Hello Northeast Ohio Counties!

The warm weather, and scattered rain really made the crops popped up this past week. Based on the number of anhydrous tanks I saw on the roads, it’s safe to say there was a lot of side dressing going on last weekend.

With a short window for hay, many folks decided to give it a go. If you are putting hay in the barn, make sure it is less than 20% moisture to minimize the risk of fire. If you need to test your hay for moisture, call the Trumbull County Extension office.

Have a great week and stay safe!
High Temperatures Mean Higher Risk of Spray Drift
By: Erdal Ozkan
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/17-2021/high-temperatures-mean-higher-risk-spray-drift

Mean high temperatures for the month of June in Central Ohio vary between 75°F at the beginning of the month and approaches around 80°F towards the end of the month. We have seen extremely hot days in the first week of June temperatures reaching almost 90°F, almost 10-15 degrees higher than the mean temperature in the first week of June. The same can be said for other parts of Ohio. We are out in the fields spraying pesticides to protect crops from weeds, insects, and diseases. How do such high temperatures affect spray drift which is defined as the movement of pesticides applied leaving the intended target area? Spray drift is influenced by many factors. One of them is weather conditions. We have to be extremely careful when spraying under adverse weather conditions such as high wind, high temperature, and low relative humidity.

Since evaporation of liquid from a droplet decreases its mass, it also influences the drift distance of the droplet. Evaporation rates of droplets by time vary depending on the initial size of droplets at the time they are released from the nozzle, temperature, and relative humidity. Effect of temperature and relative humidity will be much greater for small droplets especially those smaller than 100 micron which is the approximate diameter of human hair.

Let me give you some examples to illustrate the influence of just the temperature and relative humidity on spray drift. I will tackle the effect of wind on drift in another article. These examples are coming directly from the Ohio State University Extension Publication FABE-525, “Effect of Major Variables on Drift Distances of Spray Droplets.”

<table>
<thead>
<tr>
<th>Low Temp.</th>
<th>High Temp.</th>
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<tbody>
<tr>
<td>High Rel. Humidity</td>
<td>Low Rel. Humidity</td>
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Pesticide drift temperature and relative humidity effect

**Northeast Ohio Agriculture**

**OHIO STATE UNIVERSITY EXTENSION**
Ashtabula, Portage and Trumbull Counties
Northeast Ohio Agriculture  

Ashtabula, Portage and Trumbull Counties

For this illustration, I will assume a wind speed of approximately 5 mph, relative humidity of 50%, and the nozzle height from the top of the target is 18 inches. I will give you drift distances of different sizes of droplets under two temperatures: 68°F and 86°F. Droplets under 100 microns will almost always drift some distance away from the discharge location, however, they may at least have a chance to deposit on the target at 68°F. However, the same droplet at 86°F temperature will likely evaporate at some distance away from the discharge location. For example, a droplet with an initial size of 70 microns at 68°F will likely deposit on the target after a drift distance of 6 feet. However, at the time of deposition on the target, the final droplet size will be reduced from 70 to 44 microns (a reduction of 37% in size). The same 70-micron droplet at 86°F will completely evaporate after traveling only 13 feet. In contrast, a 150-micron droplet under similar conditions will be affected much less by the temperature. It will lose its size by only 2 or 3% of its size at 68°F and 86°F, respectively. It will deposit on the target after drifting only about 3 feet.

So, these numbers tell us one very important message: If you must spray at high temperature and low relative humidity conditions, here are some options you can choose to diminish the effect of high temperatures on spray drift. The first option is to choose nozzles that will reduce the number of droplets smaller than 100 microns. Check the nozzle manufacturers’ websites to see which nozzles will provide droplets larger than 100 microns under the spray pressure conditions you will be doing your spraying. The second option is to reduce spray pressure and adjust the sprayer travel speed accordingly to make sure the gallons per acre application rate remains the same. Always remember, the higher the spray pressure, the higher the number of drift-prone droplets discharged from the same nozzle. The third option is to add so-called “drift retardant” adjuvants in the spray mixture to bump up the droplet size spectrum and reduce the number of drift-prone droplets. However, if you want to choose this last option, always check the pesticide label to make sure they allow adding drift retardant chemicals into the spray mixture. Some pesticides provide a list of specific drift reduction products or adjuvants that can be used. So, please check the pesticide label before adding drift retardant chemicals or other adjuvants to the spray mixture.

Maximizing Returns from Double Crop Soybean

By: Adityarup “Rup” Chakravorty

Double cropping is a practice where farmers harvest one crop, and then plant and harvest a second crop in the same field – all within the same year. It allows farmers to
make the most out of the limited growing season.

By double cropping soybean after winter wheat, farmers can increase their net returns. These increased returns come without needing to farm additional acreage.

“Often, research is focused on single crop soybean,” says Carrie Knott, member of the American Society of Agronomy. “But there is a real need for research in double crop systems, as well.”

A new study from Knott and her team has determined soybean characteristics that can maximize chances that farmers will profit from double cropping soybean. The research was published in *Agronomy*.

The researchers tested several soybean relative maturity groups and seeding rates. “These are two agronomic practices every producer must consider,” says Knott.

Soybean relative maturity groupings are a numerical scale that describe how fast soybean varieties develop in relation to day lengths in different regions. In general, the lower the number, the faster the soybean plants are ready for harvest.

Much of the previous research on double cropping soybean is 30 to 40 years old. Knott and her colleagues wanted to make sure that the current recommendations for double crop soybean were still valid to maximize seed production and profitability.

“Weather conditions have changed during that time,” says Knott. “They are predicted to keep changing in the coming years, as well.”

Double crop soybean accounts for about 10% of soybeans produced in the Upper Mid-South and Ohio River Valley regions. However, that figure was as high as 36% of the region’s soybean production in the past.

“The logistics of the double crop system can be very demanding at times,” says Knott.
There is potential for reduced profitability. There are also some increased risks associated with producing double crop soybean.

Knott and her colleagues set out to identify profitable farming strategies for double crop soybean. They also aimed to understand the various risk factors.

Study sites were in western Kentucky. Four soybean relative maturity groups at five different seeding densities were tested over two growing seasons. The researchers determined the relative maturity groups and seeding densities that produced the highest yields.

According to the study, the longest relative maturity groups had the highest yield. Also, the highest seeding rates led to the highest yields.

But Knott and her colleagues wanted to learn about more than yields. They used risk analyses to find which relative maturity groups and seeding rate combinations maximized the likelihood of positive net returns for farmers.

Results show that planting soybean relative maturity group 4.7 at 200,000 seeds per acre would have the highest probability of creating a positive net economic return.

“These findings support the use of a longer relative maturity group as well as an increased seeding rate to maximize yield and economic net benefit,” explains Knott.

The maturity group recommendations from the study matched the existing 40-year-old recommendation. “Weather patterns have changed considerably in the last 40 years,” says Knott. “So, we were very surprised!”

“Double crop soybean producers have been very interested in our results,” says Knott. “They are happy to finally see data on intensive double crop soybean production.”

Northeast Ohio Agriculture
A Spring Full of Pesticide Law, Part 2
By: Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law
Source: https://farmoffice.osu.edu/blog/wed-06022021-200pm/spring-full-pesticide-law-part-2

It’s been a busy spring for legal developments in pesticides and insecticides. Our last article summarized recent activity surrounding dicamba products. In today’s post we cover legal activity on glyphosate and chlorpyrifos.

**Roundup award.** The Ninth Circuit Court of Appeals dealt another loss to Monsanto (now Bayer) on May 14, 2021, when the court upheld a $25.3 million award against the company in *Hardeman v. Monsanto*. The lower court’s decision awarded damages for personal injuries to plaintiff Edward Hardeman due to Monsanto’s knowledge and failure to warn him of the risk of non-Hodgkin lymphoma from Roundup exposure. Monsanto argued unsuccessfully that the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) preempted the plaintiff’s claim that California’s Proposition 65 law required Monsanto to include a warning about Roundup’s carcinogenic risks on its label. That requirement, according to Monsanto, conflicted with FIFRA because the EPA had determined via a letter that a cancer warning would be considered “false and misleading” under FIFRA. The Ninth Circuit disagreed that the EPA letter preempted the California requirements.

The Court of Appeals also held that the trial court did not abuse its discretion in allowing the plaintiff’s expert testimony. Monsanto had challenged testimony from a pathologist whom it alleged was not qualified to speak as an expert. But the court agreed that the witness testimony met the standard that expert opinions be “reliably based” on epidemiological evidence.

Monsanto also challenged the damages themselves. The award in Hardeman included $20 million in punitive damages that the district court reduced from $75 million originally awarded by the jury. While $75 million seemed “grossly excessive,” the appellate court reasoned, $20 million did not, especially considering Monsanto’s reprehensibility, because evidence of the carcinogenic risk of glyphosate was knowable by Monsanto.

**Roundup settlement.** In a second Roundup case, a California district court last week rejected a motion to approve a $2 billion settlement by Monsanto (now Bayer) to a proposed class of users exposed to Roundup or diagnosed with non-Hodgkin lymphoma who have not yet filed lawsuits. The offer by Bayer in *Ramirez, et al. v. Monsanto Co.* included legal services, compensation, research and assistance with non-Hodgkin lymphoma diagnosis and treatment, and changes on the Roundup label.
advising users of a link to non-Hodgkin lymphoma, but would require class members to waive their right to sue for punitive damages if they contract non-Hodgkin lymphoma and stipulate to the opinion of a seven-member science panel about whether Roundup causes non-Hodgkin lymphoma.

The judge determined that the settlement would accomplish a lot for Bayer by reducing its litigation and settlement exposure, but it would greatly diminish the future settlement value of claims and “would accomplish far less for the Roundup users who have not been diagnosed with NHL (non-Hodgkin lymphoma)—and not nearly as much as the attorneys pushing this deal contend.” The court also determined that the benefits of the medical assistance and compensation components of the settlement, to last for four years, were greatly exaggerated and vastly overstated. The proposed stipulation to a science panel also received the court’s criticism. “The reason Monsanto wants a science panel so badly is that the company has lost the “battle of the experts” in three trials,” the court stated. Concluding that “mere tweaks cannot salvage the agreement,” the court denied the motion for preliminary approval and advised that a new motion would be required if the parties could reach a settlement that reasonably protects the interest of Roundup users not yet diagnosed with non-Hodgkin lymphoma.

Bayer responded to the court’s rejection immediately with a “five-point plan to effectively address potential future Roundup claims.” The plan includes a new website with scientific studies relevant to Roundup safety; engaging partners to discuss the future of glyphosate-based producers in the U.S. lawn and garden market; alternative solutions for addressing Roundup claims including the possible use of an independent scientific advisory panel; reassessment of ongoing efforts to settle existing claims; and continuing current cases on appeal.

**Chlorpyrifos.** The insecticide chlorpyrifos also had its share of legal attention this spring. Chlorpyrifos was first registered back in 1965 by Dow Chemical but its use has dropped somewhat since then. Its largest producer now is Corteva, who announced in 2020 that it would end production of its Lorsban chlorpyrifos product in 2021. That’s good timing according to the strongly worded decision from the Ninth Circuit Court of Appeals, which ruled in late April that the EPA must either revoke or modify all food residue tolerances for chlorpyrifos within sixty days.

The plaintiffs in the case of *League of United Latin American Citizens v. Regan* originally requested a review of the tolerances in 2007 based on the Federal Food, Drug and Cosmetic Act (FFDCA), which addresses pesticide residues in or on a food. FFDCA requires EPA to establish or continue a tolerance level for food pesticide residues only if the tolerance is safe and must modify or rescind a tolerance level that is not safe. Plaintiffs claimed the tolerances for chlorpyrifos are not safe based upon evidence of neurotoxic effects of the pesticide on children. They asked the EPA to modify or rescind the tolerances. The EPA denied the request, although that decision
came ten years later in 2017 after the agency repeatedly refused to make a decision on the safety of the product. The Obama Administration had announced that it would ban chlorpyrifos, but the Trump Administration reversed that decision in 2017.

Plaintiffs objected to the EPA’s decision not to change or revoke chlorpyrifos tolerance, arguing that the agency should have first made a scientific finding on the safety of the product. The EPA again rejected the argument, which led to the Ninth Circuit’s recent review. The Ninth Circuit concluded that the EPA had wrongfully denied the petition, as it contained sufficient evidence indicating that a review of the chlorpyrifos tolerance levels was necessary. The EPA’s denial of the petition for review was “arbitrary and capricious,” according to the court. “The EPA has sought to evade, through one delaying tactic after another, its plain statutory duties,” the court stated.

More to come. While the spring held many legal developments in pesticide law, the rest of the year will see more decisions. The Roundup litigation is far from over, and the same can be said for dicamba. How will the EPA under the new administration handle pesticide review and registration, and the court’s order to address chlorpyrifos tolerances? Watch here for these and other legal issues with pesticides that will outlive the spring.

**Ohio State expert: Lessons learned from COVID-19 pandemic likely to stem potential meat supply shortage**

By: Tracy Turner


Consumer alert: There’s no need to panic and no need to stock up on meat as of now.

Despite this week’s cyberattack on JBS USA—one of the largest meat producers nationwide—beef and pork supplies could possibly avoid being in short supply at grocery stores, and consumers should not panic just yet, says Lyda Garcia, an assistant professor of meat science and an Ohio State University Extension meat specialist. OSU Extension is the statewide research arm of Ohio State’s College of Food, Agricultural, and Environmental Sciences (CFAES).

JBS is one of four large-scale meat producers, accounting for an estimated 20% of beef production in the United States. The Brazilian-based company suffered a cyberattack last weekend, prompting it to shut down its plants in North America and Australia, according to published reports.
However, the company announced in a written statement that it “took immediate action, suspending all affected systems, notifying authorities, and activating the company’s global network of IT professionals and third-party experts to resolve the situation.” The company said it expects that the vast majority of its plants would be back on Wednesday.

And even if there were a meat shortage as a result of the cyberattack, it likely would only ripple down to a couple of days or so, Garcia said.

“We still have three other large-scale meat packers that make up some 80% of the nation’s beef and pork supplies,” she said. “Retail stores may see a little hit, but there’s no need to panic. There is plenty of meat out there.”

Garcia said that even if grocery stores start to show limited supply as a precaution to prevent any meat shortages, consumers can still purchase meat from local meat processors, who are working overtime processing meat as a result of supply chain issues stemming from COVID-19 closures from earlier in the pandemic.

“In fact, small meat processors are still going strong. Many of them are booked until 2022,” she said.

As COVID-19 spread through the nation’s largest meat-processing facilities last spring, some temporarily closed or reduced hours because so many employees were out sick. Meanwhile, orders piled up. As a result, many local processing facilities took the orders instead.

“Small, local meat processors are still in full operation and are still running on overdrive,” Garcia said. “I don’t think consumers have to start stocking up like many did during the earlier days of the pandemic.

“We’ve learned a lot from the hit that meat producers took from COVID-19. Because of what they learned, meat producers are doing everything in their power not to get to the point of a meat shortage again. That doesn’t mean that it can’t happen, but we’re more informed, more educated, and more prepared now because of lessons learned from COVID-19.”

One of those lessons learned from COVID-19 was the need for more local meat processors, Garcia said. In response to that increased demand, at least eight new meat-processing facilities have started up in Ohio since last fall, she said.

Garcia, as part of an effort to serve Ohioans, organized a team from CFAES that created a free online “toolkit” with questionnaires, links, and other resources to help people fully think through starting up a meat-processing facility.
Using the toolkit, a prospective entrepreneur can discover livestock inventories by county throughout Ohio, business model options, guides to creating a business plan, contacts in the meat industry, and a host of other resources.

“If they can go through and answer questions from the questionnaires, they’ll have a good idea of what’s involved,” Garcia said.

The toolkit touches on several challenges regarding launching a meat-processing business, including finding land for the facility, securing a bank loan, getting commitments from enough producers, and attracting a customer base.

“It’s a complex system and I recognize the toolkit is only 60% of what they need, but it is definitely a good start,” she said. “The other 40%, they’re going to have to learn as they go.”

To access the free meat toolkit, visit go.osu.edu/meatoolkit. To find out about a series of meat-cutting workshops, visit go.osu.edu/meatworkshops.

What Can You Do with a Degree in Agronomy, Crops, or Soils?

By Rachelle LaCroix, Cornell University, Ithaca, NY; Lauren Schwarck, Purdue University, West Lafayette, IN; and Paige Boyle, Utah State University, Logan, UT


So, you’ve realized how much you enjoy learning about agronomy, crops, and soils and are considering pursuing a degree in one of these fields. Undoubtedly, the program itself will be fulfilling and enjoyable since you’ll be spending time doing what you’re passionate about. But if you’re unsure what type of careers a degree in agronomy, crops, or soils will prepare you for, we are here to offer some insight into different paths you should consider for the future.

Academia
A traditional path is to pursue higher education to become an educator. Typically, this means completing a doctoral program to pursue faculty positions at a college or university. Academic positions usually entail teaching, research, extension, or some combination of the three. These positions can be extremely competitive, and it’s quite rare to find ones without research output expectations (i.e., papers, presentations, and well-trained students). If you’re primarily interested in teaching, consider teaching at a two-year (i.e., a local community college) or a small four-year college. Depending on the
department, some teaching positions at community colleges may only require master’s
degrees.

Government Positions
Working for a government agency as a research scientist or technician is a great
opportunity for anyone who would like to have a career focused on conducting research.
A surprising number of agencies have agronomy, crop science, and soil science
research positions within them, such as USDA’s Agricultural Research Service (ARS),
Natural Resource Conservation Service (NRCS), and Forest Service. A few lesser-
known departments include the Department of Defense (DoD), the Department of
Energy (DoE), the Department of Homeland Security, the Bureau of Land Management
(BLM), and any state Department of Natural Resources. These positions range from
conservation and technician positions that require bachelor’s degrees to research
agronomist, soil scientist, and plant physiologist positions that generally require
master’s or doctoral degrees.

The best resource to use to find government positions is USAjobs.gov, where all official
U.S. government jobs are routinely posted. Another avenue within the government to
consider is governmental policy where you can work in the area of agricultural
legislation.

Industry
Another traditional career path is
going to work in industry, meaning
working for a business or
corporation in the agricultural
sector. Some examples include
Corteva Agriscience, Conagra
Brands, Bayer, and Hawthorne
Gardening Company as a plant
breeder, weed scientist,
agronomist, or even as a hemp
scientist (seriously). Opportunities
in industry are endless and can
have a variety of focuses (i.e.,
biotechnology, breeding, digital
tools, and many more). You could
also consider working as a sales
representative or in a communications and marketing department if research is not your
interest. Because of the variety of positions within these types of companies, there are
opportunities to work in different areas of a business and learn new skills. This could
mean working in a new position at the same location or moving to another worksite in
another state or even country!
Non-profit Organizations
Another appealing option is working for a non-profit organization, such as The Nature Conservancy or the Rodale Institute. Depending on the type of organization, there are technician and conservation positions available that span a range of responsibilities. For example, organic farm manager, crop consultant, or research technician positions at the Rodale Institute have been recently advertised with minimum education requirements of a bachelor’s degree. However, there are also research scientist positions for candidates with doctorate degrees. Other positions with non-profit organizations also include communications and public outreach where you can engage with, and educate, the public about agricultural topics.

Consulting
This can be a great option if you like working one on one with stakeholders. Consulting can take on many forms—you can be a Certified Crop Adviser, work in science communication, or work as a research consultant. A growing field in consulting is precision agriculture, working directly with farmers to make recommendations that maximize their crop yields (and profits!). This path can allow for some flexibility and can take up as much or as little time as you have available. Plus, you have the option to work as an independent consultant (see below) or for an established consulting company.

Start Your Own Company
If you have an entrepreneurial spirit, this path could be the best option for you. Here, the sky’s the limit if you have an idea of what you want to do! Some examples include starting a business that designs septic systems, or comports local residential food waste, or consults with farmers on soil health or crop rotations. Or perhaps you want to become a seed or farm equipment distributor. Maybe working in a laboratory is more your speed, and you open a lab that performs water and soil quality tests. Whatever your passion may be, you can certainly find a way to start your own business within the agricultural sector.

We hope this broad overview has demonstrated the wide breadth of options available upon completion of a degree in agronomy, crop science, or soil science. To keep up to date on open positions in any one of the above-mentioned career areas, check out the jobs board Societies’ Career Center site: https://careers.careerplacement.org/jobs.

Career Opportunities Webinar!
After your graduate degree is complete, there are many different avenues to explore as you start your career. It may be difficult to narrow down or project where you want your career to be as you look 10 years down the road.

As there are advantages and disadvantages to every option, the Graduate Student Committee’s Webinar Subcommittee (Taylor Berkshire, Fernanda Souza Krupek, Carlos
Bonini Pires, and Lauren Schwarck) brought together a group of panelists (Dr. Jerry Hatfield, Dr. Rachel Owen, and Dr. Emilio Oyarzabal) to represent industry, NGOs (non-governmental organizations), government, and academia to discuss their career paths and advice for navigating the options.

This was part of the “Level Up Your Career” webinar series. Recordings can be accessed at www.agronomy.org/gradstudents/webinars, www.crops.org/gradstudents/webinars, and www.soils.org/gradstudents/webinars.
Canner Pressure Testing
Drive-Thru Clinic

DATES: Monday June 21, 2021 & Monday August 16, 2021
TIME: 9 AM - 12 PM
LOCATION : PSWCD, 6670 OH-88, Ravenna, OH 44266

Are you preparing to can fresh fruits and vegetables from your garden or local market? Before starting, come out to our canner pressure gauge testing clinic. We will be offering two drive though clinic days this summer.

Details: This is a FREE drive-thru clinic please stay in your car. Be ready to hand your pressure canner to a staff member.

For more information: Scan the QR code, go to https://go.osu.edu/cannertestclinic
or call the Portage County Extension Office at 330-296-6432

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