

CHECKPOINT

NEWSLETTER FOR PENNSYLVANIA SOYBEAN PRODUCERS

WEED-MANAGEMENT TIPS FOR HARVEST TIME

Harvest is a good time for soybean farmers to reflect on lessons learned from environmental, disease and weed pressures from the past growing season, how much yield those stresses cost, and how to manage them next year.

Specifically for weeds, you can be a steward of the land and get a jump on next year's weed management during this year's harvest. While harvesting your crop, it is very easy for the combine to spread weed seeds throughout your field as well as into neighboring fields.

University of Tennessee Row Crop Weed Specialist Larry Steckel, Ph.D., offers four adjustments you can make to your management practices during harvest that could make your spring and summer weed management easier.

- 1 Manage weeds before they take over your field. Proactive management will improve your yields and reduce the chances of having herbicide-resistant weeds develop in your fields.
- 2 Leave large patches of weeds in the field. This will diminish the amount of weed seed spread throughout the rest of that field.
- 3 Clean the combine after harvesting weedy fields. Clean machinery transfers fewer weed seeds to other fields.
- 4 Harvest the fields with the most weeds last. Leaving the worst for last will decrease the spread of weed seed even more.



Go to www.TakeActionOnWeeds.com to find guides that will help identify herbicide-resistant weeds and what actions will help control them.

EXPLORE HIGH OLEIC SOYBEANS

The recently announced FDA ban on trans fats, which requires the food industry to gradually phase out all trans fats in the next three years, has paved the way for a growing market for high oleic soybeans. High oleic soybeans produce oil that contains no trans fat and has a nutritional profile similar to olive oil.

Recognizing the potential for high oleic soybeans, the United Soybean Board has set a goal of 18 million planted acres of high oleic soybeans by 2023, which is expected to be approximately 30 percent of the soybean-growing acres in the United States.

High oleic oil could revolutionize the soy oil industry, so it's important for growers to learn more about the varieties that are available to Pennsylvania growers. A website from the soy checkoff, **SoyInnovation.com**, helps farmers discover the benefits and profit potential of high oleic soybeans.

Find answers to your questions about how you can expect high oleic varieties to perform in your field, how easy it will be for you to market the beans, as well as other key information for making the switch to this new profit opportunity.

HERE ARE THREE THINGS YOU SHOULD CHECK OUT ON SOYINNOVATION.COM.

- 1 Performance:** Learn what on-farm benefits high oleic varieties offer, including their comparable agronomic packages and yield. And hear from current farmers who share testimonials about their first-hand experience raising high oleic varieties.
- 2 Profitability:** A soybean calculator tool allows you to anonymously enter production information specific to your operation and see how much high oleic could be worth for you.
- 3 Location:** A zip code tool maps out local high oleic delivery options. See how availability of high oleic varieties is expected to increase on the availability map. ✓

Visit [SoyInnovation.com](https://soyinnovation.com) to find more information about high oleic soybeans and determine whether they're right for your operation.



HIGH OLEIC SOYBEAN OIL PUT TO THE TEST AT PENN STATE'S AZ FRATERNITY

French fries, chicken fingers and other fried foods are among the staples of college life, and students consume huge quantities of them. The brothers and sisters at Alpha Zeta, the honorary ag fraternity at Penn State, are no exception. But what sets them apart is that last semester, they used the new, trans-fat free high oleic soybean oil in their fryers.

The 26 members who live at the fraternity house, along with members who come there to share meals, take turns in the kitchen. At first, they were a bit skeptical about the claims about high oleic soybean oil: that there were health benefits because it contains no trans-fats, that it has a lighter, neutral taste, and that the oil stays cleaner longer than other vegetable commodity oils. These are factors that are especially important to the food manufacturers and foodservice operators who are the target market for high oleic soybean oil.

But after trying the high oleic soybean oil, they were believers. The new oil met the most important criteria for the college students: the taste test. AZ brother Michael Patrick Rush handles much of the food prep and catering: "I think that the quality of the food has improved. It is less greasy and in general just tastes better. The high oleic oil is lighter and doesn't cling to the food like our old oil did." ✓



AZ brothers enjoy the French fries they've deep fried in high oleic soybean oil.



Pa. farmer Justin Knoebel (front row, far left) was part of a group of U.S. soybean growers who participated in the checkoff-sponsored *See for Yourself* tour.

SEE FOR YOURSELF PROGRAM

FARMERS GET A FIRST-HAND LOOK AT SOYBEAN USE

Justin Knoebel, a soybean grower from Elysburg, Pa., was selected by the United Soybean Board (USB) to join nine other U.S. farmers in learning more about the soy checkoff by seeing where their soybeans go beyond the elevator in the USB's *See for Yourself* program.

The *See for Yourself* program gives participants a firsthand look at how and where their soybeans are being used both domestically and internationally. It also offers farmer-participants an opportunity to evaluate specific, checkoff-funded research and promotional activities. The program was held July 30-August 7, 2015, in St. Louis, China and Vietnam.

This was *See for Yourself's* first visit to Vietnam. The third-largest aquaculture-producing country in the world, Vietnam offers a unique look at animal agriculture's needs for high-quality soybean meal. With the cost of fishmeal-based feeds rising, soybean meal is a more affordable and more sustainable protein option for aquaculture feed. In 2014, Vietnam imported more than 350,000 metric tons of U.S. soybean meal, or the meal from over 16.3 million bushels of U.S. soybeans, most of which was used to feed fish.

Other stops during the program highlighted the checkoff's work in production research, transportation, biodiesel, high oleic and more. ✓

MINIMIZE SOYBEAN HARVESTING LOSS

BE READY WHEN THEY'RE READY.

Timing is everything when it comes to minimizing soybean harvesting loss. Harvesting soybeans at the optimum moisture is important to getting the best yields.

“Over the last several years of working with some of the top soybean producers in Pennsylvania, I’ve learned the importance of timely harvest of soybeans,” says Del Voight, Penn State extension educator. Voight is also director of the On-Farm Network, a program funded by the Pennsylvania Soybean Board that conducts research in real-world conditions on test plots planted by farmer/collaborators throughout Pennsylvania on their own farms.

“Once 95% of the pods turn brown, it’s time to combine about a week later,” says Voight. “After the plants first reach harvestable moisture content, dry matter losses occur simply by the fluctuations between daytime and nighttime conditions where moisture content can increase or decrease by as much as several points.”

Voight notes that waiting as little as two weeks to harvest the plots could cost the loss of a significant amount of soybeans from shatter losses. “Consider the data (Table 1) from the University of Wisconsin, which examines soybean losses determined after maturity.

“If you assess the discount for bringing soybeans in a little wetter than normal, there will be some cost drop for the beans. In Table 2, you will note the relative cost decrease per bushel of soybeans to be around 30 cents. This is a cost that is easily overcome by the reduced harvest loss in the field at current market prices. Although it appears that soybean dryer than 13.5% return about the same to management, this does not take into account the penalty of shatter loss in the field.” ✓

TABLE 1

YIELD LOSS DUE TO HARVEST DELAY ON SOYBEAN FIELDS				
Harvest Delay	Year 1	Year 2	Year 3	3-Year Average
None	4.1%	6.7%	7.5%	6.1%
2 weeks	5.0%	9.9%	9.2%	8.1%
4 weeks	6.3%	16.1%	12.1%	11.5%
6 weeks	6.8%	18.1%	19.9%	13.9%
Average	5.6%	12.7%	11.4%	9.9%

Source: University of Wisconsin

TABLE 2

WEIGHT/VALUE LOST FROM SOYBEANS AT MOISTURES OTHER THAN 13.5%							
Based on \$10/Bu. Bean Price							
		Discount of \$.12/Bu. Per Point of Moisture (2% Per Point of Moisture)			Discount of \$.20/Bu. Per Point of Moisture (3.3% Per Point of Moisture)		
Soybean Harvest Moisture, Wet Basis	Weight of Water Loss or Gain, Lbs/Bu to Convert Soybeans to 13.5% Moisture	Discount \$.12/Bu	Price Per Bu	Value Per Bu, Adjusted for Moisture	Discount \$.20/Bu	Price Per Bu	Value Per Bu, Adjusted for Moisture
19%	5.5	\$0.66	\$9.34	\$9.76	\$1.10	\$8.90	\$9.28
18%	4.5	\$0.54	\$9.46	\$9.80	\$0.90	\$9.10	\$9.40
17%	3.5	\$0.42	\$9.58	\$9.84	\$0.70	\$9.30	\$9.52
16%	2.5	\$0.30	\$9.70	\$9.88	\$0.50	\$9.50	\$9.64
15%	1.5	\$0.18	\$9.82	\$9.92	\$0.30	\$9.70	\$9.76
14%	0.5	\$0.06	\$9.94	\$9.96	\$0.10	\$9.90	\$9.88
13.5%	0	0	\$10.00	\$10.00	\$0.00	\$10.00	\$10.00
12%	-1.5	-	\$10.00	\$9.93	-	\$10.00	\$9.93
11%	-2.5	-	\$10.00	\$9.86	-	\$10.00	\$9.86
10%	-3.5	-	\$10.00	\$9.79	-	\$10.00	\$9.79
9%	-4.5	-	\$10.00	\$9.72	-	\$10.00	\$9.72
8%	-5.5	-	\$10.00	\$9.65	-	\$10.00	\$9.65

Source: Del Voight, Extension Educator, Penn State University

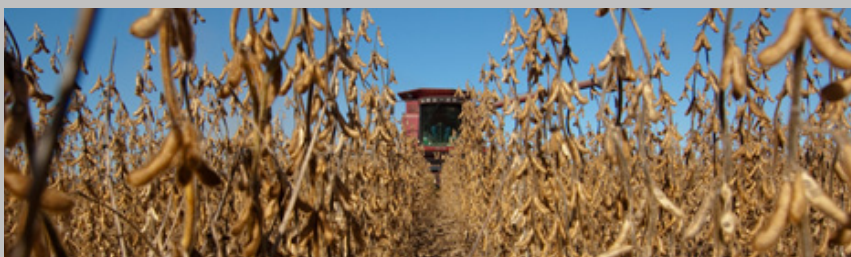


MAJOR SOURCES OF HARVEST LOSS

Numerous tests of soybean combine losses show that up to 12% of the soybean crop is lost during harvest. Harvesting losses can't be reduced to zero, but they can be reduced to about 5%. Combines can be operated to reduce losses without affecting the harvesting rate. This guide describes the major sources of loss.

- 1 Pre-harvest losses.** Pre-harvest losses are caused by lodging and shattering. In most years, 0.25% of the total crop yield is lost before harvesting begins. These losses are beyond the combine operator's control.
- 2 Shatter loss at combine header.** These losses occur when the header is operated improperly or when the crop tends to shatter easily. Shatter losses increase with crop dryness. When the reel speed is too fast or the reel is positioned too far forward, soybeans are shelled in front of the combine. Reel peripheral speed should not exceed the forward speed of the combine by more than 25%. Peripheral speed is easier to adjust on combines with variable speed reel controls. Consider shatter losses of 2% acceptable. Average losses are 5% or more.
- 3 Stubble loss.** Often many pods are left on the stubble because they have been missed by the cutterbar and were not gathered into the combine. Overcome this problem by keeping the field level and using a flexible cutterbar or special row-crop head for soybeans. Stubble losses should be no more than 0.75% of the total crop yield. Average losses are 1.5% or more.
- 4 Lodged or loose stalk loss.** Beans left in the pods on downed stalks or those that are cut but do not pass through the combine should be only about 1% of the total crop yield. Minimum losses occur when the machine is in top condition, the knife is sharp and the correct reel height is used. A pickup reel reduces these losses. Average losses are 2% to 5% of the crop yield.
- 5 Cylinder loss.** Beans left in pods that have passed through the machine are the result of harvesting when the moisture content is too high or with incorrect cylinder-concave settings. There should be no loss, but improper operation can cause losses as high as 0.5% of the crop yield.
- 6 Separation loss.** Loose beans passing out of the machine can be held to a minimum with the correct blower and sieve settings. These losses can be as high as 0.5% but should be held to 0.25% of the crop yield.

Source: **Measuring and Reducing Soybean Harvesting Losses* by Charles W. Shay, Lyle Ellis and William Hires, Department of Agricultural Engineering, University of Missouri



MANAGEMENT PRACTICES TO GET THE MOST FROM YOUR HARVEST

- 1** When harvesting tough or green stems, make combine adjustments and operate at slower speeds.
- 2** Begin harvesting at 14% moisture. What appears to be wet from the road may be dry enough to harvest. Try harvesting when some of the leaves are still dry on the plant; the beans may be drier than you think. Soybeans are fully mature when 95% of the pods are at their mature tan color.
- 3** Harvest under optimum conditions. Moisture content can increase by several points with an overnight dew or it can decrease by several points during a day with low humidity and windy conditions. Avoid harvesting when beans are driest, such as on hot afternoons, to maintain moisture and reduce shattering losses.
- 4** Avoid harvest losses from shattering. Four to five beans on the ground per square foot can add up to one bushel per acre loss. If you are putting beans in a bin equipped for drying grain, start harvesting at 16% moisture and aerate down to 13%.
- 5** Harvest at a slow pace and make combine adjustments to match conditions several times a day as conditions change.
- 6** While it's too late for this season, next year, select your varieties and schedule your planting to spread out plant maturity and harvest.

Source: *The University of Nebraska-Lincoln*

THERE'S VALUE IN HIGHER QUALITY SOYBEANS

BOTH FARMERS AND PROCESSORS NEED TO LOOK AT SOYBEAN QUALITY IN ADDITION TO YIELD

When you're selecting seed for next year's soybean crop, think quality, not just yield. Increasing the quality of soybean meal is a strategic objective of the soy checkoff because higher quality brings higher demand from the animal agriculture sector, which can lead to more value for farmers.

According to the checkoff's most recent nationwide soybean-farmer survey, over half of all U.S. soybean farmers believe that higher protein and oil content results in a higher price per bushel of soybeans. A different checkoff-funded survey from February 2015 shows that 69% believe pursuing value-added soybean meal should be a top priority for the checkoff. However, the survey also showed that 77% of farmers did not consider the protein and oil content of the soybeans they planted last crop year when selecting seed.

The first step in reaping the benefits of higher quality is selecting varieties that will produce it.



Instead of focusing solely on yield, growers can consult their seed dealer to find varieties that produce more protein. Higher quality brings higher demand from the animal agriculture sector.

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Soybean meal is one of the most important protein sources for animal agriculture. More than just crude protein, it also provides amino acids, vitamins and minerals. The value of this nutritional bundle is especially important for pigs.

Tom Crenshaw, Ph.D., a professor in the Department of Animal Sciences at the University of Wisconsin-Madison, explains that while the protein that soybean meal provides animals is important, it merely scratches the surface on why soybean meal is such a beneficial animal-feed ingredient. U.S. soybean meal's nutritional bundle goes well beyond crude protein to include amino acids, energy, vitamins and minerals. The value of this nutritional bundle is especially important when it comes to pigs, he says.

"Soybean meal is a great source of amino acids, and amino acids are essential for pigs," says Crenshaw. "They are the building blocks for proteins. When we think about muscle or lean tissue, the amino acids in soybean meal would be the building blocks for those."

Bob Thaler, Ph.D., an extension specialist and professor at South Dakota State University, also notes the importance of the nutritional bundle in balancing feed rations. "Today's hog farmers are looking for the highest-quality feed options," Thaler says.

"There are ten essential amino acids

(EAAs) that pigs need for growth and they all must be supplied by the feed they eat." He went on to say that of the options, soybean meal is one of the best. "Amino acid availability differs greatly among feedstuffs," says Thaler. "But no single feed ingredient has a better and more economical available EAA balance for pigs, poultry and aquaculture than soybean meal."

Joel Tatum, livestock specialist with the University of Missouri Extension, discussed the value of increasing protein. "The bottom line is, the higher the protein in soybeans, the greater the value for everyone," says Tatum. He elaborated by saying that when feeding farm animals, from hogs to cattle, all the way down to shrimp and catfish, "soybean meal is the most important protein source, bar none."

Tatum says poultry and livestock producers see more value in higher-quality soybean meal, which leads to greater demand. And keeping true to the basic laws of supply and demand, Tatum says soybean meal "is being priced and bought

by how much protein is in it. Protein levels in soybean meal are going to make a bigger and bigger impact at the feed mills and elevators," he adds.

Although processors are still paying on yield now, both farmers and processors need to look at soybean quality in addition to yield in the future. The seed companies' main focus has been on increasing yields due to farmer demand, and as a result, protein has taken a back seat, says Terry McClatchey, marketing manager at an AGP processing plant in Missouri.

This can be concerning when it comes to the competitive global soybean market and buyers who are aware and conscious of soybean quality when faced with the choice of purchasing from either South America or the United States.

"Currently, we at AGP buy soybeans based on bushels, but this might be a problem in the future, when we think of buyers who are focusing more on quality," says McClatchey. "We need all farmers to help increase the quality of their soybeans to ensure the U.S. has better protein. We could potentially sell more U.S. soybeans if we focus more on quality, which could ultimately lead to higher prices."

Offering higher-quality soybean meal is a win-win for both the soybean farmer and the livestock and poultry producers. If more soybean farmers can supply a high-quality product that livestock and poultry producers desire, the demand for soybean meal will rise. And that's the end goal: to satisfy customer needs and capture more value from doing so. ✓



HOW TO FIND TOP-PERFORMING VARIETIES

While many soybean farmers know the importance of growing higher-quality soybeans, they don't always know how to do so. One simple answer is to ask your seed dealer or use the Soybean Quality Toolbox, located at GrowSoybeanQuality.com, to find varieties that produce more protein.

The Soybean Quality Toolbox is an online tool from the soy checkoff that shows how commercial soybean varieties performed in test plots across the soybean-producing region of the United States. It lists protein and oil content, along with yield, for each. Protein, oil and yield all add up to determine how valuable that variety is to soybean farmers and their customers.

Farmers should work with their seed dealers to evaluate their seed purchases each year in order to make sure that their No. 1 customer—animal ag—has the highest-quality soybean meal. To use the soy-checkoff-funded Soybean Quality Toolbox, simply follow the step-by-step process to find top-performing varieties in your area that offer high protein and oil without sacrificing yield.

2016 PENN STATE CROP CONFERENCES AND CROP DAYS

Don't miss the opportunity to learn about crop management research and issues at the 2016 Penn State Crop Conferences and Crop Days. The events will be held at 15 locations statewide.

The Penn State Crop Conferences and Crop Days supported in part by the Pennsylvania Soybean Board, focus on current crop management issues important to the productivity of Pennsylvania farmers.

Each event 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!



JANUARY 14
Lancaster County

JANUARY 19
Lebanon County

JANUARY 20
Lehigh County

JANUARY 26
Franklin County

JANUARY 27
Blair County

JANUARY 28
York County

JANUARY 29
Union County

JANUARY 29
Potter County

JANUARY 29
Perry County

FEBRUARY 10
Clearfield County

FEBRUARY 17
Susquehanna County

FEBRUARY 25
Butler County

MARCH 8
Mercer County

MARCH 10
Schuylkill County

MARCH 17
Tioga County



To register, contact your local Penn State Extension Office. Additional information is available at <http://extension.psu.edu/plants/crops/courses/crops-conferences>.



2016 PA CORN AND SOYBEAN WINTER 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
- Top 5 lists for corn, soybeans and small grains
- Biodiesel update
- Science on both sides of the GMO debate
- And more!

WHEN: February 25, 2016
9 a.m. – 3 p.m.

WHERE: Grantville Holiday Inn
Hershey Exit 80, I-81
Grantville, PA 17028

Registration is \$15/person before February 15. Any registration after February 15 is \$20/person.

Register by calling the Pennsylvania Soybean Board at 717-561-5922 or via email at contact@pasoybean.org.