

**VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS (AAFM)  
AGRICULTURAL INNOVATION BOARD (AIB)**

**MEETING MINUTES**

DATE: August 26, 2024

LOCATION: Vermont Agency of Agriculture, Food and Markets 94 Harvest Lane, Williston, VT 05495 –  
Conference Room 210 / Virtual Microsoft Teams Meeting

<b>Member</b>	<b>Present</b>	<b>Absent</b>
St. Pierre, Amanda	x	
Beckford, Roy		x
Nourse, Nate	x	
Chamberlin, Jonathan		x
Pajak, Abbi	x	
Ransom, Earl		x
Rebozo, Ryan		x
Schubart, Steven	x	
Owen, Sarah	x	
Harper, Wendy Sue	x	
DiPietro, Laura		x
Dwinell, Steve	x	
Griffith, Morgan	x	
<b>Guests in Attendance</b>		
Stephanie Smith Pam Bryer Zach Szczukowski Jill Goss Becky Langer-Curry (Bayer) Steve Li (Auburn University) Kiersten Bourgeois (DFA) Jared Carpenter (Lake Champlain Committee) Brooke Decker Laura Johnson (UVM) Lisa Fantelli Dillon Gabbert (Crop Life America) Dave Huber		

**Meeting called to order:** 1:00 PM EST

**Meeting adjourned:** 3:34 PM EST

**Next meeting:** Monday September 23, 2024, 1-4PM

**Agenda:**

**1:00 PM** – Welcome & introductions

**1:05 PM** – Agenda, previous meeting minutes, AAFM update

**1:10 PM** – Agricultural Pesticide Applications by Drone – Steve Li, PhD, Associate Professor & Extension Specialist (Weed Science), Auburn University

**2:00 PM** – Neonicotinoid Research Update – Heather Darby, PhD, Agronomic and Soils Specialist, University of Vermont Extension

**2:50 PM** – Farming Practices that Support Pollinators, Laura Johnson, University of Vermont Extension

**3:40 PM** – Review of EPA Updated Occupational Exposure Assessments for Seed Treatment Uses for Three Neonicotinoids – Pam Bryer, PhD, Agency of Agriculture, Food & Markets

**3:50 PM** – Public Comments

**4:00 PM** – Adjourn

**New Action Items**

Action	Responsible Party	Complete? (date)
Provide Morgan with additional suggestions for next topics for AIB to address	AIB Members	
Send members poll for available dates for Nov/Dec meeting(s)	Morgan Griffith	
Complete BMP survey by Aug 26	All members	8/26/2024

**Ongoing Action Items**

Action	Responsible Party	Complete? (date)
AIB members let Morgan know if eligible for per diem reimbursement to receive necessary paperwork	All eligible AIB members	

**Welcome & Introductions, agenda, previous meeting minutes & AAFM update**

- July 22, 2024 meeting minutes
  - Accepted without edits
- Member thank you for filling out neonic BMP survey. Will hear about results and next steps in the near future.
- AAFM update
  - Current activities regarding EEE. Monitoring and developing responses to EEE is a major role in AAFM activities of late.
    - Mosquito surveillance occurring statewide – 47 pools have tested positive for EEE, 38 for WNV. Last year it was about 14 pools positive for EEE.
  - Virus is out there and circulating. About half of the pools tested in last round of surveillance were bridge species (mosquito species that bite humans and animals and so are capable of spreading the virus).

- Shared risk map on Department of Health website: [Eastern Equine Encephalitis | Vermont Department of Health \(healthvermont.gov\)](http://EasternEquineEncephalitis.VermontDepartmentofHealth.healthvermont.gov)
  - Please be aware of these areas – avoid outdoor activities at dusk/dawn, reduce your exposure of mosquitos

**Agricultural Pesticide Applications by Drone – Steve Li, PhD, Associate Professor & Extension Specialist (Weed Science), Auburn University**

- Introduction: Auburn University Extension, providing farmer support. Conducts many field trials and answers grower questions. His specialty is herbicide since all his degrees are in agronomy.
- Drone research over the last 4 years. Technology has rapidly taken off across the country, has been quickly adopted by many farms.
- Drone spraying is quite different because the tank is small – largest tank is about 18gal, which is very small compared to 1000gal on a commercial sprayer. This means the tank sprays out every couple minutes, so have to have mixing and battery charging station on site. So may be considered labor intensive because of multiple battery swap and tank refills necessary
  - Recommend have a mixing trailer onsite which is transportable.
- Aerial application leaves cloud of droplets above crop before it settles down, while drone applications have a stronger down draft
  - Drift potential is less with drone compared to aerial application – risk of drift is more than with ground applications but less than risk associated with aerial application
- Testing to see how much product comes through the canopy. Airplane and drone delivered same amount of product (tested with dye)
  - Drift reducing agents can be used to increase spray deposition and spray penetration
  - Applicable for fungicide applications typically sprayed when plants are full grown
- Insecticides can also be applied by drone
- Herbicides applied by drone has a higher risk because herbicide drift is more noticeable when travels off-target, Li does not advocate for broad spectrum herbicides applied by drone because of potential for drift
  - If windless day then can use drones for burndown herbicide applications
  - Wind can also cause inefficient herbicide applications
  - Li has seen high accuracy with drone application.
- Soybean desiccation before harvest to make harvest easier with combine can be applied by drone
- Perennial fruit crops drones are option
  - Drones can decrease volume of pesticides used, but ensure you have accurate mapping so drone covers tree canopy along the tree row
- Drones make applications on steep terrain possible, where tractors cannot drive. Eliminates the need for backpack sprayers – increases safety and decreases human exposure
- Grapes research showed adequate coverage with drone 16 gal/acre compared to airblast 40 gal/acre
- Ground airblast sprayer is inefficient with young/small trees chemical is wasted and doesn't hit the target. Drones can be used to spray individual trees and can even program to a certain amount to spray per tree.
  - Drones are more precise to save money and to reduce environmental impacts
- Example of ProcellaCOR drone applications to control watermilfoil in aquatic applications

- Drones are a more practical application method for spraying weeds encroaching on irrigation ponds – can access areas that cannot be accessed on ground or boat.
- Variable rate spraying based on crop size possible with drones
  - Can make prescription map for drone to follow
- Spot spraying weeds possible with drones with accurate map of treatment zones.
- Where do Drones fit?
  - Small farms with limited cash flow
  - New custom applicators with limited start up funding
  - Regions with frequent wet periods and terrain changes (challenging terrains)
  - Tall crops
  - Vegetation management in remote areas with limited and no access
  - Small odd shaped field with many obstacles
- Challenges for drone applications
  - Regulations
  - Wind
  - Efficiency since small tank sizes and battery life
  - Hardware/software issues
    - Hardware reliability can still be improved
  - Pesticide labels – no label sections for drones because still new/small market
  - Labor – hard to find reliable and skillful operators
  - Speed and obstacles (i.e. powerline etc that damages drone)
  - Mixing and refill takes a lot of manpower
- Drone conference last 2 years in Alabama
  - March 23-26 2025 in AL, remote option available.
  - [steveli@auburn.edu](mailto:steveli@auburn.edu)
- Steve Dwinell questions
  - Katrina White spoke from EPA at 2024 conference, they did mention label revisions
    - Global Spray Drone Task Force has been established – objective is to generate data for regulatory agencies to make decisions on drift models. This is first step towards having drone application methods on labels
  - Are drone applicators still required to maintain line of sight control?
    - Depends on exemptions – most are required to apply within line of sight. FAA has issued some exemptions but need better hardware. Dr. Li is not comfortable flying outside line of sight. In near future, drone hardware can improve so that risk is not as high to crash or lose drone when flying beyond of line of sight. Until there is better technology Dr. Li will continue to advise to spray by drone within line of sight
- Pam Bryer questions
  - How do nozzles and spray patterns compare?
    - Some labels require certain droplet size, and drone applicators can still meet these requirements
    - Hay pasture if need really big droplets, the rotary atomizer available on drones does not apply via large droplets.
  - Has there been certain chemistry problems?

- If you have really thick tank mix (highly viscous) can be difficult to spray, but rotary atomizer technology doesn't have as much trouble because has dedicated power source to spray.
- How is battery life when running different nozzles?
  - Impact on battery life for rotary atomizer is negligible. Still need a pump but only to move from tank to rotary atomizer. If using flat fan nozzles need pump to move product, but cannot handle a viscous tank mix.
  - The more times your drone has to turn the more battery you run through (have to change more often)

**Neonicotinoid Research Update – Heather Darby, PhD, Agronomic and Soils Specialist, University of Vermont Extension**

- Update on corn pests and neonic research at UVM
- 2<sup>nd</sup> year of monitoring corn pests and neonic research with some new trials
- 2023 had multiple research trials, one on Borderview Research Farm looking at crop stands in treated vs untreated seed
  - These studies were repeated in 2024. Saw far worse crop pest damage in 2024 than in 2023 (both in on farm plots and at Borderview Research Farm). Started planting at Borderview on May 7, was a very wet spring, and that delayed planting for most people. Those that planted in early/mid-May there was a lot of pest damage in those fields because cold and wet and saw delayed emergence.
    - Had a lot of reports from farmers this year about poor crop stands. If corn was planted then was delayed emergence so seed was more susceptible to pests.
  - Will start harvesting corn in a couple weeks from these research plots
  - Had planned to plant more research plots but with weather farmers were straight out and not able to do research plantings
- Discovery Acres site where there was edge of field water monitoring for neonics. Whole field is planted with neonic treated seed. Water data is still being collected and hasn't been summarized to date.
- New projects in 2024
  - How manure management and conservation practices impacts incidence of seed corn maggots (SCM), wireworms and grubs.
    - No-till, cover crops and manure injected, and manure broadcasted are the treatments being compared in the research plots
    - Buried corn seed in wire baskets that could be pulled up and looked at for pest incidence
    - Preliminary data show that more pest damage when have manure and standard tillage. Previous published research also has shown addition of organic matter and tillage increases pest incidence. Preliminary data is consistent with this previous published research.
      - Next steps are statistical analysis. There is a lot of variation, so more replications may be necessary.
    - Corn populations did not reach target population no matter treatment

- Saw SCM flight peak about May 10 (similar to 2023) and saw another peak flight around June 15 (also similar to 2023). Flight monitoring was around Addison and Franklin County.
- Corn populations by seed treatment research, new research in 2024
  - Control with bone meal, control, spinosad, neonic, fungicide, diamide treated seeds
  - Did not reach target populations with any treatment. Saw significantly lower populations (unacceptable) in both control plots. No significant difference among the seed treatments
  - One year of data, planted early May 7 and conditions were not good for corn growth/production
  - This same trial was also planted in NY with numerous collaborators so more data will be coming
- Soybean populations by seed treatment, new research in 2024
  - Did not see as big a difference in soybean populations among the seed treatments. Planted towards the end of May. Control with bone meal was significantly lower than control, diamide, neonic in population.
- Measured neonic dust coming off from planting equipment during planting
  - Put out dust collection units while farmers planting. This was difficult because of season. Slides on cardboard varying distances from the planter to catch dust as seeds were planted (placed based on wind speed and direction) also placed slides on ground that planter traveled over. Did this collection at 5 sites. Conditions this year: wasn't much dust because was wet, also wasn't much wind. Just received data a week ago. Only one site with detectable neonics on slides. Doesn't look like methods collected much dust/neonics traveling off field during planting. Only plate with detectable neonics was one site and from under the planter position. Method had been previously published for dust collection.
    - Heard from colleagues and industry that seed treatments have changed since previously published dust off research. Is another potential reason why little neonic detected within dust collection slides.
- Final project that was pushed off until later in season is looking at fluency agents and dust coming off of planters. Comparing talc and graphite to alternative fluency agents. This trial involves hooking a vacuum bag to the planter to collect all dust that comes off planter. Waiting for drier conditions to complete this trial, hopefully in next couple of weeks. Vacuum bag goes around exhaust of planter, method was originally published with neonic seed treatment research was done. Talked with original researchers and have agreed that an adequate method variation to accommodate VT lab capabilities is to insert the dust collection slides into the bag.
- Discovery acres was a site where collected dust on slides during planting and where water and soil neonic testing is also being done.
- Soil samples taken a year later at Alburgh trial in plots that were planted in treated corn in 2023 and did not get planted in 2024 to try and see how quickly neonics would degrade in the soil.
- Was the dust collection study conducted with all the same seed from the same vendor?

- Goal was to have sites with different conditions and planters and seeds. All of this varying information was collected from the participating sites and will be used when interpreting the data.
- NY collaboration on seed treatment research - how can we access this larger report?
  - Cornell and UVM will probably collaborate on publication. Heather will be sending along data summary when available.

### **Farming Practices that Support Pollinators, Laura Johnson, University of Vermont Extension**

- Laura Johnson, Pollinator Specialist with UVM Extension, primarily works with vegetable and berry farms
- Tenets of pollinator support
  - There are a lot of wild pollinators and they all need flowers and safe places to nest
  - Crops and plants grown on farms provide food and habitat
  - Management tactics provide affect floral and nest resources
  - Farms are and can adapt practices for more flowers and safe places for pollinators to live
- Managed pollinators: honey bees, bumble bees, mason bees, alkali bees (used in Pacific Northwest for alfalfa – are only ground nesting managed pollinators)
- Most VT farms have no commercial bees, and rely on wild pollinators
  - Bumble bees are used in VT high tunnel tomatoes and highbush blueberries
  - Honey bees are used on VT diversified vegetable and fruit farms and in pumpkin production
- Bees contribute 80% of all pollination services, there is less research on pollination by wild pollinators
  - Wild bees produce larger, better blueberry yields according to past UVM research
- Pollinators face threats: loss of habitat, pests and pathogens, pesticides, and climate change
- Developed Pollinator Support Plan as a place to start to reduce these threats – available on VT Vegetable and berry grower association webpage
  - Plan has benefits for insect mediated pollination crops i.e. pumkin, apples, brambles, blueberries, etc
  - Is also for farmers that use pesticides, or grow crops for seed production, or host managed bees.
  - Benefits of writing and implementing a plan
    - Support marketable yields
    - Reduce risk and costs of pollination
    - Develop planting or management plan to support insects needed on your farm (pollinators and pest predators)
    - Provide habitat and safe nesting spaces throughout pollinator life cycles
- Pollinator Support Plan Outline
  - Associated NRCS practice(s): pollinator habitat design (design and implementation activity 148)
    - Plan can be funded with cost share with NRCS
  - Farm Information
    - Goals for pollinator support
    - Farm profile, market base, acreage, number of fields, map, etc

- Cover crop selection and management
  - NRCS practice: allow cover crops to flower (340 – cover crop)
  - Provides floral diversity may reduce species competition during crop bloom
  - Examples in 2022 single planting of multi-species cover crop that would bloom throughout year (June-September)
  - Now in 2024 have moved to single species multi-planted cover crops – sequential planting for season long blooms, collecting pollinator health and abundance
  - Annual flowering cover crops examples in high tunnel and field
- Dedicated pollinator habitat
  - Establishing area of herbaceous/shrubby plants to establish habitat for pollinators
  - Typically in non-crop areas and can include installing artificial nests
  - Different types of flowers support different pollinators
  - Dedicated pollinator habitat i.e. pollinator meadow. Is tricky to establish and involves a lot of weeding.
  - Riparian areas for woody hedgerow with flowering shrubs support early pollinators
  - Wildlife habitat planting intended for bees and birds at Intervale in marginal land areas that cannot be used for cropping because of regular flooding.
  - Artificial nesting sites i.e. mason bee homes (need regular maintenance)
  - Maintaining bare soil so exposed soil for nests and spring mating
- Mowing practices
  - Improve food and nesting space by waiting to mow until after hard frost mow when flowers not in bloom
  - Save scattered patches rather than one large habitat – fence off to prevent wildlife from entering those patches
  - Square up fields and leave corners for pollinator habitats
- Pest management
  - Prevention, avoidance, monitoring and suppressive pest management practices to protect pollinators while mitigating pests
  - IPM with pesticide use i.e. prevent pests with low tunnels, monitoring for pests
  - Pesticide BMP to reduce risk i.e spray outside of bloom and follow state and federal regulations
- Pollinator monitoring
  - Assess change of pollinator abundance as farming practices change
  - Monitor pollinators
- Tillage practices
  - Maintain habitat with tillage management for soil dwelling pollinators
  - Some bees prefer undeterred soil, but other bees (i.e. Squash bee) prefer highly disturbed areas (tilled soil)
- Water Sources
  - Provide clean, accessible water
  - Supporting clean water initiatives that farms are already participating in.
  - Management of standing water to prevent unintentional beneficial mortality
- Use of manage pollinators



- Protecting colony health during crop pollination
      - Fencing, queen excluder for bumble bees to reduce commercial bumble bee genetics spreading to wild bees
    - Minimizing threats to wild bees that may come from managed pollinators
- All tenets of pollinator support can be championed by pollinator support plan.
- Contact for any further questions: [Laura.o.johnson@vermont.edu](mailto:Laura.o.johnson@vermont.edu)
- Questions
  - Monitoring of pollinators – is UVM accumulating this information?
    - During 2022 cover crop plantings Laura was monitoring for pollinators. This year for cover crop plantings the farmers and Laura are monitoring for pollinators. So consistent pollinator monitoring data.
      - Plan is to have this available as a case study, because monitoring data has been collected more anecdotally. Hope to have more detailed data in the future.
    - Also have Taylor Ricketts blueberry research monitoring – one publication available.
    - Steve will contact Laura to collaborate with proposed study with VT Center for Ecostudies
  - Is VT first state to do this work?
    - The Xerces Society and another non-profit has pollinator plans i.e. Xerces Bee Better Pollinator Plans, but more for marketing advantage of produced products to larger outlets like Walmart or Whole Foods.
    - NRCS has this pollinator habitat plan, Laura would like to learn from others that may be working on something like this
  - Did farms take advantage of NRCS?
    - Some examples shown today are funded by NRCS and some are not, hoping Lauar becoming Technical Service Provider will help increase farmer education and increase participation in funding from NRCS

**Review of EPA Updated Occupational Exposure Assessments for Seed Treatment Uses for Three Neonicotinoids – Pam Bryer, PhD, Agency of Agriculture, Food & Markets**

- Neonic registration review update
- Neonics are in the midst of registration review and on June 27 OPP issued memorandum updating the Occupational and Residential Exposure Assessment for Seed Treatment Uses
  - Human health risk assessment still stands from 2017 release
  - The changes stem from new information on exposure to humans while employed treating seeds
- Specific crops and uses
  - Clothianidin – people cleaning equipment at commercial seed treatment facilities and on farm seed treatment specific crops have exposures above level of concern even with required PPE
  - Imidacloprid – people cleaning equipment at commercial seed treatment facilities for treatment of certain crop seeds have exposures above level of concern

- Thiamethoxam is registered for more uses, so more exposures above the level of concern. Exposures are with people working in commercial seed treatment facilities with the following jobs: treating, packaging, cleaning equipment, loading and planting.
- PPE can be increased to accommodate these newly identified risks except for:
  - Occupational handler risks for on-farm seed treatment of potato seed pieces with a dust formulation and for occupational handlers cleaning commercial seed treatment equipment for all formulations and numerous seed types.
- Summary occupational handlers on-farm with seed potatoes and occupational handlers cleaning seed treatment equipment at risk.
  - There will be changes coming to pesticide labels in response to this (comment period closes September 24)
- EPA asking for more information from seed treatment companies and individuals
  - Type of equipment being used
  - Average rate of treatment on seed. Etc
  - Number of acres planted in one 8-hr day
  - What is the highest seeding density
- Currently AIB's BMPs focus on use and application
- Questions
  - Current PPE not adequate for commercial treaters but also for people planting it?
    - Yes, risk is based on volume handled per day that is why EPA wants more information about how much being planted and at what rates etc.
    - People planting IDed as at risk only for specific crop and chemistry
    - We can look at the comments to see what responses EPA receives
    - \*\* make sure AIB member Jonathan Chamberlin is aware of this update, as he is the only certified pesticide applicator in the state for seed treatment applications
  - Is there Quality control/quality assurance documentation or process in terms of treating seed and for the coatings used?
    - Becky: Heubach testing is method that gives data about pesticide that is released from treatment on seed (i.e. dusting off) and there is a standard for how much pesticide comes off of seed during planting process and there is risk assessments that go along with this testing. Who sets standard? For risk assessment to humans is OSHA, but also specific planter equipment standards. \*\*Becky Langer-Curry from Bayer followed up with more information about this testing requirement and standards:
      - follow-up to the question if there are standards for seed treatment. The answer is yes and no. Yes, there is a standard which is European, but no it would not be widely used in the US. Bayer being a European owned company uses the standard for directional guidance in our US seed treatment facilities.
      - Brief Historical Timeline:
        - 2008 A dust-off incident from clothianidin-treated corn seeds occurred during planting in Germany.
        - 2010 Heubach values for dust abrasion of seed treatment products proposed for inclusion in EU national regulations.

- 2014 Development and launch of ESTA Certification scheme:  
Seed Treatment Standard: European Seed Treatment Assurance  
(ESTA) Industry Scheme. [ESTA Standard - ESTA Checklist - ESTA  
Governance - Euroseeds](#)
- For the US, [ASTA's - The Guide to Seed Treatment Stewardship \(seed-  
treatment-guide.com\)](#), is the most commonly referred to and used BMP  
document for seed treatment.

### **Public Comments**

- None

\*\* - indicates action items