

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

**MEETING MINUTES**

DATE: August 28, 2023

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	
Hazelrigg, Ann		x
Chamberlin, Jonathan	x	
Cutler, Clarice	x	
Ransom, Earl		x
Rebozo, Ryan	x	
Schubart, Steven		x
Owen, Sarah	x	
Harper, Wendy Sue	x	
DiPietro, Laura	x	
Dwinell, Steve	x	
Morgan Griffith	x	
<b>Guests in Attendance</b>		
Jill Goss Doug Johnstone Stephanie Smith Zach Szczukowski Patti Casey Jonathan Wolff (croplife America) Lisa Fantelli Brooke Decker Bethany Creaser Chas Mraz Scott McArt		

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

**Meeting adjourned:** 4:16 PM EST

**Next meeting:** Monday September 25, 2023

**Agenda:**

**1:00 PM** – Welcome & introductions

**1:05 PM** – Agenda, previous meeting minutes & action item review

**1:10 PM** – PHARM activities update  
 Agricultural Input Survey Redistribution Results

**1:40 PM** – AIB member discussion  
 BMPs previously published  
 Neonicotinoid treated seed recommendation brainstorm  
 Work plan status & next steps

**3:00 PM** – Dr. Scott McArt, Associate Professor of pollinator health, Department of Entomology, Cornell University  
 Neonicotinoid Insecticides in New York State: economic benefits and risk to pollinators

**3:50 PM** – Public Comments

**4:00 PM** – Adjourn

**New Action Items**

<b>Action</b>	<b>Responsible Party</b>	<b>Complete? (date)</b>
Learn more about municipal solid waste facilities' ability to accept unwanted treated/untreated seed and whether pesticide disposal funds should be used to pay for disposal with HHW contractors	Stephanie Smith	
Update comments on existing BMPs file by 9/25/23 and send recommendations to Morgan for specific proposed BMPs to include for consideration	AIB members	
Invite Heather Darby/Jeff Sanders to speak to AIB about fluency agent and historical neonic use impact on pest pressure	Morgan	
Provide example treated seed tags for AIB review	Jonathan Chamberlin Jill Goss	
Provide Industry contact to potentially talk with AIB about Fluency Agent	Jonathan Chamberlin	

**Ongoing Action Items**

<b>Action</b>	<b>Responsible Party</b>	<b>Complete? (date)</b>
AIB members let Morgan know if eligible for per diem reimbursement to receive necessary paperwork	All eligible AIB members	
Compare crop acreage numbers to seed tonnage reports	AAFMM	
Ask PMRA: How do they regulate the prohibition of talc and graphite?	Morgan	

**Welcome & Introductions, agenda, previous meeting minutes & action item review**

- 7/24/2023 meeting minutes accepted without edits
- No additions/modifications to agenda

## PHARM Activities Update – Agricultural Input Survey Redistribution Results

- Agricultural input survey was distributed a second time to distribution list owners.
  - Received 4 new responses (1 certified mall farm operation and 3 small farm operations, including 1 maple producer)
- Members agree to summarize total results of survey in 2023 AIB annual report
- Roy asked about access to files and documents for AIB members
  - \*\*Morgan will share teams/sharepoint site link, where shared files and documents are saved for AIB members to access and collaboratively edit as appropriate

## AIB Member Discussion – BMPs previously published, Neonicotinoid treated seed recommendation brainstorm, work plan status & next steps

- Recap of required topics discussed at previous AIB meetings
  - Members' task is to take the information we have heard and keep it in mind while we try and make recommendations
- [Proposal & Report Review and Support Process](#)
  - Members will be asked for their opinion on proposals and their agreement/disagreement with the proposal will be documented.
  - Should we have logical framework for acceptance of proposals? Should a member be able to not support just for sake of not supporting?
    - Can be accommodated in discussion of proposal, if member does not support as recommendation for BMP then the reason why and logic behind opinion can be explored during member discussion.
    - If a proposal is made the person advocating could provide the logic or science in support and the detractors could provide the logic or science against during discussion.
  - Should member disagreement get into footnote of BMP recommendation?
    - Yes, process is set up to do this. Every proposal will be in document and every reason for and against each proposed BMP will be in the document.
    - AIB goal is to record all options and all opinions
- Neonic treated seed recommendations brainstorm
  - Should BMPs have a set update timeline? i.e. BMP has a 5 year term, after which the BMP has to be re-evaluated?
    - A possibility is to re-review BMPs as new information is available or on a predetermined schedule
  - Do we need an if/then flow chart for BMP recommendations so can be individualized based on practices and depend on actions of farmers? Because farmer situations might be different
    - We can use a table or other form to document specific situations as appropriate
  - Wendy Sue Harper
    - Shared ideas and recommendations for AIB regarding neonicotinoids.
    - Shared background information about neonics, seed treatments, and toxicity to bees (sourced from EPA references)
      - **Neonicotinoids:** imidacloprid, acetamiprid, dinotefuran, thiamethoxam, and clothianidin

- **Seed Treatments:**
  - Acetamiprid: 4.57-11.2 µg/bee; half-life in soil 12 days
    - Assail
  - Clothianidin: LD50 > 0.0439 µg/bee; half-life in soil 148-7000 days (19 years)
    - Poncho, NipsItInside, Poncho/VOTiVO
  - Thiamethoxam: LD50 > 0.0012 µg/bee; half-life 34.3 to 464 days
    - Cruiser
  - Imidacloprid: 0.0037 - 0.0409 µg/bee; half-life 26.5–229 days to 8 years (speaker)
    - Gaucho, Provado, Merit
- **Recommendations**
  - Recommend prohibiting the use of all neonicotinoid sprays (above ground) in Vermont.
  - Recommend prohibiting the use of highly toxic neonicotinoids (to bees) in Vermont as seed treatments (see above).
  - Recommend prohibiting farmers from treating their own seeds with neonicotinoids.
  - Recommend prohibiting the use of piperonyl butoxide as an inert ingredient with neonicotinoids.
  - Recommend requiring farmers use a fluency agent and prohibit them using graphite or talc in planters to reduce dust.
  - Recommend providing funding to farmers to modify equipment and to Extension to run programs on how farmers can make modifications (if possible).
  - Recommend requiring farmers to remove waste seed and dust from the soil and dispose of them properly.
  - Recommend following [BMP outlined by Dr. Kimberly Stoner \(1-9\)](#).
  - Recommend providing funding for workshops for beekeepers on varroa mite management.
  - Recommend a phase out period for all neonicotinoid pesticides of 2-3 years.
- Ryan Rebozo
  - We have heard a lot about treated seeds being used as a preventative practice, and wondering if there is a strategy for implementing IPM earlier in the growing season
- Jonathan Chamberlin
  - What needs to be considered is the idea of keeping the material on target, for example using technology in flow agents or seed hardening to address non-target movement of the material off seed.
- Amanda St. Pierre
  - Looking for more information on seasonality, what equipment can we use to keep dust down, what can we do to bring back health in bee colonies

- Concerned making a widespread change without pinpointing that neonic treated seed is what is really wrong – if we keep using but keep dust-off to a minimum, or lean on seed companies for new developments to help reduce risk
    - Farmers and bees are facing with a lot of challenges, so what can do to be part of solution but knowing we can't be whole solution.
  - Clarice Cutler
    - Thoughts mainly on lack of availability for non-neonic treated seeds so even when people want to try/experiment on their farm they can't even get the seeds. Farmers aren't able to try true IPM approach because of the logistics/complexity of seed buying process
    - Seed industry makes it sound like complex, difficult process to pre-order for US, but in Canada it sounds like alternatives were available
    - Is out of order that regulation has to come before available alternatives to the farmers
    - Will NY bill have any impact to availability to US? or are their too many caveats built into that bill
  - Sarah Owen
    - Neonic treated seed risks are not really focused on human health – my assignment on AIB doesn't have a lot of bearing on BMPs
    - Advice that we should know friction points of BMPs vs other states or EPA/federal regulations
      - Good to be aware of these because we are relatively small market.
  - Laura DiPietro
    - Big gap between what researchers and industry shared with us
    - Wouldn't want VT farmers not able to get seeds they want in the quality they want based on our recommendations. Don't want VT farmers hindered by our legislative recommendations
    - Wonder if there is a bigger conversation – we work with other states to discuss what could really happen and build support with them to try and help industry see extra work/complexity is a big enough business effort
    - Yield protection was not as great as expected it to be. So want to make sure farmers are spending money on something that is valuable to them.
    - Fluency agent requirement is an easy and achievable BMP
- We will keep our options open if we have more questions that get raised to bring in presenters again if we need more information
- Existing BMPs and proposed BMPs
  - AIB members shared thoughts on BMPs that have been previously published by others (states, Canada, extension, industry, etc)
    - Questions were raised about how fluency agents are used and when they are applied.
      - \*\*ask Heather Darby and/or Jeff Sanders from UVM Extension to answer our questions about the specifics of these products alternatives to talc and graphite
      - \*\*Jonathan Chamberlin will also look into an industry contact to teach us more about fluency agents

- Discussed ramifications of requiring adherence to seed tag language (similar to requirement for pesticide label language).
  - \*\*Jonathan Chamberlin and Jill Goss will provide example seed tags for AIB to learn from
  - Members pointed out that education to growers about what is on treated seed is important and Heather Darby is doing this type of outreach.
- Specific planting depth of treated seeds is just good agronomic practices that are common sense for growers looking to have productive crops
- Members note that IPM was defined differently to the AIB by researchers compared to seed companies/industry
  - \*\*Ask Heather back to talk with AIB and address any information she has about how historical neonic use on fields influences pest pressure.
- VT Pesticide Rule already has requirement for 48hr notification for application of pesticides highly toxic to bees - might be able to expand this to be applicable to planting of seeds treated with pesticides highly toxic to bees.
- Recommendations for bee keepers also considered about supplementing water and pollen during planting time so to reduce likelihood of bees looking foraging during that time.
- Members discussed seed disposal and wondered if it was an issue.
  - Jonathan Chamberlin shared that farmers typically only need to dispose of seed that accidentally hit the ground and then potentially had soil debris with the seed, which could potentially damage the planter. Seed is too valuable not to save in a safe place for planting next year.
  - Consider proper disposal of empty treated seed bags could be more appropriate/applicable BMP recommendation
- \*\*AIB members will update comments on existing BMPs file and will send recommendations to Morgan for specific proposed BMPs to include for consideration

**Dr. Scott McArt, Associate Professor of pollinator health, Department of Entomology, Cornell University – Neonicotinoid Insecticides in New York State: Economic benefits and risk to pollinators**

- Pesticide risk to bees: what we know and what we need to know better
- Bees are messy and therefore excellent pollinators
  - NY agriculture dependent on pollination worth hundreds of millions of dollars
  - Pollinators contribute \$400M in services annually in NY (Grout et al 2020)
- 40-68% of NY honey bee colonies have died each year since 2016
  - Beeinformed.org VT 71.3% loss in honey bee colonies last year
- The Empire State Native Pollinator Survey 2017-2021
  - “Using conservative criteria 38% of NY native pollinators are at risk of extirpation from NY”
- Why are pollinators not doing well?
  - Pests & pathogens, climate change, loss/lack habitat, management practices, agrochemicals
    - Agrochemicals receives the most press and is most controversial (maybe because not a lot of data about impact)

- Risk = exposure / toxicity
  - We have good understanding of toxicity for honey bees (LD50 for most pesticides known for honey bees) because that data is required in pesticide registration process
  - Poor understanding of exposure for most pesticides in most application contexts
    - Once registered no follow up studies required to see what is happening in real world
  - Hazard Quotient (HQ) shows % of LD50 i.e. 40ppb exposure / 0.004 ug/bee = 10,000=100% of LD50
    - 40ppb is realistic exposure to imidacloprid
- When is there risk from pesticides to bees?
  - Rarely during day to day beekeeping, but fairly common during crop pollination
  - Collected pollen from hives placed in apple orchards at pollination time
    - Example result: 17 pesticides found = 10 fungicides (often sprayed in orchards at bloom) + 3 insecticides (were not sprayed at bloom in any orchard sampled) + 4 herbicides (trace amounts found don't screen for glyphosate because requires different analysis)
      - Thiamethoxam = 56.39ppb found in this example sample
    - EPA says 40% of contact LD50 is exposure level of concern (LOC), EFSA acute exposure level of concern is 20% of contact LD50
    - 9 out of 20 orchards above EPA LOC
    - Similar risk in MI blueberry, NJ blueberry, NY strawberry, OR apple, CA almond as shown here in apple
    - Year to year variation but on average 20-40% of orchards exceed EOA and EFSA acute exposure LOC
  - Toxicity if defined as if the bee dies (LD50), but risk should include any changes in pollinator populations. Pesticides impact reproduction and behavior in bees. Pesticides impact ability to reproduce before killing bees, so this sublethal response is particularly important.
- NY comprehensive report risk-benefit analysis - [Neonicotinoid Insecticides in New York State: economic benefits and risks to pollinators](#)
  - Systemic literature review of 327 peer-reviewed studies
    - 169 pollinator exposure assessments (clothianidin, imidacloprid, thiamethoxam)
    - Compared to Lowest observed effects concentration (LOEC) for each neonic that's been shown to have impact on behavior, physiology, reproduction
  - Risk to pollinators near field crop
    - 74% exposures predicted to impact physiology
    - 58% exposures predicted to impact behavior
    - 37% exposures predicted to impact reproduction
- most neonic usage in US is field crops seed treatments 79-100% field corn and majority of soybeans are neonic treated seeds (NTS)
  - not just dust exposure, neonics are persistent in soil, but also move within/outside of field because they are water soluble, also can be taken up in adjacent plants systemically because of that water solubility
- Dr. McArt gave testimony to NYS Assembly hearing in sept 2021 about his comprehensive report. Industry made untrue statements about the report during testimony.

- Economic benefits field corn seed treatments
  - 13% of studies (>300 total) found positive yield effect of NTS when compared to untreated control
  - 11% of studies saw positive effect on yield compared to non-insecticidal treated seed
  - 16 trials out of 90 trials saw positive effect seeds treated with another insecticide
  - Vast majority of results from trials saw no yield difference
  - Changed expected net income per acre when factor in cost of NTS with these trial results
    - No difference compared to untreated seeds
    - 1.4-3.7% benefit compared to fungicide only treated seeds
    - No difference compared to other seed treatments or soil-applied insecticides
  - These are population level so statistically there is very little chance there is going to be a significant economic benefit, but that doesn't mean there aren't economic benefits for some growers. There is economic benefit for <10% of growers.
- Economic benefits soybean seed treatments
  - Similar results in trials
  - 18% of studies showed positive effect on yield compared to untreated control
  - 9% of trials showed positive effect on yield compared to non-insecticide/fungicide-only treated seed
  - 5% of trials showed positive effect on yield compared to non-neonic foliar insecticides
  - Changed expected net income per acre
    - 1.4-2.0% loss compared to untreated seeds
    - 1.4-2.3% benefit compared to fungicide only
    - 2.2-3.8% benefit compared to non-neonic foliar insecticides
- NY comprehensive report published in 2020, but did not include studies by Labrie (Quebec) and Smith, Baute, Schaafsma (Ontario)
  - Similar to what saw in literature, small percentage recouped financial cost of neonic treated seed
  - “these data highlight an opportunity for reducing input costs, environmental loading and nontarget effects without adverse outcomes for Ontario producers”
- Restrictions on neonics in NY (Senate Bill S1856 birds and bees protection act) is at Governor's desk currently.
- It's not every farm that doesn't need insecticide protection
  - Diamides are thought to be viable neonic replacement, less toxic to pollinators, but still have risk associated with them. Right now they are about 3x more expensive than neonic seed treatment. Not as available as neonic seed treatments. Once start being used more likely that price will drop.
- Why does EPA rely on death (LD50) as the definition of toxicity during pesticide registration? We need to look beyond this and include sublethal adverse effects and levels of exposure
- Why aren't there requirements to assess real-world exposure after releasing a product? (e.g. pro-active pharmacovigilance) industry themselves doing follow up studies
- Steve Dwinell question/comments
  - VT data, which surveys more beekeepers (12,000 colonies compared to beeinformed survey which surveys about 1,400 colonies) shows less bee loss than indicated in the slide shared from beeinformed.org – more accurately about 26% loss last year



- EPA does require environmental exposure data through a data call-in from registrant specifically for pollinators, also there is a mechanism for reporting of ecological exposure incidents, which registrants are required to report those when aware of them. And finally during the re-registration process new data is required of registrants.
- Roy Beckford Question: Is risk more than mortality? Are you saying risk ought to have direct impact on productivity and/or behavior? Yes can be measured in many different ways. We are trying to address changes in pollinator populations so death and reproduction. We know pesticides start impacting ability to reproduce before causing death

### **Public Comments**

- Chas Mraz asked about the contribution of pollinators in soybean production.
  - Dr. Scott McArt responded that previously it was commonly assumed that pollinator did not contribute to yield in soybeans, but over the last decade new varieties are planted and people are finding that was an underestimate of pollinator's impact. This new data shows that 5-20% increase in yield can be contributed to pollinators because they increase the size of the soybeans. This is an emerging topic and may lead to introduction of managed pollinators to soybean fields.
  - If bees have really good food available they are more likely to tolerate neonic exposures. If bees eat well they can tolerate higher pesticide levels. There is suspicion that this may be happening in soy crops.

\*\* - indicates action item