

Auglaize County OSU Extension Weekly Agriculture Newsletter – March 4, 2020

Scouting and Latest Information



Hello!! Good afternoon! I pray you are well. Sorry for the delay in the newsletter, but I was at the Conservation Tillage Conference the last two days.

If you are a buyer or seller of hay, let me know and I can keep a list to share with others. Call the OSU Extension office at 419-739-6580 or e-mail me at stachler.1@osu.edu.

We are quickly nearing the end of the farm bill sign up. Get into the office or call to make an appointment. If you do not get an appointment prior to March 15th, then you will not receive any 2019 payments that may be available!! If you need help deciding what to do, feel free to contact the Extension Office for an appointment or visit the following web address for the decision aid tools: <https://aede.osu.edu/research/osu-farm-management/2018-farm-bill/arcplc-decision-aid-tools>

I'm looking for people to conduct research with me this season, especially research on waterhemp. Please contact me soon so we can get things lined up. If you have any suggestions on research, let me know.

If anyone is interested there is a grower in the county that would like to hire someone to do some strip tillage this spring as he will not have time to plant and make strips at the same time. If you are interested in doing this or know of someone who is interested, please contact me and I will get you in touch with the farmer.

NRCS gave OSU extension some money to hire people to work in water quality. These people have now been hired with a job title as Extension Associates. They will be tasked with conducting research and

educational programs in water quality. Because of being the head-waters of the Western Lake Erie basin it was proposed to house one of these individuals here in Auglaize County. The individual that will be residing in the county and also working in Allen and Mercer Counties is Brigitte Moneymaker. She is originally from Virginia near the Chesapeake Bay.

Brigitte has a B.S. degree in Environmental Sciences and a Minor in Soil Science and Environmental Writing and Rhetoric from State University of New York. Brigitte has a M.S. degree in Climate and Society from Columbia University in the City of New York.

Here is a photo of Brigitte. Let's welcome her to our county.



Here is some information provided to Extension Educators this week about paraquat:

As of November 14, 2019, registrants of paraquat containing products (Gramoxone, Firestorm, Helmquat, Parazone and others) were required to have newly labeled products on the market. Paraquat training is now mandated by the USEPA for all certified applicators who intend to load, apply, mix or handle paraquat. Only licensed pesticide applicators can legally apply paraquat products and direct supervision is no longer permitted. Training is required every three years and may be completed online here: paraquattraining.com (approx. 60 min) or by attending an in-person paraquat training. I may provide training to you. Your applicators will need to score 100% on the quiz to receive their certificate (template provided through NPSEC).

Please see attachment for more details pertaining to the paraquat training requirements and additional resources. Here is the EPA link, as well: <https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators>

Joke: If a cow laughed really hard....

Snow and rain fell in the past week! Water from the snow on Wednesday, February 26th ranged from 0.05" near Valley and Idle Roads to 0.2" near County Road 66A and Dowty Roads, near County Road 66A and St. Rt. 66, and near Uniopolis. Rainfall on Monday ranged from 0.16" near Bloody Bridge to 0.42" near Valley and Idle roads. Total liquid equivalent precipitation for the week ranged from 0.26" near Bloody Bridge to 0.52" near County Road 66A and Dowty Roads. Rainfall for the week averaged 0.4", 0.1" more than last week. Total liquid equivalent precipitation for the month of February ranged from 2" near Mercer Line and St. Rt. 197 to 3.23" near County Road 66A and Dowty Roads. The average total liquid equivalent precipitation for the month of February was 2.8". The average historical rainfall (liquid precipitation equivalent) for the month of February is 2.23". Rainfall for the year so far is 6.65", 2.05" above the historical average!

The average high temperature now is 42 degrees F, two more than last week! Temperatures were above normal for 2 days of the week and below normal for 5 days of the week. The average high temperature for the week was 37 degrees F, which is 2 degrees less than last week and below normal. The average high temperature for February was 31.48 degrees F, which is 5.5 degrees F below normal.

Wheat – I have not rated the wheat for some time. I rate the wheat the same as last week which was 7% excellent, 29% good, 69% fair, and 0% for poor and very poor.

Alfalfa – Nothing to report.

Corn – There is still corn to be harvested in the county.

Soybean – Nothing to report.

Weeds – If you need help planning your herbicide programs, feel free to call the office.

Insects - No report.

There were NO changes to the XtendiMAX, FeXapan, Engenia, and Tavium labels. The Engenia label still has the most approved products compared to XtendiMAX and FeXapan. No new herbicides were added to the XtendiMAX label this past week, which totals 234 herbicides. No new adjuvants were added to the XtendiMAX label, now totaling 397. No new nozzles were added to the XtendiMAX label, which totals 36. No new Drift Reducing Adjuvant (DRA's) were added to the XtendiMAX label this week, making a total of 90 DRA's. No new nutritional products were added from the XtendiMAX label which totals 238. No new products were added to the Insecticides, Fungicides, Plant Growth Regulator and Other group on the XtendiMAX label which totals 104. No new adjuvants were added to the Engenia label, which now totals 549. No new herbicides were added to the Engenia label, which brings the total herbicide count to 160. No new products were added to the Other category (growth regulators, and fungicides) on the Engenia label, which totals 31. No new insecticides were added to the label which currently has 34 products. No new Drift Reducing Adjuvants (DRA's) were added to the Engenia label, which totals 119. No new nozzles were added to the Engenia label, which totals 31. No new nutritional products were added to the Engenia label which totals 222 products. No new products were added to the pH Modifier group of the Engenia label which totals 17 products. The FeXapan label has many of the same products and nozzles as the XtendiMAX label, but NOT all are the same, so check the FeXapan label carefully. There are 120 herbicides, 49 DRA's, 312 adjuvants, 151 nutritionals, 44 insecticides, fungicides, and others, and 26 nozzles that have been approved for the FeXapan label. There are 47 herbicides, 77 DRA's, 258 adjuvants, 30 nutritionals, 16, insecticides, 7 fungicides, 8 other products, and 41 nozzles approved for use with Tavium.

Upcoming Meetings

1. **New Fertilizer Applicator Training.** There are two sessions to this meeting, one from 1:00 to 4:00 PM and the other from 6:00 to 9:00 PM. The meeting date is March 11, 2020 and the location is the new Tri-Star Career Compact. Contact Mercer County Extension Office at 419-767-6037. If you know of someone that still does not have this certification, get them to come to this meeting.
2. **eFields Regional Meeting.** eFields is an Ohio State University program dedicated to advancing production agriculture through the use of field-scale research. This meeting will take place on March 16, 2020 from 9:00 AM to 12:00 PM at the Adult Applied Technology Center, 8901 Looney Road, Piqua, OH. No cost for the program. Register for meeting by March 10, 2020 by going to go.osu.edu/eFieldsMeeting. This meeting is to share 2019 research results from West Central Ohio and to discuss future research projects. This is an important meeting to attend to find out the latest information.
3. **New Pesticide Applicator Exam Preparation Course.** This meeting will be held March 23, 2020 from 8:30 AM to 12:30 PM in the downstairs room of Auglaize County Administration Building. Please pre-register before March 20, 2020 by calling the office at 419-739-6580 or e-mailing Stachler.1@osu.edu. There is no cost to the program.
4. **Pesticide Applicator Exam.** The ODA will be in the county on March 30, 2020 from 10:00 AM to 2:00 PM to offer pesticide and fertilizer applicator exams. The location is the downstairs room of the Auglaize County Administration Building. To register for the exam visit <http://pested.osu.edu/PrivateApplicator/testing>.
5. **Last Chance Pesticide and Fertilizer Applicator Recertification.** This meeting will be held March 31, 2020 for those individuals that still have not received their recertification courses. The meeting time is from 8:30 AM to 1:30 PM in the downstairs room of the Auglaize County Administration Building. Register for the class before March 30th by calling the office at 419-739-6580 or e-mailing Stachler.1@osu.edu. There is a \$10.00 fee for fertilizer only, \$30.00 fee for pesticide credits only and \$40.00 for both. Categories 1, 2, 3, 4, 5, 6, and 15 will be offered that day.

Answer to joke: Would milk come out of her nose?

What is Giant Ragweed and How to Manage it?



Giant ragweed is the most competitive and was the most prevalent weed in farmer's fields in Auglaize in 2018 County. Giant ragweed is a broadleaf plant that belongs to the Aster or Asteraceae family. The Aster family has the greatest number of species of any plant family. The scientific name for giant ragweed is *Ambrosia trifida*. Other common names for giant ragweed include horseweed, tall ragweed, great ragweed, kinghead, blood ragweed, and buffaloweed.

Giant ragweed has a summer annual life cycle meaning it completes its life cycle in one growing season. Therefore it germinates in the spring and begins flowering around August 1st to 15th and dies naturally in the fall or after a hard freeze. Giant ragweed is one of the earliest emerging weeds in the spring. It can germinate by the end of March of some springs!

Giant ragweed is easily identified. When it germinates it will have thick, fleshy, spoon-shaped cotyledons. The first true leaves are opposite and have no lobes or three small lobes, but will have a serrated margin. The first four to eight nodes of the plant will have opposite leaves, but then will switch to an alternating pattern.

The second or third node and all subsequent leaves will usually have three very large deep lobes, but it is possible to have no lobes or five lobes. The leaves can become very large being similar in size to a large-sized hand.

When it flowers the ending point of the branches are the male flowers, while the female flowers, which will turn into the seeds, are found in the nodes of the plant below the male flowering stems. This makes giant ragweed a monocious plant meaning that male and female flowers are separated from each other, but on the same plant similar to corn.

Giant ragweed plants commonly reach a height of six to eight feet. However, I have seen plants get over 20 feet tall! This usually happens in a low light intensity area with very thick giant ragweed densities or in a corn field.

Giant ragweed is extremely competitive! If nothing is done and it is dense it will completely eliminate corn and soybean plants. Research has shown that it takes only two giant ragweed plants per square meter to reduce corn yields 37 percent and only one giant ragweed per square meter to reduce soybean yield by 52 percent.

Giant ragweed can become resistant to herbicides somewhat easily due to its great genetic diversity. We know giant ragweed is resistant to Acetolactate Synthase (ALS) Inhibiting herbicides such as FirstRate and Classic and to glyphosate, Roundup, in individual plants or together in the same plant in Auglaize County. We believe that giant ragweed is also resistant to Protoporphyrinogen Oxidase (PPO) inhibiting herbicides such as Flexstar and Cobra in Auglaize County. We believe an individual plant can be resistant to all three types of herbicides in the county. When that occurs there are no longer any postemergence (after a plant emerges) herbicides to effectively control giant ragweed in Roundup Ready soybean. The only way to control these three-way resistant giant ragweed plants in soybean is to plant LibertyLink soybean and apply Liberty, plant Xtend soybeans and apply dicamba, or plant Enlist soybeans and apply 2,4-D!

To effectively control giant ragweed in soybean apply a combination of preemergence herbicides such as metribuzin (Sencor) and FirstRate or Classic. These are the only preemergence soybean herbicides that may be effective, but metribuzin is marginal and plants are likely resistant to FirstRate and Classic. Follow up with a postemergence herbicide application of glyphosate plus Flexstar in Roundup Ready soybean as there are not too many giant ragweed populations resistant yet to Flexstar. As mentioned above Liberty, dicamba, and 2,4-D will control giant ragweed as long as you have the appropriate soybean planted.

To effectively control giant ragweed in corn apply a preemergence herbicide containing atrazine at rates up to 1.5 to 2.0 pounds active ingredient, unless the soil is highly erodible. Including mesotrione, Callisto, or Balance Flexx with the atrazine will improve control. There is no preemergence herbicide alone or in combination that will control giant ragweed through the entire season because the preemergence herbicide

will dissipate before giant ragweed quits germinating which can be in mid-July. A postemergence herbicide or combination of herbicides will be necessary for complete control of giant ragweed, especially in fields having a history of giant ragweed. Bromoxynil, Callisto, Impact, or Laudis mixed with atrazine, 2,4-D, dicamba, Hornet, Stinger, DiFlexx Duo, DiFlexx, Status, and Liberty in LibertyLink corn can effectively control giant ragweed postemergence.

C.O.R.N. Newsletter

<https://agcrops.osu.edu/newsletter/corn-newsletter>

Some Good Weather News



Image courtesy of University of Illinois Extension

A warmer than normal March is now anticipated now. This is a change toward the warmer side. This will speed up green up conditions and start evapotranspiration early this spring. This will also help to dry out our really wet soils a little bit at least. The bottom line is things are shaping up to not be as tough this spring.

The outlook for March calls for above normal temperatures and near to a little bit above normal rain (but not as wet as it had looked like several weeks ago). <https://www.cpc.ncep.noaa.gov/>
The spring outlook calls for things to be warmer and slightly wetter than normal but not as wet as last year.

The summer is still leaning toward warmer than normal but a swing toward drier than normal.

Hence, the planting season appears not as tough as last year but there still could be some summer challenges ahead as dryness could develop. We do need to watch the above normal temperatures this spring.

The next 16-day rainfall can be found

here: <https://www.weather.gov/images/ohrfc/dynamic/NAEFS16.apcp.mean.total.png>

It is generally considered normal to slightly above normal. But it will be combined with above normal temperatures which will offset most of the normal to above normal rainfall areas.

Author(s):

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Rhizobia Inoculant Following the 2019 Season



Image courtesy of cropwatch.unl.edu

Following wet weather conditions and fallow fields, some producers are wondering if they need to inoculate their soybean seed with *Rhizobia*.

Soybean plants have a symbiotic relationship with bacteria in which the bacteria fix nitrogen from the atmosphere into a plant-available form of nitrogen. In soybean, nitrogen fixation is associated with *Bradyrhizobium japonicum* (commonly referred to as just *Rhizobia*). Generally, fields with a history of soybean production have an adequate population density of *Bradyrhizobium japonicum*. In our research

trials, we have measured a yield increase of approximately 1.5 to 2.0 bu/acre when soybean seed is inoculated and the field has a history of soybean production. However, statistically, this is only at the 70% confidence level (e.g., I'm 70% confident there is a 1.5 to 2.0 bu/acre yield increase when soybean seed is inoculated when the field has a history of soybean production.)

What about fields that were flooded? In Wisconsin, researchers examined *Rhizobia* populations and effect of inoculant following flooded field conditions the previous year. Trials were conducted in three field locations that were flooded for at least three weeks. Soybean yield was not influenced by inoculant (four inoculant products tested). Even following a flood, *Rhizobia* populations were adequate for crop growth. However, if large amounts of soil or plant residue from an unknown origin were deposited in the field, *Rhizobia* inoculation may be necessary.

What about fields that were never planted? When fields remain unplanted, there may be a decline in beneficial mycorrhizal fungi, which is commonly referred to as "fallow field syndrome." Keep in mind *Bradyrhizobium japonicum* are bacteria, not fungi. There is very limited information on the effect of fallow fields on *Rhizobia* populations. However, if soybean were planted sometime during the past three years, there should be an adequate *Rhizobia* population.

If you are concerned about having adequate *Rhizobia* populations in your fields, inoculant is a relatively cheap insurance.

Reference:

Furseth, B.J., Conley, S.P., & Ané. (2011). Soybean response to *Rhizobia* on previously flooded sites in southern Wisconsin. *Agronomy Journal*, 103, 573-576. (Available at: <https://acsess.onlinelibrary.wiley.com/doi/10.2134/agronj2010.0393>)

Author(s):

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Omitting residual herbicides in soybeans – really - we have to have this argument again?



Image courtesy of OSU Extension-Knox County

According to our network of sources, the effectiveness of new soybean trait systems has some growers once again thinking about omitting preemergence residual herbicides from their weed management programs. Some people apparently need to learn the same lessons over and over again. Having gone through this once in the early 2000's when Roundup Ready soybeans had taken over and we all sprayed only glyphosate all day every day, we think we're pretty sure where it leads. We're sensitive to concerns about the cost of production, but the cost-benefit analysis for residual herbicides is way in the positive column. We're not the ones who ultimately have to convince growers to keep using residual herbicides, and we respect those of you who do have to fight this battle. Back in the first round of this when we were advocating for use of residuals, while the developers of RR soybeans were undermining us and telling everyone that residuals would reduce yield etc, we used to have people tell us "My agronomist/salesman is recommending that I use residuals, but I think he/she is just trying to get more money out of me". Our response at that time of course was "no pretty sure he/she is just trying save your **** and make sure you control your weeds so that your whole farm isn't one big infestation of glyphosate-resistant marestail." And that answer probably works today too – maybe substituting waterhemp for marestail.

We need to state here that a good number of growers kept residual herbicides in their programs through all of this, and we assume they aren't tempted to omit them now either. For everyone else - maybe interventions are called for. Where the recalcitrant person is repeatedly thumped with a stick while being reminded of what happened last time, until they change their minds.

Weed scientist: so you're going to use residual herbicides right?

Soybean grower: no

Thump

WS: remember what happened last time – lambsquarters became a problem when every residual herbicide would have controlled it. Change your mind yet?

SB: no

Thump

WS: remember when the weather didn't cooperate and you ended up spraying 2 foot tall weeds because of no initial control? Do you want this again?

SG: no

WS: so you're going to use residuals?

SG: not sure

Thump

WS: and you expect your local dealer to clean up whatever mess occurs when you don't use residuals?

SG: yes

Thump

WS: remember when you burnt out the FirstRate on marestail and then the glyphosate wouldn't work? Do you want this to happen with dicamba, 2,4-D and glufosinate?"

SG: no

WS: well then

SG: maybe

Gentler persuasive tap

WS: You know how bad a weed waterhemp is right?

SG: yes

WS: what if residuals will help prevent waterhemp infestations

SG: Ok then – yes

WS: ok then

Note: we considered a number of sound effects here – thump, zap, whack.... Thump won out for no particular reason. We could not decide whether getting hit by a stick was more or less acceptable than getting shocked in this context.

The bottom line is that residual herbicides provide both short- and long-term risk management in weed management for a relatively low cost. A non-inclusive list of these:

- reduces weed populations overall and slows weed growth, resulting in more flexibility in the POST application window.
- Reduced risk of yield loss if weather interferes with timely POST application. In the absence of residual herbicides, soybean yield loss can occur when weeds reach a height of 6 inches.
- increases the number of different sites of action used within a season, slowing the rate of resistance development
- reduces the number of weeds that are treated by POST herbicides, which also slows the rate of herbicide resistance development
- residuals control lambsquarters which is not well-controlled by POST herbicides
- the most significant weed problems in Ohio soybean production – waterhemp, giant ragweed, and marehail – cannot be consistently controlled with POST herbicides alone. They require a comprehensive herbicide program that includes residual and POST herbicides. It may be possible to make a total POST system work some years or for a while, but in the end this approach will result in problems with control and speed up the development of resistance.

This whole subject of omitting residual herbicides makes us cranky because we don't have to guess what will happen. We've made our best case here. It's up to you of course, but we suggest that we not have to come back and have this discussion again. Because next time we're bringing a few friends, a bigger stick, and a gorilla.

Disclaimer: Parts of this article are meant in pure jest. We would certainly never advocate in earnest the use of physical harm or other methods of persuasion to change the behavior of herbicide users. This goes against everything that the discipline of weed science stands for, and also OSU. Plus - we don't even know where to rent a gorilla.

Author(s):
[Mark Loux](#)

Cover Crop Termination



Alyssa Essman was the lead author on this article.

The 2019 growing season came and went and left many fields in a state of disarray heading into 2020. Many growers that were unable to plant decided to use cover crops, to reduce soil erosion and provide some weed suppression during the extended fallow period. Terminating these cover crops using the right methods at the right time will be critical to ensure timely planting and prevent the cover crops from competing with cash crops. The three main methods of cover crop termination are natural (species that winter kill), chemical, and mechanical. Cover crops may also be bailed, grazed, or harvested as silage. Most species require some sort of management decision for termination. Cover crop species, growth stage, weather, and cover cropping goals should all be considered when planning termination method and timing. These decisions require a balance between growing the cover long enough to maximize benefits and terminating in time to prevent potential penalties to the following cash crop.

Natural Termination

Summer and fall planted cover crops that die naturally over the winter in Ohio include: oats, sorghum-sudangrass, tillage and oilseed radish, turnips, and winter pea (if planted after August). The use of these species can simplify spring management. However, they provide a shorter period of soil protection, especially if planted after a late harvest. For this reason, they are often included in some sort of species mixture with other grass or legume species that over winter to provide weed suppression and soil protection in the spring. Producers have also started to experiment with interseeding and broadcast seeding in the late summer or early fall. Doing so can maximize benefits from winter killed species and species mixes, and avoid the risk of not being able to plant cover crops in the event of a late harvest.

Chemical Termination

Termination with herbicides is reliable if applied at the appropriate herbicide rate and growth stage. Refer to the label for rate and surfactant recommendations. Glyphosate has proven to be an effective means of control. In general, grass species including wheat, barley, rye, oats, and annual ryegrass can be controlled with glyphosate alone or mixes that include glyphosate. Recent research shows that for these grass cover crop species, glyphosate alone or glyphosate plus 2,4-D, saflufenacil, or clethodim was most effective (Whalen et al. 2019a). Use caution when considering annual ryegrass as a cover crop species, as it is especially aggressive and can quickly turn weedy and escape chemical control. Systemic herbicides, such as glyphosate, are most successful when applied on warm, sunny days when plants are actively growing. Termination treatments should be applied before the boot stage of grasses. Control of grasses with paraquat and glufosinate often declines 4 weeks after application, relative to the longer-term effectiveness of glyphosate (Pittman et al. 2019). It is often recommended that cereal rye be terminated 10 to 14 days before corn planting to reduce the effects of allelopathy on the germinating corn crop. Soybeans are generally less susceptible to this effect from cereal rye, and some growers have had success planting into a growing stand of rye. As with all new practices, it is important to start experimenting on a small scale and work with your crop insurance agent regarding termination requirements.

Non-selective contact herbicides such as paraquat and glufosinate can also be used in the termination of cover crops, and can be beneficial in particularly cool springs. The key to successful termination with contact herbicides is complete coverage and including other herbicides in the mix that improve effectiveness. Legume species such as Austrian pea, crimson clover, and hairy vetch are best controlled using a mix of actives that include either paraquat or glyphosate (Pittman et al. 2019). Hairy vetch and crimson clover can also be controlled with 2,4-D. Recent multi-state research on cover crop termination shows that chemical applications which include glyphosate are more effective compared to applications that included paraquat or glufosinate. This study showed that for broadleaf cover crop species, glyphosate, paraquat, or glufosinate applied with either 2,4-D or dicamba were most effective (Whalen et al. 2019a). When making your spray plan keep in mind that some antagonism can occur if glyphosate and glufosinate are applied together, and also for grasses where a growth regulator herbicide is added to glyphosate. A follow up POST treatment of growth regulator herbicide and/or glyphosate in corn and certain soybean trait systems can complete control of covers that partially survive a burndown treatment.

Residual herbicides can be integrated into cover crop termination applications to reduce additional field passes. Preplant and POST termination applications that include a residual can provide effective cover crop termination and residual weed control. There is generally more weed control benefit from including the residual in preplant applications compared with inclusion in the POST application. Timing of termination and levels of biomass are often determined by the goals of the cover crop, and will impact the amount of residual product that reaches the soil. If high biomass is the goal, then later termination and inclusion of the residual with the POST application is recommended (Whalen et al. 2019b).

Recommendations for using herbicides to terminate a cover crop:

Cereal rye

- Generally easy to kill
- Glyphosate up to 18 inches
- Base rate: 0.75 lb ae (22 oz PowerMax)
- Increase the rate on taller rye
- Antagonism with residual herbicides possible, increase rates or apply separately
- Gramoxone can be effective
- Use high rates on tall plants
- Coverage is essential, 20 GPA
- More effective with atrazine or 28%

Winter wheat

- Tougher to kill than cereal rye, more issues with antagonism, weather, and rate
- Glyphosate up to 18 inches
- 1.1 to 1.5 lb ae (33 to 44 oz PowerMax)
- Increase rate on taller wheat, possible antagonism with residual herbicides
- 28% a concern, most effective when applied alone in water
- Most easily controlled when plants are small
- Gramoxone not consistently effective

Annual ryegrass

- Ryegrass should be less than 6 inches tall
- Control is faster in warm weather, cold weather slows herbicide activity
- Glyphosate is most effective

- 1.5 lbs ae/A minimum (44 oz PowerMax)
- Can use a higher rate if plants are large or in cold weather
- Can add Select, Assure II
- Gramoxone is variable, possibly high cost
- Terminate small plants at high rates
- More effective with atrazine
- 20 GPA is preferable, aim for medium spray droplets

Hairy vetch, winter pea

- Fairly easy to kill, large vetch especially
- Glyphosate plus 2,4-D or dicamba
- Glyphosate: 0.75 to 1.1 lb ae (22 to 33 oz PowerMax)
- Gramoxone is effective on larger hairy vetch
- Add 2,4-D and/or atrazine

Clover, alfalfa

- Not necessarily easy to kill
- Glyphosate plus 2,4-D or dicamba
- Glyphosate: 1.1 to 1.5 lb ae (24 to 44 oz PowerMax)
- Clopyralid is very effective on these species
- Surestart, TripleFlex, Hornet, Stinger
- Gramoxone is generally not a good choice
- Can kill larger crimson clover with 2,4-D

Mechanical Termination

Mechanical means of cover crop termination include tillage, rolling/crimping, or mowing. Tillage from field cultivators can terminate a cover crop by burying the plant residue and cutting the roots. Vertical tillage is a less effective termination option, and many types of tillage may require multiple passes to achieve the desired level of control. Strip-tillage can be performed to break up residue and increase soil warming in the row. Termination via tillage speeds up the breakdown of residue and incorporates it into the soil. In general, this method of termination can negate some of the benefits associated with using cover crops.

A roller-crimper can be used to control a number of cover crop species, but doing so at the right stage based on species is critical for complete termination. Cereal rye can be rolled after pollen shed to form a dense mat of residue. This can be an effective option, as this residue is capable of choking out weeds and conserving soil moisture in the hot summer months. Hairy vetch can be rolled in full bloom just before corn planting. This termination method might be suitable for organic operations looking for less soil-intensive means of weed control. The use of multi-species mixes can complicate termination via roller-crimping, as the different species often require termination at different times due to varying maturation rates. In these instances it is best to roller-crimp according to the latest maturing species. Mowing is generally less effective than tillage or roller-crimping, with often unpredictable effectiveness and regrowth of some species.

As you plan for the 2020 season and decide on methods to terminate your cover crop, contact your crop insurance agent to know your options and requirements.

References: Pittman K, Cahoon C, Bamber K, Rector L, Flessner M (2019) Herbicide selection to terminate grass, legume, and brassica cover crop species. *Weed Tech* 34: 48–54

Whalen D, Bish M, Young B, Conley S, Reynolds D, Norsworthy J, Bradley K (2019a) Herbicide programs for the termination of grass and broadleaf cover crop species. *Weed Tech* 34: 1–10

Whalen D, Shergill L, Kinne L, Bish M, Bradley K. (2019b) Integration of residual herbicides with cover crop termination in soybean. *Weed Tech* 34: 11–18

Author(s):

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2019 Challenges Linger



As farmers are preparing for the 2020 cropping season, the challenges of 2019 may still linger. There are basically 3 scenarios which will influence 2020 cropping practices.

1. Corn or soybeans were planted.

Yes, there were some acres of corn planted last year in NW Ohio. Storage of low test weight and higher moisture corn is creating mold and damaged grain. Above normal winter temperatures and humid air have interfered with proper aeration of storage bins. Farmers need to monitor grain bins and be prepared to unload before spring temperatures rise. Also, fall tillage was not done due to wet soil conditions. This may change tillage plans this spring. No-till soybeans into corn stalks are a better alternative.

Soybeans were planted later than normal in 2019. As a result, less wheat was planted last fall due to the late soybean harvest. Will more acres of 2020 soybeans be planted into those same 2019 soybean fields? If so, then choosing the correct soybean genetics is important so as to provide the best protection against soybean disease and cyst nematodes. Soybean seed treatment is especially important for second year planted soybeans to protect the young seedlings.

2. Prevent plant with cover crops.

Over 1 million acres of Ohio farmland did not have corn or soybeans planted in 2019. As a result, most farmers took advantage of cost sharing government programs and planted cover crops on the idle soil. Spring management of these fields will depend on the type of cover crops planted. If winter-killed, such as oats or radish, then the 2020 grain crop could be no-till planted into any remaining cover crop residue. If an overwintering cover crop, such as cereal rye, was used, then termination of the rye this spring will be needed. Termination can be done by tillage, crimper-roller, or herbicides. Herbicides are the most popular method. Timing of the herbicide application can be done as early as when spring growth begins, or delayed until planting of the grain crop to allow maximum biomass accumulation.

3. Prevent plant with bare soil.

This is the most challenging scenario for 2020. Since nature strives to keep soil covered, if a crop is not planted, then weeds will invade. During the summer and fall of 2019 farmers were challenged to control weeds on this bare soil. Tillage or herbicides were used and those effects will carry forward to the 2020 season. Tillage may have created compaction layers in the soil which can reduce yields. Herbicides may not have been 100% effective and surviving weeds can develop herbicide resistance which is passed on to 2020 germinating weeds. The 2020 herbicide program for these bare soil fields will require the correct chemistry to overcome resistant weeds. This can be more expensive and if control is lacking, then weed pressure reduces crop yields in 2020.

With continued wet spring soil, farmers must be careful not to ruin soil structure and need to wait for dry conditions. The effect of one machinery pass can cause compaction of soil that lasts for years. Continuing to use cover crops and no-till is the best management farmers have to overcome weather related challenges.

Author(s):

[Alan Sundermeier, CCA](#)

Mental Health First Aid Training Offered by OSU Extension



The wet weather of 2019 caused a great deal of stress for farmers and Ohio's agricultural industry. While we don't know what Spring 2020 will bring, there are indications that we may have another delayed start to the planting season. Ohio State University Extension educators and specialists responded last year with the creation of a website (<https://u.osu.edu/2019farmassistance/home/>) to address Ohio's agricultural challenges. This website continues to be maintained with resources that address agronomic crops, financial management, and stress management.

Ohio State University Extension, with funding assistance from the USDA Farm Stress and Rural Assistance Network, is offering Mental Health First Aid Trainings for agricultural professionals. Target audiences include agricultural businesses and service providers, financial planners and lenders, veterinarians, clergy, educators and others who work with farm clientele.

These one-day trainings will be offered mid-March thru mid-April at seven locations across Ohio:

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- March 18 FABE Building at OARDC Wooster
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- March 19 OSU Extension Regional Office, Caldwell
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- March 27 OSU Extension Fayette County
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- March 30 OSU Piketon
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- April 9 OSU Lima Campus

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- April 14 OSU Extension Butler County
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- April 17 OSU Extension Franklin County

The registration fee is \$20 per person and includes eight hours of training by OSU Extension professionals, materials and lunch. Space is limited at each location. Training begins at 8:15am and will conclude by 5pm. To register, please click here: <https://go.osu.edu/mhfa20>

Author(s):

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Fertilizer Applicator Certification Training

A three-hour fertilizer certification program will be held in Celina for any private or commercial applicator who needs to obtain fertilizer certification for the first time. This training will be held at the Tri-Star Career Compact, 7655 St. Rt. 703, Celina, Ohio, on Wednesday, March 11. The class will begin at 1:00 and end at 4:00 pm. There is a \$30 class fee payable to OSU Extension for this training.

This training will meet the fertilizer certification requirements for those with and without a pesticide license. Pre-registration is suggested by calling the Mercer County OSU Extension office at 419-586-2179.

Agricultural fertilizer applicator certification is required in Ohio for farmers who apply fertilizer to more than 50 acres of agricultural production grown primarily for sale. This requirement was signed into law in June 2014, and also requires certification for commercial agricultural fertilizer applicators.

Fertilizer is defined for the regulation as any substance containing nitrogen, phosphorus, potassium, or other plant nutrient in a dry or liquid formulation. All application types such as broadcast, side dress, sub-surface, knifing and others are included in the certification requirement. Lime and limestone are not included as fertilizer for the certification.

The agriculture fertilizer certification is not required for manure applications, unless farmers are applying livestock or poultry manure from a Concentrated Animal Feeding Facility.

The Ohio Department of Agriculture is the agency issuing the certification for agriculture fertilizer applications.

Author(s):

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Transition to Organic Grains Workshop



Is your farming operation looking for alternatives to commodity corn and soybeans? Have you been wondering how to add value to your operation? On Tuesday, April 7th from 9 am to 2 pm at the Robert Fulton Agriculture Center, 8770 State Route 108, Wauseon, OH, OSU Extension will be hosting a discussion of the opportunities and challenges associated with growing a value-added, organic grain crop. This discussion will be open to current, transitioning, or interested organic farmers, farmland owners, venders and grain buyers. The workshop will address three primary hurdles for transitioning to organic grains: market options, weed control and organic documentation.

Speakers include Julia Barton, Ohio Ecological Food and Farm Association, discussing the organic transition process including the required documentation and approved products for use. Then Dani Kusner, The Andersons-Organic Division, will walk through key organic agronomy principles that could possibly require a mindset change on your farm. A panel prior to lunch will address how farmers and venders offer

solutions to controlling weeds in organic systems. After lunch a ‘lightning round’ of organic vendors and service providers will highlight their products prior to wrapping up with an organic grain buyers panel that includes The Andersons, Kalmbach, and Kapi. For more information visit <https://fulton.osu.edu/news/transition-organic-grain-production-workshop> or call OSU Extension-Fulton County 419-337-9210.

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Other Articles

Widely used weed killer harming biodiversity

Study examines resilience of freshwater ecosystems contaminated by Roundup herbicide

MCGILL UNIVERSITY

Source: https://www.eurekalert.org/pub_releases/2020-03/mu-wuw030220.php



IMAGE: EXPERIMENTAL PONDS IN GAULT NATURE RESERVE.

One of the world's most widely used glyphosate-based herbicides, Roundup, can trigger loss of biodiversity, making ecosystems more vulnerable to pollution and climate change, say researchers from McGill University.

The widespread use of Roundup on farms has sparked concerns over potential health and environmental effects globally. Since the 1990s use of the herbicide boomed, as the farming industry adopted "Roundup Ready" genetically modified crop seeds that are resistant to the herbicide. "Farmers spray their corn and soy fields to eliminate weeds and boost production, but this has led to glyphosate leaching into the surrounding environment. In Quebec, for example, traces of glyphosate have been found in Montérégie rivers," says Andrew Gonzalez, a McGill biology professor and Liber Ero Chair in Conservation Biology.

To test how freshwater ecosystems respond to environmental contamination by glyphosate, researchers used experimental ponds to expose phytoplankton communities (algae) to the herbicide. "These tiny species at the

bottom of the food chain play an important role in the balance of a lake's ecosystem and are a key source of food for microscopic animals. Our experiments allow us to observe, in real time, how algae can acquire resistance to glyphosate in freshwater ecosystems," says post-doctoral researcher Vincent Fugère.

Ecosystems adapt but at the cost of biodiversity

The researchers found that freshwater ecosystems that experience moderate contamination from the herbicide became more resistant when later exposed to a very high level of it - working as a form of "evolutionary vaccination." According to the researchers, the results are consistent with what scientists call "evolutionary rescue," which until recently had only been tested in the laboratory. Previous experiments by the Gonzalez group had shown that evolutionary rescue can prevent the extinction of an entire population when exposed to severe environmental contamination by a pesticide thanks to the rapid evolution.

However, the researchers note that the resistance to the herbicide came at a cost of plankton diversity. "We observed significant loss of biodiversity in communities contaminated with glyphosate. This could have a profound impact on the proper functioning of ecosystems and lower the chance that they can adapt to new pollutants or stressors. This is particularly concerning as many ecosystems are grappling with the increasing threat of pollution and climate change," says Gonzalez.

The researchers point out that it is still unclear how rapid evolution contributes to herbicide resistance in these aquatic ecosystems. Scientists already know that some plants have acquired genetic resistance to glyphosate in crop fields that are sprayed heavily with the herbicide. Finding out more will require genetic analyses that are currently under way by the team.

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About the study

"Community rescue in experimental phytoplankton communities facing severe herbicide pollution" by Fugère V., Hébert M.-P., Costa N.B., Xu C.C.Y., Barrett R.D.H., Beisner B.E., Bell G., Fussmann G.F., Shapiro B.J., Yargeau V., and Gonzalez A. is published in *Nature Ecology & Evolution*. DOI: <https://doi.org/10.1038/s41559-020-1134-5>.

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Canada Research Chair Program (R.D.H.B., A.G., B.J.S.), the Quebec Centre for Biodiversity Science (QCBS), and the Groupe de Recherche Interuniversitaire en Limnologie et environnements aquatiques (GRIL). The Canadian Foundation for Innovation and the Liber Ero Chair in Biodiversity Conservation provided funding to A.G. to construct the LEAP mesocosm facility.

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