGHER DEMAND FROM END USER CUSTOMERS

When you raise the protein level in your soybeans, animal ag’s demand for soybean meal will increase.

HIGH PRICE OF SOYBEAN MEAL

To meet demand, processors will pay more for soybeans with higher protein.



HIGHER PRICE FROM ELEVATORS

When an elevator receives a higher price for soybeans, it can pass along more value to the farmer.



HIGHER PRICE PER BUSHEL FOR YOU

When all customers in the value chain are demanding and paying more for higher protein, it improves farmers’ basis and the price they receive.





COMPETITION IS GROWING FOR ANIMAL-FEED MARKET SHARE

Poultry and livestock farmers demand high levels of protein to maximize their animals' potential. While many animal ag farmers have relied on soybean meal for years to meet their needs, other alternatives are available.

"From our perspective as animal feeders, we would like to see more emphasis on the protein level in soybeans," says R. Dean Boyd, Ph.D., technical director for Hanover Company, a pork-production and food-processing firm. "That has not been the focus of soybean farmers over the last few years when selecting seed."

Soon, poultry and livestock farmers will have additional options to meet their animals' needs—and that may not bode

well for the U.S. soy industry.

Dow AgroSciences recently announced it will offer a new high-protein canola meal for hog and poultry farmers in 2017. That new product will have a protein content of around 44 percent, compared with canola meal's typical protein level of around 37 percent.

And Ajinomoto Animal Nutrition Group, Inc. announced that it will begin feed-grade production of the essential amino acid tryptophan in North America in 2017. The company will have the capacity to produce approximately 3,000 tons of tryptophan per year.

Both announcements pose threats to the U.S. soy industry and its share of the animal-feed market, which makes it more

important than ever for farmers to grow high-quality soybeans.

"Soybean farmers can gain back some of their lost market share by growing a bean that has a higher level of protein," says Boyd. "Soybean meal is an extremely good source of protein because it has such a high-quality balance of amino acids, but the protein levels need to be better."

By looking beyond their local elevators and meeting the needs of their end users, especially the animal ag sector, soybean farmers can produce high-protein soybeans and increase their profit potential. Consider asking your seed dealer which varieties in your area produce high-protein without sacrificing yield.



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Photo: J. Craig Williams, Penn State Extension

EYES IN THE SKY

The advent of unmanned aerial vehicles (UAVs) or drones, has given farmers another tool to help them get the most out of their crops.

Thousands of farmers across the country have invested in their own machines or have enlisted crop consultants to fly fields for them. The potential for monitoring fields for weed issues, plant emergence or health problems is attractive to many farmers.

Airplanes helped farmers get field images more quickly than satellites, but still didn't offer the immediate information that can be gleaned from UAVs.

UAV use will expand in agriculture as sensor technology and interactivity improves. Once more people begin gathering data using remote sensors, databases analyzing that information will flourish, giving farmers access to even more material on which to base production decisions. This technology will allow farmers to generate actionable data. When data is available quickly enough, farmers can fix things in a timely fashion in order to be more productive.

4 WAYS TO USE DRONES ON YOUR FARM MAKE THE MOST OF YOUR DRONE INVESTMENT

Coming home with a brand-new drone in tow may make you feel like a kid at Christmas, but at the end of the day, any drone you may purchase is a powerful tool. Here are four ways drones can be put to use.

1. Scouting for weeds and insects

Protecting your fields from weeds and insects starts with vigilant scouting from planting to harvest, and the earlier you can kill weeds, the better your chances are of controlling them. But while scouting is an important management practice, many farmers have trouble finding the time to walk through all of their fields. Drones can cover more area in less time, allowing you to monitor pest pressure consistently.

2. Measuring crop health

Plants reflect both visible light and near-infrared (NIR) light, and if a plant is healthy, it will reflect more NIR light. But you aren't able to see the difference with your naked eye. Some drones are equipped with imaging technology that can capture both visible and NIR light to be compared and analyzed that will help you identify crop-health issues.

3. Monitor water drainage

Soybeans don't do well in wet soil for prolonged periods of time, so drainage in your fields is very important. Drones with thermal sensors can scan your field and recognize dry and wet areas. This can help you identify problem areas in your field as well help you plan out optimized drainage strategies.

4. Weather damage

There are several things to consider when facing a replanting decision. Using a drone to scan your field can help you determine how much damage was sustained during a storm or other event, which can ultimately help you assess the pros and cons of replanting. Taking aerial photographs of your crops and property following a severe storm will also provide you with documentation that may be necessary for insurance claims.

Drones can be put to use in several ways, but not all ways will be valuable for you. Do your research and make sure the technology is a good fit for your farm before taking the plunge.

NEW FAA RULES FOR DRONE OPERATION

The new rules for non-hobbyist small unmanned aircraft (UAS) operations – Part 107 of the Federal Aviation Regulations – cover a broad spectrum of commercial uses for drones weighing less than 55 pounds. Here are some highlights of the latest Part 107 rule, effective August 29, 2016.



Photo: J. Craig Williams, Penn State Extension

Operating requirements

The small UAS operator manipulating the controls of a drone should always avoid manned aircraft and never operate in a careless or reckless manner.

- You must keep your drone within sight.
- Alternatively, if you use First Person View or similar technology, you must have a visual observer always keep your aircraft within unaided sight (for example, no binoculars). However, even if you use a visual observer, you must still keep your unmanned aircraft close enough to be able to see it if something unexpected happens.
- Neither you nor a visual observer can be responsible for more than one unmanned aircraft operation at a time.
- You can fly during daylight or in twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting.
- Minimum weather visibility is three miles from your control station.
- The maximum allowable altitude is 400 feet above the ground, and higher if your drone remains within 400 feet of a structure.
- The maximum speed is 100 mph (87 knots).
- You can't fly a small UAS over anyone who is not directly participating in the

operation, not under a covered structure, nor inside a covered stationary vehicle.

- No operations from a moving vehicle are allowed unless you are flying over a sparsely populated area.

Pilot certification

To operate the controls of a small UAS under Part 107, you need a remote pilot airman certificate with a small UAS rating, or be under the direct supervision of a person who holds such a certificate.

You must be at least 16 years old to qualify for a remote pilot certificate. You can obtain it by passing an initial aeronautical knowledge test at an FAA-approved knowledge testing center. Or, if you already have a Part 61 pilot certificate, other than a student pilot certificate, you must have completed a flight review in the previous 24 months and you must take a small UAS online training course provided by the FAA.

If you have a non-student pilot Part 61 certificate, you will immediately receive a temporary remote pilot certificate when you apply for a permanent certificate. Other applicants will obtain a temporary remote pilot certificate upon successful completion of a security background check. We anticipate we will be able to issue temporary certificates within 10 business days after receiving a completed application.

UAS certification

The UAS must be registered. You are responsible for ensuring a drone is safe before flying. The remote pilot must perform a preflight visual and operational check of the small UAS to ensure that safety-pertinent systems are functioning properly. This includes checking the communications link between the control station and the UAS.

Photo: J. Craig Williams, Penn State Extension



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Respecting privacy

Although the new rule does not specifically deal with privacy issues in the use of drones, the FAA is acting to address privacy considerations in this area. The FAA strongly encourages all UAS pilots to check local and state laws before gathering information through remote sensing technology or photography.

Other requirements

If you are acting as pilot in command, you have to comply with several other provisions of the rule:

- You must make your drone available to the FAA for inspection or testing on request, and you must provide any associated records required to be kept under the rule.
- You must report to the FAA within 10 days any operation that results in serious injury, loss of consciousness, or property damage (to property other than the UAS) of at least \$500.

The requirements are subject to change. Be sure to reference the FAA for the latest rule at www.faa.gov/UAS.

DEADLINE FOR PA SOYBEAN YIELD CONTEST

A reminder to all soybean producers who have registered for the 2016 Pennsylvania Soybean Yield Contest that your harvest report form is due December 1, 2016. The report, and full details on the contest, are available at www.pasoybean.org under the "Grower" tab.



2017 PA WINTER CORN & SOYBEAN CONGRESS

Be sure to mark your calendar for the Winter Corn & Soybean Congress, sponsored by the Pennsylvania Soybean Board and the Pennsylvania Corn Growers Association.

All corn and soybean growers are invited to this informational session to learn the latest research findings in corn and soybean production. Lunch is provided. CCA and Pesticide Credits are available.

Topics will include:

- A grower panel with farmers involved in the On-Farm Network soybean research
- A Global View of Corn and Agriculture, with Chip Bowling, Past President of the National Corn Growers Association
- Value Added Crop Alternatives
- Farm Business Financial Management
- And more!

WHEN: February 23, 2017
8 a.m. – 3 p.m.

WHERE: Grantville Holiday Inn
Hershey Exit 80, I81
Grantville, PA 17028

Registration, which opens December 1, 2016, is \$15/person before February 15. Any registration after February 15 is \$20/person. Register online at www.pasoybean.org under the "Events" tab or by calling the Pennsylvania Soybean Board at 717-561-5922 or via email at contact@pasoybean.org.

2017 PENN STATE CROP CONFERENCES & CROPS DAYS

Don't miss the opportunity to learn about crop management research and issues at the 2017 Penn State Crop Conferences and Crops Days. The events will be held at more than a dozen locations statewide.

The Penn State Crop Conferences, supported in part by the Pennsylvania Soybean Board, focus on current crop management issues important to the productivity of Pennsylvania farmers. Each conference offers a day-long program with at least two breakout sessions that give attendees the opportunity to select topics that are relevant to them and their agricultural operations. Topics are geared to key issues and the latest research from the Penn State Field and Forage Team.

In addition to hearing valuable research-based information from Penn State Field and Forage Crop Specialists, participants will also earn a minimum of two category and two core pesticide education credits.

Learn about cutting-edge crop management strategies from Penn State Specialists at a location near you!

**To register or for more
information, contact
your local Penn State
Extension Office.**

