

PENNSYLVANIA
VEGETABLE GROWERS

NEWS

for the vegetable, potato, and berry grower

PVGA

Volume 48/Issue 5



Cover photos provided by Donald Wilson for Forry's Roadside Market

PVGA

Pennsylvania Vegetable Growers Association

An association of vegetable,
potato and berry growers.

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President's Message | *Peter Flynn | President*

As PVGA looks toward celebrating its 100th anniversary in 2026, it's clear that farming seasons are changing. In southeastern Pennsylvania, winter produce auctions in Oxford, Leola, and Weaverland now operate weekly, keeping markets active year-round. For those expecting a quiet winter, times have changed—and farmland is more valuable than ever.

Years ago, I wrote a letter to the editor when my leased farm faced eminent domain for a new school. I questioned why farms are always the first to go, while housing developments are rarely considered. A developer once called the land I farmed "vacant and barren." I strongly disagreed then, and still do. To our customers—and to the deer, groundhogs, and geese—the land is anything but vacant. The irony is that many move to the countryside for its beauty, yet in doing so, destroy what makes it beautiful.

Farmers are responding with creativity—growing more, growing longer, and finding new ways to add value. At the 2026 Mid-Atlantic Fruit and Vegetable Convention, you'll hear from winter-growing pioneers, a world-record pumpkin grower, and experts in everything from retail marketing to vine crops and cut flowers. Mark your calendars for January 27–29, 2026.

We'll also be seeking volunteers for our Pennsylvania Farm Show booth. It's a great way to support vegetable research, meet fellow growers, and build industry camaraderie.

Wishing you a strong finish to this season and a great start to the next,

Pete Flynn

PVGA President

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Pennsylvania Vegetable Growers News is the official publication of the
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Our Mission

PVGA serves Pennsylvania's vegetable, potato, and berry growers through education, research, advocacy, and promotion.

Our Vision

PVGA is the driving force in ensuring the future viability of the vegetable, potato, and berry industries in Pennsylvania.

Inquiries about membership, this publication or advertising rates should be directed to PVGA at the above address.

Kaelin Farm Twilight Recap | *Glen Bupp | Penn State Extension*

The evening of August 20 was beautiful on the Kaelin Farm and a perfect night for a vegetable grower twilight. Matt Kaelin took a group of 14 growers around their primary production farm in Evans City. This is also the location of one of four corn earworm monitoring traps in Western Pennsylvania that contributes to the national PestWatch report utilized by many of you for watching corn earworm populations and determining spray intervals. Dr. Heather Grab from Penn State University discussed how the trap worked, identify corn earworm moths, reduce spray, and scout for corn ear worm eggs in silking sweet corn. Afterwards

the Kaelin family generously hosted the group for conversation and Penn State Creamery ice cream.

Thank you to PVGA for supporting this twilight meeting, the growers for showing up, and the Kaelin family for hosting. Be sure to look out for sweet corn monitoring updates each year from PVGA and Penn State. You can find the reports online at <https://extension.psu.edu/pestwatch-report>. Stop by the Kaelin Farm Market, 2547 Brandt School Rd, Wexford, PA 15090, when you are in Western Pennsylvania and say hello to the Kaelin family.



Upcoming Greenhouse and Berry Crops Twilight Meeting - Twin Springs Fruit Farm

Join fellow growers on **October 9th from 4:00 to 6:30 p.m.** at Twin Springs Fruit Farm, a diversified operation known for its tree fruits, berries, field crops, and greenhouse production. This no-cost event is sponsored by the Pennsylvania Vegetable Growers Association and the Mid-Atlantic Strawberry Growers Association.

The meeting will start out in one of Twin Springs vegetable production greenhouses, where Tom Childs, one of the farm's managers, will talk to us about how Twin Springs grows greens successfully year-round. Then we will move out to the field to discuss methods used for growing plasticulture strawberries with dormant plants as the planting stock. This is especially timely considering current disease issues in parts of the strawberry plug plant supply. Jesse King, Twin Springs co-owner, will show us

Twin Springs' bramble varieties and trellising methods, and Kathy Demchak will cover blueberry establishment practices, nutrition, and current disease issues. Refreshments (provided at no charge) will be served by The Cow to end the evening. Growers are welcome to stay and continue conversations informally afterwards.

The address for the meeting is Twin Springs Fruit Farm, 936 Orchard Rd. Orrtanna, Pennsylvania 17353. Please enter Rodney Lee Drive via the Orchard Road entrance only.

Online registration is appreciated to help with planning, but is not required at: <https://extension.psu.edu/greenhouse-and-berry-crops-field-walk>

Walk-ins will also be accepted.

Dr. M. D. Orzolek | Prof. Emeritus Vegetables | The Pennsylvania State University

HORTICULTURAL Observations



Very Interesting Summer in Central Pennsylvania

I have been consulting with a small vegetable grower in Saulsburg, PA (Huntingdon County) for the last 3 years. This grower has 2 high tunnels and grows assorted vegetables on only 3 acres. He will start transplants in his larger high tunnel in mid to late February and transplant tomatoes, zucchini, beets and snap beans in his smaller high tunnel in late March/ early April. He plants sequentially his snap bean, beets and tomato crops to maintain season long harvesting. This year, his snap beans, cucumbers and summer squash are still producing fruit after 8 weeks! Why? There has been no major diseases and insects that have infected any of

these crops. He also will apply a weekly foliar fertilizer application as well maintain adequate soil moisture for all his crops. In fact, he planted potato seed in late March - mainly Eva and Dark Red Norland - and harvested those potatoes in mid July. The quality of all his vegetables this year has been exceptional - appearance, taste and uniformity of size. This grower participates in the Pine Grove Mill Farmers Market every Thursday until the end of September. The most critical question for growers in central PA is when will we have our first fall freeze!

PVGA's Farm Show Booth Volunteers

Bill Reynolds on behalf of the Farm Show Booth Task Force

Cooler weather has finally arrived and many of us are preparing for the fall season ahead. We are also getting closer to the Farm Show! PVGA's Farm Show Booth Task Force has been planning various aspects of the booth for the Farm Show which will be held January 9-17, 2026.

For our Farm Show Booth to be profitable and run well, we need your help to fill the volunteer shifts. We appreciate all our volunteers who have helped in the past, and especially those who helped make last year our second best ever!

We have already started making calls in late September and will continue calls into October to get an earlier start on securing volunteers. Our goal is to have the shifts filled by mid-November. We hope you, your family, employees, and friends will be willing to help. If you are willing to coordinate individuals, that would be a great help to those making calls.



It is only with YOU, our volunteers, that we can continue to be successful in raising funds for our organization and enable us to fund the many research projects we all benefit from.

We are excited for another successful Farm Show Booth, and look forward to seeing you in January!

AgWorks: Connecting Agricultural Businesses to Workforce Services and Training

Workforce Help for Farms and Agribusinesses

Over the next two years, Penn State Extension will offer no-cost workforce training and consulting services to farms and agribusinesses in Pennsylvania. The goal of the project is to help agribusinesses hire, train, and retain a workforce that will allow for growth and prosperity across the agricultural industry. Qualified farms and agribusinesses will work with a Penn State Workforce Consultant to identify individual needs and training for their unique workforce. The Workforce Consultant will then work to match businesses with the necessary training and expertise. These services are made possible through a grant from the Department of Labor and Industry in collaboration with PA CareerLink®.

As part of the project, over 90 no-cost webinars will be made available and open to the public. The webinars will primarily focus on human resource operations such as leadership, hiring, business operations, benefits, safety, and ag law-related topics. Additional topics will be added through input from participating farms and agribusinesses.

Research shows that owners and managers play a key role in building a strong farm workforce. Leadership from the agricultural industry is essential to creating opportunities that attract and retain workers in agriculture-related operations. By working alongside Penn State and the PA CareerLink®, agricultural leaders can shape programs that truly meet their workforce needs. With farm owners fully involved, this project can develop a skilled, dependable workforce that supports the future of farming in Pennsylvania.

To register for the AgWorks Program, email AgWorks@psu.edu.

AgWorks: Calendar of Events – <https://extension.psu.edu/agworks-calendar-of-events>

The calendar will be updated as new sessions become available so this link will remain active and updated until 2027.

PVGA Young Growers Award – Nominees Wanted!

PVGA's Leadership and Recognition Committee is seeking nominations for the PVGA Young Grower Award. This award is designed to recognize outstanding young growers in the vegetable, potato, or berry industries. The following criteria must be met for this award:

- PVGA Member who is 35 years old or younger
- Successfully growing vegetables, potatoes or berries
- Contributed to advancing or promoting the Pennsylvania vegetable, potato, or berry industry.

If you would like to nominate a young grower for this year's award, email your nomination (include name of nominee and a paragraph explaining why you feel they deserve to receive the award) to pvga@pvga.org or mail to Pennsylvania Vegetable Growers Association, 908 N 2nd St, Harrisburg, PA 17102 **no later than November 14, 2025.**

PVGA

PVGA Annual Meeting

January 28, 2026

4:30 pm*

Hershey Lodge | Hershey, PA

In conjunction with the
Mid-Atlantic Fruit & Vegetable Convention
January 27-29, 2026

*Note new time

2025 Rudolph Grob Memorial Scholarship Recipients

The Pennsylvania Vegetable Growers Association has awarded the Rudolph Grob Memorial Scholarship to two recipients in 2025 – Marcia Copenhaver of Lebanon who is attending Pennsylvania University and Charles F. Covin of Malvern who is attending Penn State University.

The scholarship is given in memory of Rudolph Grob of Millersville who served PVGA for 50 years as a director, 20 years as secretary-treasurer, and over 20 years as manager of the PVGA's Farm Show Booth. Mr. Grob was a horticulture graduate of Penn State University and was employed for many years at Funk's Farm Market in Millersville.



**Marcia Copenhaver | 2025
PVGA Scholarship Recipient**

Marcia plans to possibly enter the research field and pursue a master's in plant science. She thinks this would be a great opportunity to find more sustainability and help solve problems that we are facing in Pennsylvania. She is interested in

researching and using cover crops as a way to reduce pesticides and also work to improve soil health by reducing tillage. If this door doesn't open, she hopes to keep working with her family on the green bean farm and incorporate her deeper knowledge of soil, plants, and sustainability in agriculture.



**Charles F. Colvin | 2025
PVGA Scholarship Recipient**

During his time in college, Charles has dedicated himself to plant science research and deliberately pursued experiences that are broadly applicable across many types of crops, including those within the vegetable/potato/berry industry. Throughout his

undergraduate studies, he has focused on plant-insect-microbe interactions, plant breeding, and crop resilience, all fields that are critically important to the vegetable/potato/berry industry. The skills he has developed, including molecular biology techniques, experimental design, and an understanding of genetic resistance mechanisms, are readily transferable to these different crops and their unique challenges.

Upon completing his undergraduate degree, he intends to pursue a Ph.D. in plant genetics, a decision grounded in his fervent interest in plant breeding and sustainable agriculture. He firmly believes that these fields hold the key to a future where we can revolutionize food production methods while simultaneously mitigating our environmental impact. During his Ph.D. program, he plans to immerse himself in cutting-edge research at the intersection of plant genetics, physiology, and biotechnology. This educational journey will not only equip him with a profound understanding of these subjects but also enable him to cultivate robust research skills. His graduate studies will allow him to become adept at designing and conducting independent research projects, an essential skill set in the pursuit of scientific advancements.

After completing his Ph.D. program, he aims to contribute to the vegetable industry in Pennsylvania by conducting research that addresses the major challenges facing growers today. In his opinion, the biggest issue confronting the vegetable industry is climate change. While the Pennsylvania vegetable industry is vast and diverse, climate change poses a multifaceted threat that transcends individual farms and crops. Over the past several years and into the future, it has manifested in shifting temperature patterns, erratic precipitation, altered insect pest dynamics, and heightened risks of late frost damage. These changes affect every stage of production and will require innovative, science-based solutions to ensure the sustainability of the industry.

In his research experience, he has seen firsthand how modern plant breeding techniques and biotechnology are indispensable tools for confronting climate-related challenges. By understanding the genetic complexities of plants, we can identify traits that confer resistance to pests, diseases, and environmental stressors. While his current research lab focuses on corn as our model system, the underlying principles and techniques are universally applicable across crops, including vegetables, berries and potatoes. The insights he has gained can be seamlessly translated to these crops, helping to develop varieties that are resilient to the evolving demands of climate change.

As he continues his academic and professional journey, he is committed to advancing sustainable agriculture through plant breeding and biotechnology. His goal is to be a versatile and adaptable professional, equipped to address any agricultural challenge that arises. By

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Neopestalotiopsis in Strawberry Plug Plants – A 2025 Update | Kathy Demchak | Penn State

Most strawberry plug plant producers have gotten quite skilled in recognizing *Neopestalotiopsis* symptoms in strawberry plug plants during production and have found some infected plants again this year.

As in 2024, the issue has shown up in plug plants rooted from runner tips from at least one source in eastern Canada. Plug plants rooted from western U.S. runner tips appear to be healthy. Being healthy does not necessarily mean the same as being fungus-free, however, as most plant disease organisms can exist in strawberry plants at low levels while the plants remain symptom-free.

Part of the reason this problem keeps cropping up in plug plant production is that we give this fungal organism exactly the conditions it needs to multiply and spread (i.e., high humidity and moisture under mist; foliage that stays wet for long periods) and susceptible tissue to colonize (i.e., tender growth on highly susceptible cultivars). The result is a “perfect storm” for this disease to develop. This also means that there is room for improvement in several aspects that could improve the situation over time.

Symptoms to look for include brown blotches that expand rapidly, sometimes with an olive green color where the disease is progressing into healthy tissue. There may be more dead plants than usual in the flats, often grouped together in one area of the flat. After infected plants are planted in the field, they may not grow much or plants may die.

It is easy to spread the disease from infected plants to healthy ones, so discard plants that look suspicious rather than plant them, or if you do decide to plant them, group the less healthy plants in one area that would be easy to plow down later should that become necessary.

Do your best to get an accurate diagnosis of what is causing the symptoms you are seeing. Some of the leaves with suspicious symptoms can be put in a plastic bag with a damp paper towel, leaving enough air space so the plastic is not flattened against the leaves. You



‘Chandler’ strawberry leaf infected by *Neopestalotiopsis*. Note the “off” color to the leaf tissue surrounding the lesion, and the black pycnidia in its center. Photo: K. Demchak, Penn State.



Tendrils of *Neopestalotiopsis* spores growing from black pycnidia on an infected ‘Ashley Jay’ strawberry leaf. Photo: K. Demchak, Penn State.

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working closely with Pennsylvania growers, research institutions, and extension services, he hopes to contribute to breeding varieties that not only survive but thrive under changing environmental conditions. Through innovation, collaboration, and a strong commitment to scientific excellence, he is determined to help ensure a sustainable and thriving future for the Pennsylvania vegetable industry.

2026 Rudolph Grob Memorial Scholarships

Applications are being accepted for the 2026 scholarships with a deadline of May 31, 2026. More information on the scholarships, as well as the application can be found on PVGA's website at www.pvga.org under the services tab or by contacting PVGA at 717-973-5915 or pvga@pvag.org.

Neopestalotiopsis in Strawberry Plug Plants – A 2025 Update ... continued from page 7

should see black pycnidia in the leaf lesions within a few days, and “tendrils of spores” growing from the pycnidia a day or two afterwards if you have a highly susceptible cultivar (‘Ruby June’ or ‘Chandler’ for example). You will need a good hand lens or magnifying glass to see these, however. It will take longer for tendrils to appear if you are growing a more resistant cultivar.

Samples can also be sent to Penn State’s Plant Disease Clinic, and while it may take some time to get results depending on how many samples are in the lab’s pipeline, obtaining accurate results at any point is much better than misidentifying a disease and potentially spraying ineffective materials for the entire fall and into next spring.

Thiram, a multisite fungicide, and Switch are the two best products to apply to minimize disease spread, but even they are not completely effective. Thiram availability is limited, and the use of Switch may result in resistance development to this product in other diseases like botrytis, so its use should be minimized as much as possible at this time of the year. Category 3 fungicides including Merivon, Rhyme, and ones with the active ingredient propiconazole help, but since they are in the same chemical class, cannot be rotated with each other and may stunt plant growth if used more than 3 or 4 times in a season. For these reasons, avoiding the disease as much as possible, and using cultural controls like long rotations to minimize a buildup of disease problems, are critical.



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Gearing up for Time Schedule Changes

Sonya Ryan Nace | Penn State
Extension educator and Nutrition Links
supervisor based in Dauphin County

Learn to reduce your daily stress with time management.

Make a plan to reduce stress.

Soon the time zone will “fall back,” and we will find the days growing shorter and nights longer. For many folks, that small change makes them feel both energized and uneasy. People like routine and a sense of predictability. We have less anxiety and stress when we can get a sneak peek of what comes next. An extra hour in the day, even though a gift of time, can disturb our sleep patterns and rattle our routines.

The change of seasons seems to present opportunities for our personal schedules to change as well. Winter means preparing for cold and harsh weather conditions. Spring may mean adding more outdoor chores to our to-do lists. Summer brings vacations and other events to add to our schedules. Transitioning from summer to autumn, is no different especially if you have children that you have sent back to school. Fall is an especially good time to re-evaluate those schedules and our time management techniques.

How can we organize our time so we can reduce stress and feel more in control? Here are a few ideas to try:

- *Keep a calendar of your family's events.* If you carry a smartphone, try an online calendar. An online calendar can be shared with your family so everyone can get alerts at the same time. If you use a paper calendar, keep it in a place where everyone in your family can view it easily. Keep a small tablet near the calendar so you or your family can write down their reminders for the day to stay on track.
- *Plan meals ahead of time.* Experience has taught me to start by planning for one week at a time.



Credit: jenny on the moon / [bigstockphoto.com](https://www.bigstockphoto.com)

Maybe in a couple of months I will be able to plan for a whole month at a time, but I'm taking baby steps. Pick the days of the week that you plan to cook a full dinner. Choose a meal for each day. Make sure you have all the ingredients in your pantry or refrigerator and start a grocery list for items you don't have. Let your family know what the meal plan is by posting each night's dinner on a chalkboard or on your family calendar. Use recipes that you know how to cook, your family likes and for which you know the prep time. Some people have great success by meal prepping over the weekend for the upcoming week. (Check out the easy recipe below that you can prepare ahead of time and heat and serve on a busy weeknight.)

- *Create a to-do list.* Write down what needs to be done each day. Tasks such as picking up prescriptions, making an eye doctor appointment, going grocery shopping, taking the dog to the groomer... everything takes time. Try to combine tasks such as picking

up the grandkids at soccer practice and stopping for the prescriptions on the way home. Maybe divide the work with other members of the family such as while you are mowing the yard, another family member empties the dishwasher. Celebrate the accomplishment of marking items off of the to-do list as they are accomplished.

- *Stick to a consistent bedtime and wake-up time.* Set an alarm to begin a routine to get ready for bed just like you do for waking up each day. Creating time to wind down your mind and body could help you rest more efficiently each night. Use this time to read to your children, set out needed items for the morning, read a good book or meditate. This will set the tone to get some rest and recharge. Taking care of yourself is just as important as taking care of others.
- *Stay the course.* Creating new habits can take weeks. If you have the best intentions to use your meal planning chart every night this week,

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but you are just too tired to cook and you end up ordering take-out, try again tomorrow. Be patient with yourself if you can't be as efficient with your time as you had planned.

- *Take time for fun.* When you have an opportunity-planned or unplanned- to have a bit of fun, take it. We can plan for vacations, events, and parties. But if you get the chance to fly a kite with your child, take a walk with

your spouse, or enjoy a sunset, do it. There is nothing better than an impromptu lunch with a friend or a trip to the flower shop to uplift our spirits.

Whether it is with a change in time zones or seasons, these transitions present us with great opportunities to reset our sails, adjust our schedules, or create new routines. Being flexible and open to new ways of doing things keeps us fresh and energized all year long.

Flank Steak Sheet Pan Dinner

6 servings |serving size: 1/6 of recipe

When preparing this recipe, start with clean countertops and utensils. Wash hands with soap and water. Wash whole, fresh garlic, lime, tomatoes, and shallots by gently rubbing under cold, running water. Prewashed, packaged items do not require further washing. Do not rinse raw meat.

Ingredients

- Non-stick cooking spray
- 1½ pounds flank steak
- 4 garlic cloves, minced
- 1 lime, juiced
- 2 Tablespoons olive oil
- 2 teaspoons paprika
- 2 teaspoons cumin
- ½ teaspoon ground black pepper, plus more for seasoning
- 1 pound cherry tomatoes
- 3 shallots, sliced
- 6 warm whole wheat tortillas, for serving



Directions

1. Heat oven to 425°F. Arrange rack in upper third of the oven.
2. Line rimmed baking sheet with foil. Spray with non-stick cooking spray. Place flank steak on baking sheet. Rewash hands with soap and water.
3. Combine garlic, lime juice, olive oil, paprika, cumin, and pepper in a small bowl. Pour marinade over steak and rub onto both sides. Rewash hands with soap and water. Do not reuse marinades.
4. Spread cherry tomatoes and shallots over top of the steak and season with pepper.
5. Roast in oven, about 15 minutes, until the internal temperature of the beef reaches 145°F on a food thermometer. Let rest for about 10 minutes after removal from the oven, then slice and serve with tomatoes, shallots, and tortillas.

1 Serving: Calories 390, Fat 18g, Saturated Fat 6g, Carbohydrate 29g, Protein 29g, Sodium 390mg, Fiber 2g, Calcium 55mg

Recipe adapted from <https://www.fightbac.org/safe-recipes-entrees/flank-steak-sheet-pan-dinner/>

Eating for a Good Night's Sleep

Lori Klein, EdD, MPH, NDTR | Extension Educator, Food, Families, and Health | Penn State Extension

Not sleeping well? This article explains that the culprit can sometimes be found in when, how, and what you eat.

When we have had trouble falling or staying asleep, we may feel like we are dragging ourselves through the next day. One sleepless night might not be a problem, but poor sleep patterns over time can deplete us and increase our risk for chronic disease.

Our sleep cycles may be disrupted for many reasons, including excessive stress and screen time. But did you know that your food and beverage choices can affect how easily you fall asleep, how long you stay asleep, and the quality of your sleep cycles?

The research on the relationship between what we eat and how we sleep can be complicated, but a few practical recommendations may improve your sleep.

What to Avoid Before Sleep

The National Sleep Foundation (2020) suggests some basic foods to avoid before bedtime, including foods high in saturated fat and protein (like a big steak) or spicy meals that can cause heartburn when you lie down. They also recommend avoiding caffeinated beverages and even checking food labels for hidden caffeine (beware the coffee ice cream and some types of chocolate, for example). And while alcohol may initially be relaxing, it can ultimately disrupt sleep during the night.

While some of these warnings may sound familiar, you might also have wondered whether similarly familiar recommendations about specific foods that can help you sleep better are true. For example, is there any truth to the belief that drinking warm milk can help you fall asleep? Or what about the common saying that Thanksgiving turkey makes you tired?

Nutrients That Are Connected to Sleep

Believe it or not, there actually might be some truth to the grandmotherly wisdom that a glass of warm milk or a big turkey dinner can make you sleepy (Binks et al., 2020; Pereira et al., 2020). According to Binks et al. (2020), specific nutrients in these and other foods can be the key to sleep balance. The top three food nutrients that may improve sleep are the amino acid tryptophan, the hormone melatonin, and antioxidants.

The amino acid tryptophan (something you may have heard tied to that big turkey dinner) is found in many protein foods and is used by the body to produce the hormones serotonin and melatonin—both of which are associated with better mood and sleep patterns (Binks et



Credit: Mediazone / [bigstockphoto.com](https://www.bigstockphoto.com)

al., 2020). And while turkey and other poultry do contain tryptophan, many other common foods are high in the amino acid as well—including dairy products (like milk and cheese), fish, egg whites, tart cherries, and seeds (like pumpkin, sesame, and sunflower).

Eating a variety of tryptophan-rich foods on a regular basis can support balanced sleep, but a small portion of these foods won't necessarily send you to dreamland. While people might want to blame the tryptophan in Thanksgiving Day turkey as the sole culprit for our post-meal nap, the over-indulgence of generous amounts of food at the feast is more likely to blame.

As with the turkey dinner, the benefits of a glass of warm milk are a bit tricky to prove as a sure-fire sleep potion (Binks et al., 2020; Pereira et al., 2020). However, milk is one of the foods that contains both melatonin and tryptophan, so it may offer a double sleep-enhancing benefit. The good news, though, is that unless you are lactose-intolerant or allergic to milk, you can try your own experiment of a glass of warm milk before bed without any harm.

One last home remedy to consider is tart cherry juice. In addition to melatonin and tryptophan, tart cherries and 100% tart cherry juice are also a source of high levels of health- (and sleep-) promoting antioxidants and other nutrients (Binks et al., 2020; Pereira et al., 2020). Again, scientists have had trouble finding enough proof to say that drinking tart cherry juice is a cure for insomnia, but a

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small glass before bedtime is easy to try. Just remember that more is not necessarily better and that too much juice could cause an upset stomach.

Eat a Variety of Healthy Foods

So, what *has* been proven to help with a good night's sleep?

When it comes to nutrition and sleep, your overall eating habits may have a greater impact than a glass of warm milk or tart cherry juice (National Sleep Foundation, 2020). Following a healthful diet with plenty of fruits and vegetables, whole grains, low-fat or fat-free dairy products, and a variety of protein foods will supply your body with the nutrition needed for good health and rest cycles. You will eat plenty of tryptophan, melatonin, and antioxidants without even thinking about it.

There may also be some foods that you can limit in your daily choices to improve your sleep. Processed, packaged foods are often higher in added sugars, saturated fat, and sodium, and, according to Delpino et al. (2022), eating ultra-processed foods has been linked to poor sleep quality and duration.

The bottom line is that there are many things to try if you are having trouble sleeping. It can't hurt to try that glass of milk or tart cherry juice. But consider your overall eating

patterns. Ultimately, if you are unhappy with how you sleep at night, you might want to consider what you put on your plate during the day.

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A/B Testing to Improve Your Online Marketing

Sarah Cornelisse | Penn State University

What gets you to open the emails that land in your inbox or to click on an advertisement that appears in your social media feed? Perhaps you are drawn to humor or to images of practical applications for products. Now, consider how you develop your own online marketing. For instance, if there are yellow call-to-action (CTA) buttons on your website how did you select that color?

You may have relied on generalized statistics or personal preferences when initially developing your business website or email newsletters. As you generate and collect data on conversion, bounce, or open rates, or begin to spend marketing dollars on social media advertising, the value in optimizing all aspects of your online presence becomes apparent. You want your marketing budget to be spent wisely and effectively and this is where A/B testing can assist.

The principle of A/B testing is similar to that of partial budgeting; it allows for the comparison in performance and effectiveness from making one change. As stated by Go (2022), “The premise behind A/B testing is comparing the performance of two or more variations to identify how different marketing strategies or activities perform with an audience. It’s designed to improve user experience (UX) and increase conversion rate optimization (CRO).”

To illustrate, imagine that you are running a Facebook ad campaign and it is not generating the number of click-throughs that you would like. For the ad, you initially used an image of the product by itself, but you now speculate that an image of someone using the product would be more visually appealing, prompting greater a number of Facebook users to click on the ad. This type of situation is ideal for performing A/B testing.

There are numerous elements of your online presence that you can experiment with through A/B testing. A selection of elements is outlined below and categorized by marketing tool.

Website

- Call-to-action (CTA) buttons — size, color, placement, and text
- Social media sharing buttons — placement, size
- Headings — color, text, and size
- Content — format (text, image, video, audio), text font size, style, placement, and structure
- Video/Images — different composition and placement
- Product descriptions — inclusion of reviews, format
- Forms — amount and type of information requested

Social Media

- Use of Image/video — text only vs. with image or video, image vs. GIF, people in image, video length, number of images
- Hashtags — hashtag use vs. not, multiple vs. one, placement within the post
- Post text — length, style (quote, statistic, statement, question), emoji use, punctuation, tone (casual, formal, passive, active)

Email/Email newsletters

- Email subject lines — questions, statements, emoji use
- “From” name
- Send time
- Content — length, font size, style, placement, and structure/layout
- Video/Images — composition, placement
- Personalization
- Preview text
- Social media sharing buttons — placement, size

Performing A/B testing offers numerous benefits including:

- Quick results
- Wide applicability to features of your online/digital presence
- Reduced risk from making untested changes
- Improved user engagement and experience (improving trust and customer retention)
- Enhanced content
- Reduced bounce rates
- Greater conversion rates
- Higher conversion rate values
- Reduced cart abandonment
- Increased sales

A/B testing allows you to make data-driven decisions rather than decisions based on gut feelings and personal preferences. Stated succinctly, “A/B testing provides practical, tangible evidence of your most impactful marketing techniques” (Grayson).

While there are a number of benefits to A/B testing, there are also a few challenges to be aware of. As noted by Singh, V., Nanavati, B., Kar, A.K. et al., these include:

- **A/B testing only works for specific goals.** If the goal is difficult to measure, or unmeasurable, A/B testing is not effective. As stated previously, A/B testing is data-driven therefore you must have a variable that you can measure and track.

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- **Long-term relevance.** You must ask yourself if 6 or 12 months down the road whether the A/B test would generate the same results.
- **Continuous testing.** This ties to the previous challenge. For long-term relevancy, marketing should be tested regularly. Unfortunately, many A/B tests are once-and-done exercises.
- **Time and resource-heavy.** Since you are only testing one variable at a time, if you have numerous variables to test it could take quite a while to perform all of the desired A/B tests. The slow nature of this process can see testing-related expenses accumulate quickly.

Suggested processes for performing an effective A/B test include the following steps which closely align with the scientific method.

1. **Identify the problem/opportunities for improvement.**
2. **Set/know goals.**
3. **Develop a theory/hypothesis.**
4. **Create variation(s).**
5. **Run test(s).**
6. **Analyze results.**
7. **Adjust (or leave alone).**
8. **Monitor and repeat.**

As with any process, there are some best practices that will aid in the effectiveness of A/B testing. These include:

- **Know your goals.** Have a clear vision for what it is that you want to accomplish in your business and online marketing. For instance, with social media is your goal brand awareness or sales maximization? What is it that you want consumers to do, or how do you want them to respond?
- **Have a clear question that you want to test.** You need to be able to clearly articulate your hypothesis, how it will be measured, and how the outcome will help you better achieve your stated goals.
- **Test only one variable at a time.** If you make more than one change, you can't be certain which change the audience is responding to.
- **Prioritize testing variables to those that will have the greatest impact.** To try to identify these, focus on bottlenecks or pain points that your consumers are experiencing. Monitoring analytic data for your website, social media, and emails will allow you to identify aspects that are proving to be hurdles with your consumer audience.
- **Allow sufficient time for your test(s) to run.** While A/B testing offers the advantage of providing quick results, you must still run tests for an adequate length of time to allow for variations in consumer activity. For



Image: A/B Testing Process, S. Cornelisse

example, running a test on an aspect of your social media between Monday and Friday only when you know that a large percentage of your audience is active on the weekends will result in lower statistical significance.

- **Get ideas from others.** As with many aspects of business planning and operation, you can benefit from asking others (customers, social media audience, employees, etc.) for their input on what could be tested.

In addition to the benefits and challenges that have been previously covered, there are some additional factors to consider when performing A/B testing. The first is the cost of implementation. Most A/B tests can typically be easily created, and a change implemented if test results indicate to do so. However, if either development of the test variation or change implementation requires changes to website code or significant additional work on the part of a hired marketing consultant, you should determine whether the benefit from performing the test will outweigh the additional costs.

A second consideration is the demographics of your audience. A study looking at eye tracking and A/B tests for a social media marketing campaign discovered that men and women were attracted to different types of components (Nichifor, 2021). It is reasonable to believe that other demographics, such as the age of the consumer may affect the effectiveness of marketing characteristics that you consider for A/B testing. Due to the potential for demographic differences, try to gather and include demographic data along with the data you are collecting to measure A/B test performance.

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Finally, different tools exist to use when performing A/B testing. Social media platforms (Facebook, Instagram, etc.) offer A/B testing functionality when creating advertisements. For websites, two options are Google Optimize and Optimizely. Most email marketing services (MailChimp, Constant Contact, etc.) also offer the ability to perform A/B tests.

For business owners or marketing managers interested in optimizing their online marketing, A/B testing is a relatively easy-to-implement method to use. "The goal of every A/B test is to find what variant drives more engagement, and then implement that change" (Wingerberg). It may take time to discover the most effective variant and variants may perform differently with different audiences. Therefore it is important to perform A/B tests regularly, collect demographic data on your audience in addition to data for measuring your hypothesis, revisit tests that you previously performed, and stay abreast of marketing trends that influence consumers.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

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Employee Disengagement and the Impact of Leadership

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Businesses and organizations are constantly in a struggle to innovate and adapt to changing technology, market, and environmental conditions. The need for greater productivity and efficiency builds anxiety and stress for all involved.

In the twenty-first century, businesses and organizations constantly struggle to innovate and adapt to changing technology, markets, and environmental conditions. The need for greater productivity and efficiency builds anxiety and stress for all involved, but perhaps more destructively, it can lead to disengagement among employees, staff, and volunteers. Disengagement is a major problem, with estimates suggesting nearly over 70% of the workforce are disengaged in certain areas (Rastogi et al., 2018). This issue is complicated by the lack of identification and adequate addressing of the causes and symptoms associated with disengagement at the workplace (Wolff, 2019). This article will define employee disengagement, identify contributing factors that lead to employee disengagement, and provide leadership strategies toward addressing disengagement among employees.

What is Employee Engagement?

To effectively describe disengagement, it is necessary to define what engagement is in the employee context. Employee engagement can be broadly described as having a positive attitude toward their company/organization and a desire to aid and contribute to its success. In other words, engagement is often related to commitment and loyalty toward one's organization (Markos & Sridevi, 2010). Employee engagement is important to organizational performance and success (Pech & Slade, 2006).

What, Then, is Disengagement, and What Causes It?

Disengagement is often defined by its symptoms, which include slow working tempo, lack of interest in work, easy and prolonged distraction, and minimal output (Pech & Slade, 2006). Disengaged employees often possess negative attitudes toward their work and organization. These negative attitudes have been shown to have detrimental effects on organizational productivity and success. As mentioned at the beginning of this article, there is a real need for organizational managers and leaders to identify contributing factors that lead to



disengagement quickly. Below is a list of four key factors identified by Rastogi et al., 2018:

1. **Lack of Job Resources-** this refers to the absence of the various aspects of a job that supplement the work experience: things that provide a support structure, promote growth and development, or aid directly with job activities.
2. **Lack of Job Control-** this refers to the inability of an employee to make decisions about their work (i.e. the path or approach taken toward task completion). A lack of job control is associated with lower autonomy and decisiveness among employees.
3. **Lack of Job Complexity-** this refers to a lack of creativity, complexity or challenge associated with assigned tasks. Monotonous and repetitive tasks contribute directly to disengagement among employees.
4. **Lack of Organizational Support-** this refers to a lack of support from supervisors, co-workers, and the organization itself. Examples of a lack of organizational support include excessive job expectations, uncooperative co-workers, and lack of supervisor consideration.

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Auditing Your Online Marketing Presence

Sarah Cornelisse | Penn State University

An engaging and effective online presence that includes a website and/or social media has become a vital component of the marketing strategy for the vast majority of agricultural businesses, especially those engaged in direct marketing. Seventy-one percent of small businesses had a website in 2023, and 96% use social media in their marketing strategy (Haan, 2024; Kiplangat, 2025). Through online tools, businesses are able to connect with customers and the public, not just to advertise products, but to connect with them at a more personal level, telling your story and engaging in conversation, just as you might do in person.

A lot of emphasis is placed on developing an online or social media marketing strategy, and rightly so, due to the importance of these digital connections to marketing and business success. However, it is equally important to regularly audit your online presence, ensuring that the tools you are using and your approach continue to help you achieve your goals. Often, the use and performance of online tools are reviewed individually.

However, an online, or digital, marketing audit is comprehensive, looking at your presence across all platforms. As described by Heinrich, “A digital marketing audit is a thorough, objective evaluation of an organization’s marketing strategies. It assesses marketing activities’ effectiveness, relevance, and alignment with business goals and surfaces opportunities for improvement” (2025).

A strong online marketing audit begins with a review of your marketing goals for your online presence. For instance, do goals include growing brand awareness, improving customer engagement, increasing

product sales quantity, or revenue? Your audit findings should allow you to assess whether the platforms you are using are aligned with your goals.

Be sure to include all aspects of your business’s online marketing presence in your audit. This should include:

- Social media platforms (Facebook, Instagram, TikTok, YouTube, etc.)
- Email list and newsletter
- Google business profile
- Third-party review sites (Yelp, etc.)
- Online directories (Chamber of Commerce, Visitors Bureau, etc.)

Start your audit by reviewing the accuracy of information such as contact information, business hours, and links to your website, online store, or social media. Following this, take into account your use of each online tool. For instance, are you routinely using each social media platform that your business is on? How often are you posting or using other features (Stories, Reels, boosted posts, etc.)? Are you responding to customer reviews? Analytical data gathered by the tools used is valuable for uncovering the effectiveness of your current actions. Study performance data such as open rate, click-through rates, sign-ups, likes, shares, number or value of purchases, and other quantitative information.

Finally, assess qualitative aspects of your online marketing presence. This includes things such as ease and clarity of website and/or online store navigation and accessibility, brand voice, and messaging. Data provided by social media tools allows you to assess the level and quality of engagement with your audience, while Google Analytics data can provide insight into the user experience of your website and online store.

One aspect of your online presence that bears specific mention is brand

consistency. Since online marketing tools did not become available at the same time, and each has evolved differently since its launch, it stands to reason that you likely integrated the use of individual tools at different times. Or perhaps different people within your business are responsible for managing different tools, such as one person being responsible for your website, online store, Google profile, and review sites, while another is responsible for managing your social media platforms and email newsletter. Either scenario can lead to inconsistent branding across platforms that make up your online presence. Specific things to look at during an audit include logo, business name, visual identity elements (photos, colors, fonts), and your core messages and tone across platforms.

Be sure to keep in mind the marketing funnel or customer journey when assessing your online marketing presence.

How effectively does information and content connect with customers, and how easily are they able to engage and interact with you? It is often the small things, such as how quickly a website loads, that will determine whether a customer moves from awareness to decision, that is, making a purchase.

Once your audit is complete, it is important to act on your findings. You should have a list of areas for improvement, along with things that are working successfully. Building on what is effective, create a list of short- and long-term improvements that you will implement. For example, through

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your audit, you may determine that your presence on Instagram is not driving the results you desire but that your YouTube videos are achieving high reach and engagement, leading you to decide to mothball your business's Instagram account and increase your focus on developing YouTube videos that can also be shared on your website, through other social media platforms, and your email newsletter.

It is often recommended that audits take place annually or when a problem is identified or brought to your attention. However, there are other events that may lead you to perform an online presence audit. These include:

- Changes to the business, such as rebranding or new product/service offerings.
- Changes in strategy in response to market changes.
- Personnel changes, such as hiring a marketing consultant.

Whatever triggers an audit of your business's online presence, be intentional and thorough during the process. Your business's online presence may be the first impression

customers or the public get of your business. Your goal through an audit is to ensure that your business has an accurate and consistent presence across all platforms and outlets being used. An online marketing audit will allow you to:

- Improve your understanding of current performance
- Determine where improvements can be made
- Ensure actions align with goals
- Identify opportunities

Performed routinely, online marketing presence audits will allow you to enhance your online presence, attracting new customers and strengthening connections with existing ones.

Disclaimer: Where individual or trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

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How Do We Address Employee Disengagement?

Given the significant positive impacts of employee engagement on organizational success, it follows that disengagement has equally significant negative impacts. Engagement and disengagement are not switches you can turn on and off. You cannot suddenly make employees engaged or disengaged; however, as managers and leaders, our approach and relationships with our employees can have a major impact on creating an engaging working environment. Dr. David MacLeod, companion member at Chartered Management Institute in London, UK, emphasized that employee engagement is a workplace approach that helps to create the conditions in which employees can reach their highest potential and capability. In Wolff, 2019, the author discusses four leadership and management strategies to address the psychological needs related to employee engagement.

1. **Make employees feel valued and understood.** Actively listen to employee concerns and ideas, creating an open dialogue between the organization and the employees.
2. **Match employee interests in tasks/job positions when possible.** People work harder when interested in what they are doing; therefore, as a manager or leader, assign tasks that match employee interests whenever possible.
3. **Clarify and lay out the purpose of the assigned work.** Make it clear to employees the rationale behind their work. If possible, describe their contribution in the larger project or program context.
4. **Create a healthy tension or level of competition.** To boost productivity, hold employees to a high but reasonable standard, and ensure accountability if expectations are not met.

Ensuring Food Safety in Microgreens Production

Jeff Stoltzfus and Leah Fronk | Penn State Extension

Microgreens production offers an exciting opportunity for growers to meet the growing demand for fresh, nutrient-rich greens. However, this crop comes with unique food safety challenges that require careful management. Unlike larger field-grown crops, microgreens grow in controlled environments where moisture, warmth, and close proximity to soil and equipment can increase contamination risks.

Food Safety and Microgreens

In 2011, food safety laws in the United States underwent significant reform. Known as the Food Safety Modernization Act (FSMA), the law's overall objective is to focus on prevention of food safety issues. Further, the law seeks to prevent microbial contamination and reduce foodborne illness associated with fresh fruits and vegetables. Included within FSMA is the Produce Safety Rule (PSR) which includes science-based standards for growing, harvesting, packing, and holding produce for human consumption. In general, the PSR specifically covers produce that is consumed raw. Microgreens fall into that category.

Understanding Microgreens and Their Risks

Microgreens and sprouts are often confused, but they differ in growth stages, harvest methods, and associated risks. Sprouts are harvested earlier, with seeds and cotyledons still attached, and are often grown in water. These factors increase their vulnerability to bacterial contamination. Microgreens are grown until their first true leaves appear and are typically grown in soil or substrate, then harvested by cutting above the growing medium.

While microgreens have slightly lower risks than sprouts due to exposure



Image: Radish microgreens in sprouting trays | P Poudel PUSA

to light, which can reduce bacteria, they share some challenges. Bacteria thrive in moist, warm environments, and these same conditions promote microgreen growth. Producers must implement stringent food safety practices to mitigate risks.

Key Areas of Risk in Microgreens Production

Worker Hygiene

Workers play a critical role in maintaining food safety. Poor hygiene can introduce pathogens to microgreens during planting, harvesting, and packaging. Worker hygiene guidelines under FSMA include mandatory handwashing and a strong emphasis on health and cleanliness.

To reduce risks:

- Train workers on proper handwashing techniques, emphasizing a minimum of 30 seconds with soap and water.
- Ensure employees wear clean clothing and footwear, especially when moving between outdoor and indoor environments.

- Prohibit sick workers from handling crops.
- Implement protocols for identifying and handling contaminated areas, such as those with bird or rodent droppings.

Water Quality

Water used in the production of microgreens is a potential source of contamination. For microgreen production, water must be free of *E. coli* for seed soaking, rinsing, irrigation, and post-harvest washing. If you use municipal water, you do not need to test your water, but you can request a copy of the test results to keep on file. If using a private water source such as a well or spring, and water is found to have detectable *E. coli*, the grower must immediately discontinue its use. Before resuming use of the water, it must be treated with an in-line sanitizer, UV treatment, or other system that is consistently safe and adequately sanitary. Shocking the well is not a solution because it will not ensure consistent safety. Washing flats and trays is an important part of

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microgreen production. A standard operating procedure (SOP) should be written so that all workers know what is expected. Cleansers and sanitizers may be used. Be sure to follow the label directions when using these products.

Steps to ensure water safety include:

- Regular testing for generic *E. coli*, the primary indicator of contamination.
- Consider using UV light systems or approved sanitizers, such as chlorine or peroxyacetic acid, to treat water used for irrigation or washing.
- Minimize overhead irrigation, as water that directly contacts the edible portion of the crop increases risk.
- Prevent hoses and nozzles from dragging on the ground where they can pick up contaminants.

Microgreens that are grown hydroponically often benefit from tighter water quality control, especially if pretreated with UV light or similar systems.

Cleaning and Sanitizing

Proper cleaning and sanitizing of all tools, surfaces, and equipment used in microgreens production is essential. Growers must:

- Physically clean surfaces with water and soap to remove visible dirt before applying sanitizers. Remember, “You can’t sanitize dirt.”
- Use food-safe sanitizers like chlorine solutions or peroxyacetic acid to eliminate microorganisms.
- Establish regular cleaning schedules for high-contact areas such as trays, clippers, and containers.
- Focus on non-food-contact surfaces, such as walls and floors
- Eliminate standing water or debris

For tools and food contact surfaces, employ a two-step process:

1. Clean - Use a soap or detergent to remove dirt, grease, and organic residues.



2. Sanitize - Apply a food-grade sanitizer to remove invisible microbial threats. Approved solutions, such as peroxyacetic acid or chlorine-based sanitizers, are commonly used by growers.

Regularly inspect and sanitize non-food-contact areas, including cooling units and equipment storage zones, to reduce pathogen buildup. If possible, expose trays and other surfaces to sunlight, which can naturally reduce bacterial loads.

Soil Media Concerns

The growing medium used for microgreens can harbor pathogens such as *E. coli* or *Listeria*. Producers should:

- Avoid potting mixes that contain biological soil amendments of animal origin, such as raw manure, which can introduce harmful bacteria.
- Source substrates like coco coir, hemp mats, or peat-based mixes from reputable suppliers. Verify they have undergone proper composting or heat treatment.
- Test soil media for generic *E. coli* when in doubt.
- Ensure the substrate doesn’t come into direct contact with the edible parts of the microgreens during harvest.

Packaging and Handling

Always use clean containers for handling and shipping microgreens. Do not reuse any cardboard or paper

packaging. Regularly inspect and clean storage areas for packaging supplies.

Compliance with FSMA and Best Practices

FSMA provides a framework for growers to improve food safety. For microgreens producers, compliance with FSMA includes:

- Regular testing of water for contamination.
- Cleaning schedules and sanitizing protocols for all harvesting and packaging tools.
- Proper training for workers on hygiene and contamination prevention.

Post-harvest washing is not recommended for microgreens unless absolutely necessary, as it can spread contamination. If washing is required, always use clean water treated to remove generic *E. coli*.

Proactive Risk Management

Food safety in microgreens production depends on understanding and managing the unique risks associated with this crop. By implementing effective hygiene, water quality testing, thorough cleaning, and careful selection of soil media, growers can minimize contamination risks.

Growers seeking FSMA training are encouraged to participate in upcoming webinars or reach out to local Extension offices for support.

The Farmer Stress Management Toolbox Part 1

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This is the first article of the Stress Management Toolbox, a series of three articles related to understanding and managing stress. This article will help you define the concept of stress and identify different forms of stress.

Defining Stress

This article is the first article in The Stress Management Toolbox, a series of publications related to stress management on the farm. This series of three articles will help you understand the impacts of stress on your health, work environment, and daily life. It will provide you with strategies and tools that will help you manage stress and reduce its impact on your daily life. This article will help you define and understand the concept of stress and its different dimensions. The second article will provide information to help you identify the symptoms of stress. The third article will help you learn how to cope with stress.

Why Should Farmers Care About Stress?

Psychological stress affects people's health and daily life performance, including productivity on the farm (Kalia, 2002; Donald, 2005; Halkos, 2010; Windon et al., 2014). For example, stress can affect a farmer's ability to care for crops or livestock, increase farm work-related accidents, and affect the relationship with farmworkers, friends, and family members. Thus, it is essential to understand the concept of stress and to raise awareness of how to cope with stress.

Stress on the Farm

Think back to a time when you experienced stress on your farm — perhaps waking up to an unexpected frost, a vital piece of equipment breaking down during harvest, a sick animal, flooding during the rainy season, or crop failure. When we think about it, we can usually identify a time when we felt stressed. However, we may not always recognize or understand how stress impacts us, our farm operations, and our relationships with family members and the community.

In Pennsylvania, several organic dairy producers lost their milk contracts in 2020-2021. Could this cause stress for dairy farmers? One farmer said, "Not having a buyer for your organic milk is a really severe position to be in." The possibility of closing a three-generation farm operation or finding a way to diversify existing operations can cause stress for a farmer.



Source: <https://pixabay.com/photos/stress-burnout-man-person-events-3853148/>

According to the American Psychological Association, the COVID-19 pandemic affected U.S. farming communities. Rural and agricultural communities experienced a disruption in supply chains and greater financial instability due to more significant uncertainty. American psychologists and other mental health professionals are concerned about the rate of undiagnosed mood disorders and substance misuse in farming communities.

What is Stress?

Identifying the causes of stress is key because it is the first step in coping with stress and may help motivate the farmer to manage their stress, stay healthy, and be more productive.

Stress is a double-edged sword that affects our psychological strain and job performance (Lin et al., 2015). Stress is defined as a disruption to the internal stability of our organism, involving physical and/or mental tension, resulting in a compensatory response to restore stability and reduce tension (Tsigos et al., 2020). In other words, stress is an adaptive body's response to any emotional, psychological, and/or physical tension—such as long work hours, lack of sleep hours, the fear of failure, an uncertain financial situation, a physical injury, to name a

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few—it can affect everyone, including farmers. According to the National Institute of Mental Health, stress is a natural biological, psychological, and physical response/reaction against predators or any situation that can put us at risk. In other words, stress is the body's response to personal or environmental pressures. Thus, it can vary significantly from person to person and differs according to social and economic circumstances, the environment we live in, and our genetic makeup.

Dimensions of Stress

- **Physical Stress**

A physical factor that disrupts the body's internal balance is physical stress, which is identified by the skin's sensory receptors that bring information to the brain, which interprets it. This stress is processed in a bottom-up manner. Examples of physical stressors (demands) are extreme temperatures, pain, and physical work. All these demands cause our bodies to regulate the internal balance. (McRae et al., 2012). Farmers often experience physical stress during harvest season when they receive little sleep, change their mealtimes, and operate farm equipment during long hours.

- **Psychological Stress**

A psychological factor that disrupts the person's internal balance. Mental representations of real and supposing situations or events that may imply a risk for us can be considered as stressors or triggers of stress (McRae et al., 2012). These negative or challenging mental representations disrupt mental/central processes and affect the body. This stress is processed top-down because it is directly identified by the brain and extended toward the rest of the body, producing a physical response or attitude evidencing the tension. Some examples of psychological stress can be fear, anxiety, and surprise (McRae et al., 2012). Psychological stressors (disruptions) can be based on the detection of threats/challenges in the environment ("I see something dangerous") or in the brain ("I think I did something wrong"). These mental representations are expressed as emotions. An emotion is a conscious mental reaction (ex. anguish or anger) and a coordinated behavioral response that supports reward or avoidance of punishment approaches. An emotion is subjectively experienced as a strong feeling usually caused by a specific event/object and typically accompanied by physiological and behavioral changes in the body (Merriam- Webster, n.d). Emotions are composed of subjective feelings (ex. fear), activation of the internal (physiological) process (ex. increment of heart rate), and physical actions (ex. escape from a situation).

Psychological stress on the farm might include different situations where a farmer has no control; for example, an unfavorable weather forecast, the fear of losing the family

farm, or the anger when an employee does not show up to milk cows.

There is a bidirectional relationship between psychological stress and physical stress. For example, the anxiety caused by the fear of losing a family farm (psychological stress) can affect farmers' sleep disruption or muscle tension (physical stress). Also, experiencing an elevated high blood pressure (physical stress) could lead a farmer to think that he/she can have a heart attack or die (psychological stress). Thus, these types of stress usually work together, engaging an individual's health, work performance, and daily life activities.

Duration of Stress

- **Good stress** is called **eustress**, which has a beneficial effect on the human body. For example, shopping for new farm equipment can be considered as good stress because it motivates a farmer to do his work more efficiently. In this case, stress can be released when the deal is closed.

- **Bad stress** is called **distress**, which has a deleterious effect. It is defined as an aversive, negative state in which coping and adaptation processes fail to return the body to its physiological and/or psychological balance (Carstens & Moberg, 2000). Simpson et al. (2004) define distress as a subjective process when a perceived imbalance between demand and one's response capability under conditions where failure to meet demand has significant (perceived) consequences. The individual's perception of stress plays a crucial role in health. For example, the pressure of having too much to do in too little time during harvest season.

- **Short-term stress**, also known as **acute stress**, can go away quickly. For example, having a conflict with farm employees about the quality of their work. This type of stress goes away after resolving a work conflict.

- **Long-term stress**, also known as **chronic stress**, refers to the cumulative effect of stress. For example, the fluctuation of market prices for corn can make farmers constantly worry about financial loss, which might cause sleep disorder, racing thoughts, inability to focus, and, as a result, can lead to poor farm management or a farm accident.

In summary, we all experience stress in our work and personal life. It is important to understand that stress involves mental, cognitive, and physical components. Stress in our bodies can be considered as an adaptive response to internal and external factors that modify the organism's internal balance. Coping mechanisms facilitate our body's reestablishment of its internal balance. Long-term stress can negatively affect an individual's health, daily life performance, and productivity on the farm.

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Photo Credit: Abbie Spackman, AgrAbility PA project

Moving Further

We hope this article can help the reader understand the meaning of stress, its different dimensions, and durations. In the following article, the reader will learn how to recognize stress symptoms. Keep learning about how to cope with stress!

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We appreciate Dr. Derek Spangler's profound insights and feedback that helped shape the series of articles on stress management on the farm. Dr. Derek Spangler is an Assistant Professor of Biobehavioral Health at Penn State who conducts research related to real-world stress and its impacts on health.

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Row Covers

Dr. Michael D. Orzolek | Prof. Emeritus Vegetables | Pennsylvania State University

For most crops, floating row covers require no support because they are lightweight. They literally “float” or lie directly over the crop, whether direct seeded or transplanted. Materials include perforated plastic, spunbonded polyester, and spunbonded polypropylene; they do not impede seedling emergence or subsequent growth of the crop. (For an exception, see below.) To secure the cover against wind, all the edges are buried or weighted down with sandbags, rocks, or secured to the ground with plastic pegs.

There are two types of these covers: perforated polyethylene which is about 1 mil thick and spunbonded polyester or polypropylene which is available in several weights (rather than in thickness).

Perforated polyethylene has a uniform pattern of 3/8-inch holes (74 holes/sq ft) for ventilation. However, the holes allow for heat loss at night and are an entry point for insects. Overall, many growers have found these covers to be very beneficial for growth enhancement.

Spunbonded covers are comprised of a thin mesh of white synthetic fibers which entrap heat and serve as a barrier to wind, insects, and some wildlife. Water from rain or overhead irrigation freely passes through. The weight of these covers range from 0.3 to about 2.0 oz/sq yd (10 to 68 grams/sq meter). The lightest covers are used primarily for insect exclusion while the heaviest of the covers are used for frost protection. The most common weights are 0.5 to 1.25 oz/sq yd (17 to 42 grams/sq meter). With covers under 0.5 oz there is minimal heat retention at night; and over 1.75 oz, there is a significant reduction in light transmission. The heavy covers are used for nighttime frost protection only since they do not

transmit sufficient light for optimum crop growth.

Spunbonded row covers in the 0.5 to 1.25 oz range provide 2o to 4o F frost protection in the spring. In the fall, there is more protection because there is a larger reservoir of heat in the soil in the fall than in the spring. These covers perform very well in protecting late-season tomatoes and pepper from early frosts.

Floating covers require much less installation labor than hoop supported covers. The wider and longer the covers, the less labor required per unit area since only the edges are secured.

These covers vary in width from 6 to 50 feet and up to about 800 feet long. One way to evaluate labor needs is to compare the time that it takes to apply one piece of cover 50 feet wide x 200 feet long (500 perimeter feet) versus the time it takes to apply 5 pieces 10 feet wide x 200 feet long (2100 perimeter feet). Regardless of width, the cover is secured by weighting down the edges (sides and ends) with soil, sand bags, stones, or long pins or pegs. In extremely windy areas, additional weighting in the middle of the cover is advisable.

Insect control is effective with spunbonded covers when all of the edges are completely sealed. For example, maggots in radish (and in other crops in the cabbage family) are controlled when a cover is applied at seeding with a complete seal around the edges. When the adult maggot

flies search out the young seedlings for laying eggs, the flies will be unable to get under or through the cover. A continuous furrow of soil along the edges is probably the best method.

It is feasible, however, that row covers could actually increase insect damage on some crops. The environment under the cover is pretty “cozy” for insects, so it is important that all transplants that are to be covered are free of insects at transplanting. To prevent a heavy population of Colorado potato beetles under a cover, do not plant potatoes in the same place in successive years and use a cover the second year. Overwintering adult beetles could emerge from the soil under the cover and lay an abundance of eggs that would soon hatch into a dense population of larvae.

There are a couple of disadvantages of floating covers. One is the weed pressure under the covers. Between strips of plastic mulch or with crops such as sweet corn where plastic mulch is not used, weeds grow rapidly and competitively. When using herbicides, the highest labeled rate is generally needed to adequately control weeds. There is also some inefficiency in covering the space between strips of plastic, but here again the trade-off is reduced installation labor of wide covers versus narrow covers.

Most all vegetable crops as well as strawberries, raspberries, and cut flowers have been grown with row covers. Although the primary crops for row cover use are high value crops such as melons, tomatoes, pepper, summer squash, sweet corn, and strawberries, many growers find row covers to be valuable for a number of crops for varying reasons -- earliness, higher yields, overwintering

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Self-Care for Cold and Gloomy Days

Lori Klein, EdD, MPH, NDTR | Extension Educator, Food, Families, and Health | Penn State Extension

Have you ever had the blues after too many cold, dreary days? Try some of the tips below to lift your spirits when you find yourself in a slump.

After the warmer months, we can quickly become fatigued by the seemingly endless cold and darkness of winter and early spring. We do not get much sunlight in Pennsylvania, especially with the shorter days, and many of us experience seasonal depression. Instead of sinking into the dreariness, we can plan to take good care of ourselves and our families with a bit of warmth and coziness.

Developing a Self-Care Plan

Some cultures embrace the colder time of year and use the shorter days to reflect and create a snuggly atmosphere. The Danish tradition of *hygge* (pronounced “hoo-ga”) may contribute to the country’s reputation for a high level of happiness despite the typically cold and dreary climate that is similar in many ways to the short winter days of Pennsylvania (Ministry of Foreign Affairs of Denmark, n.d.). We can learn from their examples to develop more of our own traditions that promote self-care for mind and body.

Here are five ideas to maintain a positive outlook through the winter season.

1. Stay warm and cozy.

We know that bundling up before going outside will keep us warm, but do we always remember to cover our ears, hands, and feet? Sipping hot herbal teas throughout the day can help us stay hydrated and heat cold hands. We can also make sure that we warm up from the inside by eating hot, cooked foods instead of cold salads.

Tip: Chilly, damp days are the perfect time to enjoy the comfort of soups and stews. Make an extra big batch to freeze or reheat for lunches throughout the week. Try some new herbs and spices instead of salt, or choose low-sodium canned soups for convenience.

2. Move your body every day.

When the weather is cold and the days are short, we may struggle to get outside for walks and physical activity. Researchers have found that people who spend time outdoors in nature are happier and also find life more meaningful (Pritchard et al., 2020). So, try to bundle up and get out – you might be surprised at how much warmer you feel after some brisk movement. If you just can’t get out the door, there are plenty of ways to be active inside.



Credit: New Africa / [bigstockphoto.com](https://www.bigstockphoto.com)

Tip: Turn on fun music for an indoor dance party to get moving and liven up any day.

3. Mind your mind.

Our thoughts develop like seeds sprouting in the soil. Sometimes the seeds grow into beautiful flowers and delicious foods. Other times, our intentional plantings are overtaken by weeds and cannot thrive. You can take control of your thoughts just as you tend your garden. When our brain is left to wander, the default thoughts are frequently critical or worrying. This tendency towards negative thinking is protective but can send us into a spiral of doom and gloom. Scientists have identified that meditation and mindfulness practices can help us to shift the mind into positive thought processes and ultimately into improved connections between different areas of the brain (Feruglio et al., 2021).

Tip: Set aside 10 minutes in the morning for contemplation when you first wake up and at night before going to sleep to tend your mental garden. You can choose a reflective practice from any tradition that you like: prayer, meditation, and journaling are a few examples. Just sitting and noticing what thoughts are cropping up is an easy activity during this time. Lovingkindness meditation is a sweet choice to help you be more compassionate with yourself and others. You can find guided practices and more information on reflective practices in a variety

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protection, and insect and wildlife control. Crop selection and cover selection are important to the economical success of the extra inputs. Crop distinctions such as temperature sensitivity, pollination methods, and growth habit dictate the type of row cover that is best to use.

Even though most crops can be grown without damage under floating covers, tomatoes and pepper are an exception. If the spunbonded material is not supported with wire hoops for these crops, flapping of the cover in the wind will damage the growing points of young plants.

Also, with summer squash under windy conditions, many of the leaves might be broken by the cover. For these three crops, a series of strategically placed wire hoops will prevent crop damage.

of places, including the Mindful website (<https://www.mindful.org>) and in apps such as Calm and Insight Timer.

4. Stay Social.

After larger social festivities over the holiday season, we may be ready for a break from planning gatherings. However, there are many benefits to connecting with our friends and family members on a regular basis. You can skip the large, celebratory meals and instead invite a few friends for an intimate dinner or a Sunday afternoon snack and chat.

Tip: A fun game night can brighten spirits and bring people together in a new way. Have everyone bring a favorite warming snack or beverage to share.

5. Find some brightness!

Citrus fruits offer their bright color, scent, and flavor to balance out the cloudy days by reminding us that the sunshine will return soon.

We can also light candles (or use electric candles for safety) when we need a mood boost.

Tip: Send some oranges to a friend who could use a little *hygge* gift and boost your own mood with the spirit of giving.

Develop your own self-care plan using these tips and more to enhance your own happiness and share the good feelings with your friends and family.

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High Tunnel Construction Considerations

Dr. Michael D. Orzolek | Prof. Emeritus Vegetables | Pennsylvania State University

High tunnels are low-cost protective structures. Though they appear to be similar to a greenhouse, they differ in several ways. They are relatively inexpensive to build, and environmental management is usually not automated but manual. There is no constructed floor, and plants are usually planted directly into the soil, as in field production. Benefits typically expected from high tunnel use are increased air temperatures, extended fall and spring growing seasons, and protection from wind and rain.

Because trickle irrigation is the water source, soil moisture levels are usually completely under the grower's control, resulting in decreased soil leaching of nutrients and early soil workability in the springtime. In addition, the soil temperature is increased, and there is a significant amount of control of temperature through timely venting or closure of the tunnel. These increases in temperatures typically make planting possible about four to six weeks earlier than for field production.

The use of crop protectants can often be markedly reduced, though the complex of diseases and insects may differ from that encountered in field production. Due to all of these effects, crops can be harvested earlier, yields are greater, and produce size, appearance, and shelflife is improved. Also, due to the longer growing season and higher temperatures, some crops may be grown that normally could be grown only in warmer regions relative to the grower's location.

High Tunnel Structures

High tunnel are available in single-bay and multi-bay types. Single-bay tunnels tend to result in greater environmental modification, while

multi-bay tunnels are typically much larger and do not tolerate a snow load or significant wind events. Within single bay tunnels, it is important to choose a design suited for your weather conditions. Designs with a peaked or Gothic roof design are better-suited to locations that receive snow than those with an arched or Quonset-style roof.

High tunnels are relatively easy to construct. Detailed construction information for the high tunnel design used in Penn State research can be found at http://plasticulture.cas.psu.edu/Design_construction.pdf.

Currently in North America, there is a dramatic increase in the construction of high tunnels and the variety of crops grown in them. In addition to vegetable crops, culinary herbs, cut flowers, berries, and select tree fruit crops are being produced in high tunnels.

When choosing a crop to grow, it is important to determine market demand for the product itself and also for acceptance of that product at less typical times of the year.

Since there are additional costs associated with high tunnel production and possibilities are expanded, it makes sense to grow crops that will command a premium price.

In addition, because production takes place for most of the year, a succession of crops can be planned to sustain a long-term marketing program. Crops are grown at closer

spacings than are used for field production, but crowding the plants too much will result in poor growth and an increased disease incidence, especially from powdery mildew.

High Tunnel Tips

To get the most out of your high tunnels, take note of the following suggestions from Mike Orzolek, professor of vegetable crops at The Pennsylvania State University. He has done extensive research on stand establishment, plastic mulches, high tunnels, weed management, and tillage systems.

Use raised beds when laying plastic mulch to ensure better water and nutrient management.

When laying plastic mulch, make sure soil is at 85% if water-holding capacity or more.

Wait at least two or three days after laying plastic mulch in the tunnel before transplanting plants through the plastic to allow for increased soil temperatures. Minimum soil temperature for vegetable transplants is 55 F to 60 F.

Use actively growing, insect- and disease-free transplants that are the optimum transplant age for that particular crop.

After transplanting through plastic mulch, monitor soil moisture level underneath the plastic mulch with a tensiometer or irrometer and maintain moisture level by use of drip irrigation system.

Monitor plants for aphid, thrips, whitefly, and spider mite populations since these insect pests can rapidly reproduce and vector viruses to young transplants.

Fertigate with low levels of nitrogen throughout the growing season.

Growth and Hope: A Recipe for Optimism and Organizational Success

Suzanna Windon, Ph.D. | Assistant Professor, Youth and Adult Leadership | Pennsylvania State University
Mariah Stollar | Former Part-time Research Assistant | Pennsylvania State University

This article will help foster an optimistic and successful mindset among your employees and volunteers within your organization.

In challenging times, it is important to not only keep our spirits up, but also the spirits of those we serve and lead in our communities and organizations. Leadership scholars have begun researching paradigms related to optimism, such as growth mindset and hope, that can have implications for leaders and managers.

Growth Mindset

Dweck (2016) emphasized that having a growth mindset involves believing in yourself and your success “through hard work, good strategies, and input from others” (p. 2). A key part of growth mindset is understanding that both consistent effort and persistence are needed to achieve group goals. Consistent effort and persistence can be described as the willingness to persist when challenges and adversity arise (Duckworth, Peterson, Matthews, & Kelly, 2007). Organizations with growth mindsets tend to have more independent and dedicated employees and better teamwork among employees and volunteers (Dweck, 2016). The following strategies will help foster growth mindset among your employees and volunteers within your organization.

Strategies to foster growth mindset in your work with organizations

We adapted the following tips based on Duckworth, Peterson, Matthews, and Kelly’s (2007) work and Dweck’s (2016) work to help you foster a growth mindset among employees and volunteers within your organization.

- **Set high expectations.** Expect the best effort from your employees through your communication. They will perform to the level you expect.
- **Give sincere and clear feedback.** Explain to employees and volunteers why a task was not completed correctly. Tell them how they can correct the mistake.
- **Use failure as an opportunity to learn.** Promote a culture of learning from one’s mistakes. Demonstrate an example of using failures as chances to learn by speaking positively about the value of experience (whether successful or not).



Source: <https://pixabay.com/photos/sky-freedom-happiness-relieved-2667455/>

- **Recognize persistence and a job well done.** Recognize employees and volunteers that both worked hard and completed a task well. Highlight those who overcame much adversity to achieve organizational goals, using them as an example for others.

Hope

Hope has been defined as a state of optimism where individuals feel willing and able to achieve their goals (Malik, 2013). Employees and volunteers with hope must have both the personal motivation to achieve a goal and the infrastructure to do so. Hope may help people to cope with stress and uncertainty in their lives (Folkman, 2010). Research has shown that organizations higher in hope have higher profits, retention, satisfaction, and commitment among employees (Snyder, et. al., 1991). The literature shows that hope can be absent if people do not feel they have control over a given situation (Folkman, 2010). The following strategies will help foster hope among your employees and volunteers within your organization.

Strategies to foster hope in your work with organizations

We adapted the following tips from Malik (2013), Folkman (2010), and Snyder et. al.’s (1991) work to help you foster hope among your employees and volunteers within your organization.

- **Empower your employees and volunteers.** Demonstrate that you believe in them. Give them

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When and how to safely involve children in farm tasks?

Florence Becot, Linda Fetzter, and Dennis Murphy./ Penn State Extension

This article provides practical information that farm parents, or any caregiver, can use to decide when children can be on the farm worksite, the type of tasks that can be assigned to the children, and the safety measures to adopt.

“Raising kids on the farm is one of my greatest joys. But it has many challenges.”
- A Farm parent

This quote illustrates the complex reality of raising children on the farm. Involving children on the farm is a great way for children to learn about the farm and to teach them skills. At the same time, farms can be a dangerous environment. In a national study of 860 farm families, three out of four (78%) enjoyed having the children along while working on the farm but nine in ten farm families (97%) worried that their children could get hurt on the farm (Becot and Inwood, 2023). These farm families’ fear that children could get hurt connects back to national statistics. Children growing up on farms are exposed to a higher risk of injuries and fatalities. Every day, about 33 children are seriously injured in agricultural-related incidents and every three days, a child dies (National Children’s Center for Rural and Agricultural Health and Safety, 2020). In Pennsylvania, about one third of people who died in farm-related incidents within the last two years were children under the age of 19 (Judd et al., 2023, 2024).

Safety strategies based on children development stages

As children grow and develop, their physical, intellectual, and emotional abilities evolve. Research about injuries and fatalities among farm children has found that often these incidents occurred because children were doing something on the farm that did not match their abilities.

Table 1 shows development stages associated with age groups along with safety strategies and developmentally appropriate farm tasks. As you read through the table,



Photo credit: USDA

please keep in mind that there are variations in the speed and manner in which children develop. Therefore, the safety strategies and developmentally appropriate tasks are provided as general guidelines and they should be adjusted based on your children’s abilities. Mental, emotional, social, and physical development all play equally important roles in determining children’s capability and readiness for farm tasks.

As you assign tasks, don’t forget to “practice what you preach” by setting a good example and practicing safety in your own day-to-day activities. While you might be used to your daily work and routines, don’t forget that what seems easy for you might be hard for youth.

Table 1. Child development stages, safety strategies and developmentally appropriate farm tasks

Growth stage	Developmental characteristics	Safety strategies	Developmentally appropriate farm tasks
Birth-4 (infant/ toddler/ preschooler)	• Rapid growth, beginning motor skills development • Has balance problems, slow reaction time • Is curious, exploring	• Use strong physical barriers such as locks and fences around ponds and manure pits. Lock up chemicals.	• None. Children this age should not be exposed to work hazards.

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Table 1. Child development stages, safety strategies and developmentally appropriate farm tasks (cont.)

Growth stage	Developmental characteristics	Safety strategies	Developmentally appropriate farm tasks
	• Is fascinated by movement • Has illogical or “magic” thinking • Is very energetic, releases tension by playing, even when exhausted • Is self-centered but interested in group activities	• Store ladders out of sight and reach. • Provide a fenced-in play area away from farming activities. • Provide maximum supervision at all times because of small children’s poor coordination, high energy, and lack of fear. • Children should not ride as an extra rider on farm equipment	
5-9 (preschooler/early elementary school age)	• Is learning to use small and large muscles--slow, steady growth stage • Has poor hand-eye coordination • Tries to master more complex skills • Operates with concrete facts, not capable of abstract ideas/thinking • Wishes to appear competent; seeks parental approval • Wishes to take on tasks without adult supervision • Is discovering that parents make mistakes, are human • Rarely follows through on a task -- not yet ready for responsibility	• Set rules. • Discuss safe behavior with children. • Talk openly about types of injuries and consequences. • Assign and closely supervise chores. • Never assign intense, physical chores--they can lead to exhaustion. • Play games (with adult supervision) that focus on farm safety issues. • Children should not ride as an extra rider on farm equipment	• Tasks of short duration that do not require a lot of hand-eye coordination • Projects with hand tools, not power tools • Help with watering plants, hand weeding, hand-harvesting produce, and feeding small animals, such as pets or orphaned baby animals • Collect eggs • Use youth working guidelines to help you assign tasks (see below for more information).
10-13 (middle school age/ early teen)	• Is growing at a steady rate -- approaching puberty; boys grow more quickly than girls • Small muscles are developing rapidly • Has same coordination as adults but lapses of awkwardness are common • Has greater physical and mental skills • Desires peer and social acceptance • Wishes to try new skills without constant adult supervision • Signs of independence emerging	• Potentially the most dangerous age because of constant risk taking and ease of distraction and clumsiness--never mistake a child’s size for ability to do work! • Set clear and consistent rules; discuss consequences and rewards. • Provide specific education on farm hazard prevention. • Plan increases in chores and responsibilities. • Start with low-risk tasks; give more responsibility for follow-through with less supervision.	• Hand raking, digging • Limited power tool use (supervision); hand tools better • Help with watering plants, hand weeding, hand-harvesting produce, • Handling and assisting with animals • Use youth working guidelines to help you assign tasks (see below for more information).

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Table 1. Child development stages, safety strategies and developmentally appropriate farm tasks (cont.)

Growth stage	Developmental characteristics	Safety strategies	Developmentally appropriate farm tasks
13-16 (adolescent/ young teenagers)	• Is growing rapidly and changing physically; can be an uneasy time • Girls growing faster than boys • Has moved from concrete thinking to abstract; enjoys mental activity • Can find solutions to own problems but still need adult guidance • Feels need to be accepted by peers • Resists adult authority • Feels immortal	• Judge size and age to measure maturity for tasks. • Be consistent with rules. • Provide education from peers with farm injuries. • Provide all-terrain vehicle training, protective gear. • Enroll child in safe tractor and machinery operation program (NSTMOP) (see below for more information) • Encourage children to become involved in 4-H and FFA safety projects.	• Still needs adult supervision but ready for more adult jobs such as equipment operation and maintenance • Gradually increase tasks as experience is gained • Manual handling of feed and feeding animals • Operate lawn mower (push mower, flat surface, under supervision) or garden tractor • Can operate a tractor over 20 PTO horsepower along with tractor implements at ages 14 and 15 after the completion of safe tractor and machinery operation training program • Use youth working guidelines to help you assign tasks (see below for more information).
16-18 (middle/ older teenage)	• Awkwardness overcome, mastery of small and large muscles basically complete. • Knows abilities, moving further away from family and into community as independent person • Feels immortal • May act like child one day, adult the next • Rebellion, risk-taking, aggressiveness typical behaviors • Consistent treatment from adults important • Needs independence and to develop own identity • Has increased sense of adult responsibilities, thinking of future • May experiment with drugs or alcohol	• Provide rules regarding drugs and alcohol; open communication • Reward for accepting adult responsibilities. • Serve as role model--teach younger children farm safety. • Parents may still have cause for concern with recklessness and risk-taking and may work side-by-side with young adult until absolutely ready.	• May be ready to work with tractors, self-propelled machinery, augers, elevators, and other farm equipment, but must earn this responsibility. Should be trained, educated, and supervised at regular intervals. • Use youth working guidelines to help you assign tasks (see below for more information).

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Youth working guidelines

In addition to table 1, you can use the Agricultural Youth Working Guidelines from the National Children's Center for Rural and Agricultural Health and Safety.

With guidelines for 53 common agricultural tasks, these guidelines:

- Help you determine when youth ages 7-16 can safely perform a task,
- Provide information about hazards and protective strategies for each task, and
- Help you find the right level of supervision needed.

Examples of tasks covered by the Agricultural Youth Working Guidelines include hand harvesting, working with large animals, operating a lawn mower, repairing fence, and cleaning calf pens/hutches. See figure 1 for an example of guidelines for cleaning calf pens/hutches.



Figure 1. Example of guidelines for cleaning calf pens/hutches

Cultivate Safety lists 53 Agricultural Youth Work guidelines. You can also find [booklets](#) focused on groups of tasks including: operating farm equipment, working in gardens, and working with animals.

A printed version of the Guidelines can be requested by contacting

the National Children's Center for Rural and Agricultural Health and Safety at 1-800-662-6900 or lull.stephanie@marshfieldresearch.org

National Safe Tractor and Machinery Operation Program

The [National Safe Tractor and Machinery Operation Program](#) (NSTMOP) through Penn State Extension is a great program for your youth to develop safe tractor and machinery operation skills. It is a 24-hour program where they will learn about general agricultural safety, tractor and equipment operation, and highway transportation.

This training along with obtaining the US Department of Labor certificate are required for youth aged 14 and 15 to be legally allowed to operate tractor and machinery on a farm that is not operated by a family member. [Visit our website](#) to find out more about the program or contact us by email at nstmop@psu.edu or call (814) 865-4582.

Conducting Farm Safety Audits with the Children

Another way to promote safety with the children is to conduct periodic farm safety audits. The audits will allow you to identify hazards to correct while at the same time talking with the children about hazards and how to prevent them.

As you walk around the farm, think about past “close calls” or potential future situations that might cause injuries. Determine the factors that were or could be responsible for a near-miss and attempt to explain those factors to children who are mature enough to understand.

You can use a [safety checklist](#) such as this [one](#) that was specifically designed with children in mind. You can also use this list of common checks to do:

- Be sure to safely store items that cause injuries, including tools, equipment, power cords, fence wire, and baler cord. Heavy objects such as tractor tires should not be propped against walls or fences because they could fall over and crush a child or adult. Always place the bottom rungs of fixed ladders out of reach of children or fit the ladders with barriers. Store portable ladders away from dangerous areas.
- Don't create new hazards when storing items. This includes haphazardly stacked lumber or poorly stacked cut logs as they can topple.
- Pesticides, treated seed, fertilizer, and other toxic materials like dairy pipeline cleaner should be kept in a locked storage area.
- Place appropriate warning decals on tractors, machines, grain bins, silos, wagons, and any other potentially hazardous item. Explain the significance of these warning symbols to children.
- Children should be able to reach feed and water containers from outside an animal's pen or corral.
- Maintain safety zones around buildings and structures. Special fencing and barriers need to be placed around or over the structures that are extremely dangerous so that children cannot enter them. Dangerous areas include:
 - o **Silos:** These are particularly dangerous because of gases and running machinery during the filling and unloading of silage and grains.
 - o **Grain bins:** The grain inside can turn into “quicksand,” especially during bottom unloading.
 - o **Farm ponds and manure pits:** These are potential drowning sites with gasses and low oxygen hazards. Always make sure that ponds and pits are inaccessible to children!
 - o **Barn hay-drop openings:** Fractured skulls and deaths have been caused by falls through a hay hole during play.

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For younger children, you can also use [farm safety activity books](#) such as this one to introduce them to dangers on the farm.

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Growth and Hope: A Recipe for Optimism and Organizational Success ... continued from page 28

the freedom and responsibility to complete projects independently.

- **Set employees up for success.** Do not set employees up for failure. Seriously consider their abilities and organizational resources available before assigning them projects.
- **Recognize employees and volunteers.** Thank employees and volunteers for their efforts.
- **Provide professional development opportunities for employees and volunteers to manage stress.** If you are a highly productive organization, there are likely times of stress in your organization. Educate employees about stress and ways to manage it. Inspire them by sharing how you have successfully managed stress.

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Featuring recipes that include vegetables

recipe corner

Broccoli Casserole

Submitted by Tina Forry | Forry's Roadside Market

INGREDIENTS

- 2 (10 ounce) packages frozen chopped broccoli, cooked and drained
- 1 cup mayonnaise
- 1 cup sharp cheddar cheese, grated
- 1 (10 $\frac{3}{4}$ ounce) can condensed cream of mushroom soup
- 2 eggs, light beaten
- 2 cups crackers, crushed
- 2 tablespoons butter, melted

INSTRUCTIONS

1. Preheat oven to 350°F
2. Spray a 13 x 9 inch baking dish with cooking spray.
3. In a large bowl, combine broccoli, mayonnaise, cheese, soup and eggs. Mix well.
4. Place the mixture in pan.
5. Top with crushed crackers and pour the melted butter evenly over crackers.
6. Bake for 35 minutes or until set and browned.

Italian Hillside Garden Soup

Submitted by Tammy K. Linn | Adapted from Crockpot Recipe Collection

INGREDIENTS

- 1 tablespoon extra-virgin olive oil
- 1 cup chopped green pepper
- 1 cup chopped onion
- 1 $\frac{3}{4}$ cups or 1 can (14 oz) diced tomatoes, undrained
- 1 can (15 $\frac{1}{2}$ ounces) navy beans, drained & rinsed
- 1 medium zucchini, chopped
- 1 cup fresh or frozen cut beans, thaw if frozen (I have also used canned green and yellow beans)
- 2 cans (about 14 ounces each) chicken broth
- $\frac{1}{4}$ teaspoon garlic powder
- 1 package (9 ounces) refrigerated sausage, cheese filled tortellini or chicken prosciutto tortellini (I have also used cheese tortellini, mini cheese ravioli, or just pasta and added cut up chicken breasts)
- Shredded parmesan cheese (optional)

INSTRUCTIONS

1. Heat oil in large skillet over medium high heat until hot. Add bell pepper and onion. Cook and stir 4 minutes or until onions are translucent. Transfer to crock pot.
2. Add tomatoes with juice, zucchini, beans, broth and garlic powder. Cover, cook on low 7 hours (or high 3 $\frac{1}{2}$ hours).
3. With crock pot on high, add tortellini and cook 20-25 minutes longer or until pasta is tender.
4. Garnish each serving with cheese, if desired.
5. I usually serve with corn bread.

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Cabbage Roll Soup

Tina Forry | Forry's Roadside Market

INGREDIENTS

- 4 cups cabbage, roughly chopped
- 1 lb. ground beef
- 1 tsp Worcestershire sauce
- 1 tsp salt
- 1 tsp paprika
- 1 onion, chopped
- 3 cloves garlic, minced
- ½ cup water
- 1 tsp oregano
- ½ tsp basil
- 680 mL can tomato sauce (or about 3 cups)
- 796 mL can diced tomatoes (or about 4 cups)
- 1 cup rice, uncooked

INSTRUCTIONS

1. Add onion, garlic, Worcestershire sauce, paprika, ground beef and salt to a skillet on medium heat. Cook until the ground beef is browned (about 7 to 10 minutes).
2. In a 6 quart slow cooker, add cabbage, oregano, basil, tomato sauce, diced tomatoes, water and ground beef mixture and stir to combine.
3. Cover and cook on low heat for 8 to 10 hours.
4. In last half hour of cooking, cook the rice according to package directions.
5. Add the cooked rice to the slow cooker and stir to combine.

Sheet Pan w/ Vegetables & Sausage

Tammy K. Linn | PVGA

INGREDIENTS

- Chicken sausage (or your favorite) cut into bite-sized pieces
- 1-2 potatoes, cut into bite sized pieces
- 3-4 cups of carrots, peppers, mushrooms (or your favorite vegetable), cut into bite-sized pieces
- Olive oil
- Pepper
- Season Salt
- Garlic Powder
- Onion Powder
- Ground Mustard

INSTRUCTIONS

1. Preheat oven to 475°F
2. Place sausage, potatoes, and vegetables on a 9x13 (or larger) sheet pan, spread out evenly
3. Sprinkle with pepper, seasoned salt, garlic powder, onion powder, and ground mustard
4. Drizzle lightly with olive oil
5. Bake approximately 20-25 minutes (checking frequently after 15 minutes) or until vegetables are thoroughly cooked.

Sausage Filled Peppers

Tina Forry | Forry's Roadside Market

INGREDIENTS

- 1 lb. loose sausage
- 1 8oz. brick softened cream cheese
- 1 can rotel (or diced tomatoes)*
- 3 bell peppers– cut in half
- Salt, pepper, garlic powder– optional

INSTRUCTIONS

1. Brown sausage while breaking into small pieces
 2. Add can of rotel* with juice and stir
 3. Add softened cream cheese
 4. Heat thru until melted and stir to combine
 5. Fill pepper halves
 6. Place on a lightly greased baking sheet
 7. Bake at 350 until peppers are soft or at preferred texture
- *We usually use fresh tomatoes (1 or 2 depending on size)
Add cheese for a yummy topping!

Pennsylvania Vegetable Growers Association

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