

## AGLINE

PURDUE UNIVERSITY COOPERATIVE EXTENSION SERVICE, Fulton County

1009 W. 3rd Street, Rochester, IN 46975-574-223-3397-mkepler@purdue.edu

On June 30, I will be transitioning into retirement or I like to look at it, refocusing. By that time I will have been in Extension fulltime for 38 years, 27 in my current position in Fulton County.

I have had the opportunity to learn a lot, work with a lot of great people and be a part of this excellent community. I first started out here when I was born at the old Woodlawn hospital and returned 40 years later to be a bigger part of this community. When I teach the Fulton County Youth Leadership Academy, one of my goals is for them to look at many of the possibilities that exist in this community and hopefully one day they will find their way back.

The office staff is having a retirement celebration on June 22 from 11am till 1 pm in the 4-H community building. We will have an informal lunch. If you could stop by I would love to see you.

I have written several articles lately that I have included in this newsletter. I figure that over the past 38 years I have written about 2,000 of these. Some subjects I have covered once and some need to be talked about more frequently. One subject that is becoming more work and expensive for all of us are these species of plants and insects that have come, unwanted, into our area. As I drive the county, this week, poison hemlock is in bloom along the roads, ditches and abandoned areas. I first wrote about it in 2010. It has multiplied tremendously since then. If we would work at it, we could have reduced the impact. I have none of it on my farm and that will be one of my refocus activities to keep it off.

The second article is one I wrote last year on the newest of the bad weeds I am seeing.



Mark Kepler  
Purdue Extension Educator, ANR  
Fulton County

## ***Eastern Red Cedar***

*Written by Mark Kepler*

*Purdue Extension Educator, ANR—Fulton County*

Another of more visible plant that I also will be refocusing to on my place are cedars. Again, They are not supposed to be here.

A few weeks ago, while visiting a rural homeowner, I was looking at some eastern red cedars and there were some brown balls hanging from the branches.

Now I am not a fan of eastern red cedars. They may be native to America but not here in our neck of the woods. The pioneers coming into this deciduous hardwood forest for the first time in the early 1800s would have found this tree confined principally to the bluffs of streams and rocky ravines according to Charles Deam who wrote “Trees of Indiana” in 1921. By the time Deam wrote the book, Indiana land coverage had gone from 87% trees to 8%. This opening up of the forest allowed the cedar more area to grow.

Today I see this tree growing everywhere including outside my office window. On my place, I cut them down. Out in the prairies of Nebraska, the native eastern red cedar has taken over rangeland, reducing grasses and the wildlife associated with grass plants. Without the massive prairie fires, this tree is expanding in numbers and has covered around 75% of the landscape in some areas. One article I read on this plant ended with “...cedar trees are awful. They take resources away from the native species of the Plains, displace native wildlife.”

I do not like them, but here in Indiana I would not call them awful yet. I do see it coming up along the highways here in our community and its numbers are sprouting especially around interchanges. I do have farmers that have concerns about their spreading. Just this week I saw a thin stand of woods starting to experience cedar tree growth. It is a tough tree and looking to get a hold in open areas.

One other bad characteristic of these trees goes back to those brown balls. They are actually a mass packed with fungal spores. Spring rains cause the ball to swell and turn into a gelatinous orange mass with structures known as telial horns protruding from it. Those spores find their way to newly emerging apple leaves and infect the plant so that leaves have an orangish spot that grows through the leaf bottom with little tubes attached.

This is called cedar apple rust. There are also conditions caused by similar organisms called Cedar-Quince rust and Cedar-Hawthorn Rust. They can affect the apple tree production but they do no harm to the cedar. Picking those balls off the cedar in the spring can reduce the disease on apples but it's hard to get them all.

There are fungicides for apple trees that will prevent the disease but there is no use trying to protect the cedar. Any serious apple orchardist will remove any cedars within view and further as the spores could travel several miles if the wind is right. But in that situation, a few spores may show up versus having an infected cedar tree in the same yard.

I marvel at this disease as it has found a way to use two hosts to survive. There are so many amazing wonders of this world. Even though cedar apple sure is really kind of pretty, it's not healthy. In general, having cedar trees around is not a good idea.

# Losing the Battle

Written by Mark Kepler  
Purdue Extension Educator, ANR—Fulton County

I wrote about seeing wild parsnip three years ago along US 31. For me, it is the newest of the nasties coming into the area and it is spreading...

From a distance wild parsnip looks like a yellow-green flowering version of wild carrot, also called Queen Ann's lace. But it can get a lot taller, up to 4 feet. This plant is referred to as a monocarpic perennial. It grows from seed and forms leaves near the ground in the fall. When it finds growing conditions favorable, it will bolt and form a seed head. That may happen the next year or several years later. It is not on a set schedule.

The worst thing about this plant is another word you may never have heard before, Phyto photodermatitis. If this plant comes in contact with bare skin and you continue to remain in the sunlight, a rash and/or blistering can occur, as well as skin discoloration that may last several months.

There are a variety of plants in the same family as wild parsnip that will have this reaction. The most exploited by the news media is giant hogweed. This plant will grow to over 10 feet tall and have leaves that are several feet long. We do not have this giant hogweed in our area. Like most invasives, giant hogweed was someone's great idea to bring it to this country and was first found in a New York ornamental garden in 1917. We will all pay for that decision.

Three years ago, our wild parsnip was growing in various areas along US Highway 31, a haven for invasive plants such as purple loosestrife, phragmites, poison hemlock, Canada thistle, bush honeysuckle and the one planted specifically by the state, autumn olive.

Maintenance is an unending part of life. It is like planting a garden or a flower bed. It's great when you have it done, but then you have to pull weeds for the rest of the summer. Yards need to be mowed, oil changed in vehicles and house shingles replaced. When a piece of property is abandoned, there is a progression of plants ready to fill in the spaces. On my property I have a nice wooded area that was farmed and abandoned in the 1930's. With the natural succession of plants, it had grown into a nice woods. (cont. to page 4)

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That woods was devastated by the invasive emerald ash borer and now the natural progression includes a multitude of invasive plants that were not around in the 1930's.

The unmown areas along US 31 are beginning that succession and unfortunately all of the invasives previously mentioned are now the first in line to grow. In the past few years, they have been grinding brushy plants along the highway. The wild parsnip is taking advantage to grow in the open areas where the plants have been removed. It can now be found growing in open private and public lands areas next to the highway. It has expanded its range.

Poison Hemlock with its tall plants and white blooms is also running rampant in our community this year. No one took the time to control it, so it has multiplied. Livestock farmers are now having to deal with this poisonous plant in their hay and pastures.

In the long run controlling current populations by not allowing them to spread is one partial answer to the problem. Long before we had chemicals, the way to reduce Canada thistles spread was to mow them in the flower bud stage. That growth period was last week. Wild parsnip seeds take at least three weeks from flowering to become viable. We have a few days. Even though you may be itching to get at them, don't touch them with your bare skin.



local wild parsnip

## ***Dairy Knowledge***

Written by Mark Kepler

Purdue Extension Educator, ANR—Fulton County

*Agriculture is constantly changing. Here is one area that is rapidly changing and will continue to do so.*

The Purdue Cooperative Extension Service works with local schools and their Vocational Agriculture programs to host many career development programs. In the old days, we just referred to them as judging contests. In reality, career development is better terminology as students receive ample training on evaluating various agriculture subjects including live-stock, soils, crops, forestry, meats, dairy products, environment, and entomology.

This past week on a dairy farm near Royal Center, 82 students from 11 schools congregated to look at four classes of dairy cows and heifers that would be potential milkers in about a year. Their objective was to rank the four animals in each class in order of superiority. Then in two of the classes, they would stand before a judge and verbally justify their ranking.

In these “reasons” classes, participants would explain by recalling from visual memory which animals had superior mammary development, structural soundness, and many other positive or negative body traits. No notes. It is just them thinking on their two feet before the judge. It is an excellent confidence builder. Winners of these contests can go on to participate in state and potentially national competitions.

It is interesting that we held this competition a little after the annual USDA Milk Production Report was published. Twenty years ago, there were 70,375 dairy herds in the U.S. In 2022, there were 27,932 herds. In the last year, there was a loss of 6% of the dairy herds.

The average US herd size reached a record-high of 337 head in 2022. It was 129 cows in 2003. During that same time, total dairy cows have declined slightly but the production per cow has increased so total production is at the highest level in history. In the past year, the number of milk cows in Indiana has fallen from 193,000 to 187,000.

Even though the statics are showing fewer producers, there are still many interested in Dairy Judging. Many of those dairy contestants do not have a dairy background but that has not stopped them from being acquainted with dairy cattle. They are still consumers of dairy products. Beyond that, the jobs available in the dairy industry are just like many others in the agriculture sector and they are still in demand.

These dairy judges' future might not be milking cows, but they may be well-vested and skilled to obtain other related jobs in agriculture.

# ***Animal Handling***

Written by Mark Kepler

Purdue Extension Educator, ANR—Fulton County

It was a race I knew I could win. The participants were a doe deer and me, driving my pickup truck. As I drove slowly down the gravel road with a new goat feeder in the bed, along my passenger side the deer running full speed in a corn stubble field was determined to out run me. As I slowly gained on the parallel running deer in that eighth of a mile stretch I kept wondering when it would decide to veer left in front of me. I was ready for that to happen and I had enough distance to react since I really did not want to test out my grill guard. As I neared the field bordering high tinsel fence, the deer was still parallel as she cleared the fence and ran into some brush just as I passed on by.

For me, it was not the chase but the chance to see a wild animal exhibit the characteristic behavior we teach in our animal management classes called “Point of Balance.” There is a spot on an animal where you can make the animal move forward or backwards. That point is generally near the shoulder. If you walk towards an animal and you are in front of the shoulder they will turn away from you. If you are behind the shoulder, they will continue to move forward.

Several years ago, we produced a video used in programs to teach law enforcement officers how to handle escaped animals. In that video Purdue Beef Specialist, Ron Lemenager takes a step in front of the shoulder of a beef animal, at this point the animal stops. He then takes a step back and the animal goes ahead. He does this about five times before letting the animal proceed by stepping back.

We also did this with a hog and a person carrying a hurdle board beside it. That person was in a hurry and every time the hurdle got in front of the shoulder the hog stopped.

The animal characteristic that leads to this is the eye placement. Our farm animals are considered prey species. In the wild they would be eaten by predators and so cattle have developed an eye set that allows them to see a little more than 300 degrees around them. Think of it as panoramic vision. They can easily detect movement behind their shoulders but not as far back as behind their tail. Conversely, they cannot see horizontally as good as we can. Humans can see about 140 degrees up and down and cattle can only see around 60 degrees. This is why cattle must lower their heads to focus on something on the ground. (cont. to page 7)

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This is also why deer hunters use tree stands to escape the view of their quarry.

Binocular vision is what humans have where we use both eyes to focus on an object, allowing the perception of depth, speed and distance. Cattle have binocular vision up to the 50-degree range in front of them. Along their sides, they know something is there but they cannot focus and tell exactly what it is.

Part of animal husbandry is knowing how to use their biological makeup to our advantage. Walking directly behind an animal will put you in their blind spot. To effectively get them to move walking in a zigzag pattern will allow you to be seen out of both of their eyes and will get them to move straight ahead. If the handler is walking on one side they will eventually curve away.

In a group of cattle, the point of balance is the shoulder of the lead cow. Someone zigzagging behind the group and other people walking along side can get the herd to move. The people walking on the side should never get ahead of the shoulder of the lead cow.

The running deer is in panic mode and it sees the truck in its monocular vision so it views itself as being chased. In this mode my truck is well past the point of its shoulder and its mind is focusing on what is ahead of it. This illustrates another principle that we teach in livestock classes and that is, animals can only process one thought at a time. That animal is only concerned about the fence and brush that lie ahead it will have to navigate. It is in flight or fight mode and some of our animal handling knowledge and technique no longer work. I will never forget the day-old calf that I tried to catch and tag. It took off on a dead run through the high tinsel fence and across a twenty-acre field before it was stopped by a short span of woven wire fence. When I finally caught up to it, it put its head down and charged me. It didn't care where its mom was, it was in panic mode with only one thought on its mind. That was one of many experiences where I learned that calving pastures need to have woven wire fences.

# ***Plant Psychology***

Written by Mark Kepler

Purdue Extension Educator, ANR—Fulton County

I come from a small livestock farm near Culver. My dad's life revolved around livestock. Milking those cows were more of a love than a labor. I am sure that when his life transformed from mules to tractors, as the power source, he very much lamented the animal loss. Over the past years I have been able to spend more time with animals both on my farm and in my profession. Understanding how they see the world is important no matter what plant or animal you raise. That's right, I said plant.

One of my favorite topics when I teach gardening courses is plant psychology. This is not something you are going to pick up and read in a text book, but my way of understanding what plants think. Now I will agree they do not have a brain, but what they do possess is the genetic material and processes for them to exist as a species. These processes are unique to each species and many times they have evolved from where they originated in the world.

What is a plant's goal in life? The answer is, to reproduce the species. In order to accomplish that, it has developed certain characteristics. Let's take for example the tomato. Its native homeland is Central and Southern America. It was cultivated by the Aztecs. In that area of the world are some good soils and the tomato plant would grow just fine on those soils. Knowing its goal in life was to reproduce, it would put on tomato fruit that would drop to the ground and reseed. We start a breeding program with this plant and develop an untold number of varieties, bring it to our garden and fertilize it.

Gardeners that fertilize this plant with excessive amounts of nitrogen will tell you of all sorts of vegetative growth and few tomatoes. It's like the plant senses that there is no worrying about reproducing its species, all it feels like it needs to do, in this fertile soil, is drop a few fruit and it will easily reproduce.

Apples are similar. Apples originate in the fertile crescent area of the world that includes Egypt and Turkey. These are harsh dry soils where it would reproduce in large numbers so that there would be a chance one of the offspring would take root. Planting the tree in our productive soils and fertilizing it with nitrogen, it again need only throw out a few fruit to accomplish its goal in life. The old-time orchardist, hoping for a large crop, would take out his pocket knife, jab it into the bark and cut a partial circle around the tree. If trees could talk, you would have heard it yelling, "I'm dying, I dying!" It would then push out a heavy crop of apples in its goal of reproducing the species. The wise old orchardist would have only done enough of this just to trick the tree but not kill it.

With some of our slow-reproducing perennial species like wisteria, lilac and apples, I advocate root pruning instead of the pocket knife. Here you take a spade, about 2 foot from the tree and cut off about a third of the roots in mid-summer to spur on bud formation for next year.

With the alfalfa plant you can get into some real psychoanalysis. There are lots of plants that produce toxins in their roots that make it difficult for other plants to grow around it. We call this allelopathy. Walnuts are the classic case of having roots that are toxic to certain other plants. The walnut root will kill tomato plants. Field crops such as rye and sunflowers also have this effect on certain other plants. It is their way of saying "Back Off!"

The mother alfalfa plant has this same toxicity but only to its own seed. If its own kids try to grow within about 18 inches of mom it will die. No "Mother of the Year" award here. Farmers planting alfalfa seeds into an established alfalfa field are just wasting their time. A thin stand of alfalfa has to be rotated out into another crop for as much as two years before alfalfa can be grown again.

Again, alfalfa originated around the northern coast of the Mediterranean in a hot dry desert. Development of this trait known as autotoxicity may have reduced competition to mom from nearby new seedlings for scarce soil moisture. It was her way of survival, at the same time forcing her seeds to develop further away and essentially increasing the growing area of this plant. These children were not coddled but given the characteristics to make it on their own. One of the characteristics of alfalfa is a deep tap root that searches out moisture. One such tap root found in an underground mine in Nevada was at 129 feet.

For me, plant psychology is more of an understanding of the plant we are growing and our ability to recognize what it wants. Kind of like a, "feel my pain" session. Just like the old song, "to know, know, know you is to love, love, love you. . . ."



## *The Why and the Who of farming*

As a child growing up on a dairy and general livestock farm, there were a variety of animals to feed and care for. I had my set of chores to do, I was told what and how much to feed the pigs, calves, rabbits, goats, and cattle. I did my job contributing to the farm including a multitude of fieldwork activities.

As I aged and became more educated, more of a feeding perspective came into play. Just like the little child who is told to do something that comes back with the answer of, “Why?” We need to start knowing not just how but why we do certain things.

I used this example in a presentation last month. One of the first things we graduate to do is mow the lawn. You are told that the gas you use for the push mower must be the special one in the marked can. Are you told why? Probably not right away but eventually you will learn that the lawn mower needs oil to stay lubricated and unlike the tractor there is no oil pan from which the cylinders can splash oil up to keep proper functions. So, the oil is mixed with the gas for the lawnmower, chainsaw, weed trimmer, and various other small engines to accomplish the proper lubrication. Now we have learned, the why.

How many of us are still feeding animals the way grandpa did? Getting the same ration mixed at the elevator for the past decade even when the nutritional needs of livestock have changed as well as the ingredients we could possibly be used in the feed. We now have soy hulls, distiller grains (in various forms), corn gluten feed, cottonseed meal, and others.

We even are seeing the nutritional characteristics of these feed change. When I started figuring corn protein content 40 years ago, we used 8.9%, today that level has fallen to about 8.2% depending on the growing year. Original corn, called teosinte contained 20–30% protein. Protein was lost as we continued to breed for yield. Do we employ a nutritionist to balance a ration to reflect nutrient needs and prices? Why not? We do a lot better job at soil testing than ration balancing.

Last summer I was visiting my relatives in South Dakota where I was in a pasture field next to a hay field. I noticed how much better the pasture looked than the hay. I found out the hay field is never fertilized. Never meaning many decades. The pasture is not losing phosphorus and potassium like that which is being taken away in the hay. In fact, it may be gaining as hay is fed in pasture areas.

I know better than to judge how one part of the country farms in comparison to us. The ranch land is dotted with the foundations of abandoned homesteads of people that came from the East and farmed the way it was done back East until they went broke. Fertilizer returns, especially nitrogen is risky on that dry land. I am taking a soil probe with me this next summer as my curiosity is aroused. Two samples. One in the pasture and one in the hay field. I will see if it helps tell, why the difference. Just another set of curious eyes is good to have around.

I think many of us grazers are asking why questions. We are trying different combinations of forages, utilizing variations of the old forages such as late maturing orchardgrass and low endophyte tall fescue and understanding better the process of forage growth and animal behavior.

Soil is no longer dirt but an active biological system containing not just the bad weed seeds and disease-causing fungus but also one particularly beneficial and important type of fungi called arbuscular mycorrhizae. These fungi form a mutually beneficial relationship with 80 percent of all land plants, including most agricultural crops.

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It is a system if left undisturbed, like in a pasture field, it can increase the resistance of the crop to root diseases by acting as a physical barrier as well as a pathway for nutrients. It is part of why leaving the ground undisturbed improves soil health and function.

Why does rotational grazing increase yield? We have had many authors talk about this over the years. Sunlight is one of the major reasons. National corn yields have increased yearly and much of that is the genetic improvement that allows the plant to catch more sunlight. Most of today's corn hybrids have more leaves above the ear.

In the pasture, when we leave more photosynthetic grass tissue behind after grazing it traps more sunlight for a better growth spurt. Photosynthesis is a 6th-grade subject but a lifelong learning process as we improve our farming abilities to trap and use it for our life goals. Our forages are just like all these solar panels we are starting to see that is taking advantage of the abundant sunlight as an energy resource. We all have these things we wonder about. Sometimes we don't take the time or know where to find the answers.

The knowing part, I call "The Who." We need to know who can help us solve the complexity of our farm and lives. That originally may have been our ancestors but it has gone well beyond that group. Some may be the "been there, done that" people in our neighborhood. They also can be the people to tell you "Who" might answer your questions and guide you to those that can help.

The who can help you stay away from the most nagging phrase of all, the could of, would of, should of.

Mark Kepler

Purdue Extension Educator, ANR

Fulton County

Finally, many of the calls I receive and the people that stop by our office have questions about a multitude of issues they need to address both around the home and farm. In this article, I talk about "why" and "the who" I hope that I have been able to accomplish though my career being one of "the who" for you.

