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

MEETING MINUTES

DATE: September 25, 2023

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

Member	**Present**	**Absent**
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	
Guests in Attendance		
Jill Goss Stephanie Smith Patti Casey Zach Szczukowski Clark Parmelee Dillon Gabbert (bayer Crop Science) Steve Cash Doug Johnstone Lisa Fantelli Brooke Decker Heather Darby Jeff Sanders		

Meeting called to order: 9:00 AM EST

Meeting adjourned: 11:50 AM EST

Next meeting: Monday October 16, 2023, 1-4PM

Agenda:

9:00 AM – Welcome & introductions

9:05 AM – Agenda, previous meeting minutes & action item review

9:10 AM – Dr. Heather Darby & Jeff Sanders, Agronomy Specialists, UVM Extension
Fluency agent & planter modification discussion
Research update

10:00 AM – AIB member discussion
Seed tag review
Existing BMP pick list member comments
Neonicotinoid treated seed recommendation brainstorm
Work plan status & next steps

11:50 AM – Public Comments

12:00 PM – Adjourn

New Action Items

Action	Responsible Party	Complete? (date)
Provide AIB with summary of observations from evaluation of 4 different seed lubricants	Heather Darby / Jeff Sanders	
Send information/research and articles shared by Dillon with AIB members about Bayer's efforts to reduce dust	Morgan Griffith	9/26/23
Send paper that was published this year about corn seed maggot impacts	Heather Darby	
Review/recap AIB learnings to date (highlight of what we know relevant to the key topics listed in legislative charge)	Morgan Griffith	
Literature review for research relevant to halo effect of neonic treated seeds and/or comparison of neonic treated seeds to diamide treated seeds	Jill Goss Morgan Griffith	

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	
Compare crop acreage numbers to seed tonnage reports	AAFM	
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	

<u>Welcome & Introductions, agenda, previous meeting minutes & action item review</u>

- 8/28/2023 meeting minutes accepted without edits
- No additions/modifications to agenda

<u>Dr. Heather Darby & Jeff Sanders, Agronomy Specialists, UVM Extension</u>

- Questions prepared for Heather and Jeff:
- Dust reducing seed lubricant without talc and graphite (i.e. Fluency Agent (Bayer/BASF))
    - Is it available to purchase in VT?
        - Yes, through John Deere dealership it can be ordered and available within a few weeks
    - What is the product matrix? Dry? Liquid?
        - All products evaluated by UVM were dry
    - How is it used?
        - All come with measuring container included. Grower scoops some on top of the seed in the planter box. People usually put more on than they need.
    - Who uses it? Growers or seed treatment facilities?
        - Growers
    - Do planter manufacturers provide recommendations on rate/ratio and type of lubricants? Do any recommend lubricant without talc and/or graphite?
        - Talc product is what is most commonly used in VT and what is on the shelf at dealerships, however the Fluency Agent lubricant available from Bayer/BASF was available to order from John Deere and they supported its use in their pneumatic planters.
        - Kinze didn't address using Fluency Agent specifically, but their planters are very similar to John Deere so the non-talc/graphite lubricant probably wouldn't perform any differently. Same with planters manufactured by Sunflower.
- Jeff Sanders and Heather Darby conducted a demonstration this summer, evaluating different dust reducing lubricants that growers could use during planting. The objective was to show growers options to reduce dust potentially containing neonics that are abraded off of the treated seeds and exhausted by pneumatic planters. If they reduce the dust then they reduce the risk to pollinators.
    - Evaluated 4 different products
        - Bayer Fluency Agent
        - Dust (product of Low Mu Tech)
            - A soybean based product that claims spherical particles that roll better when enhancing flowability of seeds with less abrasion of the seeds and therefore less chipping into the treatment on the seeds and release of neonicotinoids.
        - Powdered graphite
        - Talc
- In VT, talc is used by most people – that is what is most available.
- John Deere dealership also has a product that is 80/20 talc/graphite, but this product was not demonstrated or evaluated by UVM.
- Bayer Fluency Agent was available from John Deere dealership, could be ordered and received in a few weeks.
- Soybean product called Dust (Low Mu Tech)
    - Bought through online broker so is readily available
    - Was observed to be sticky in high humidity conditions
- Bayer Fluency Agent was the most expensive lubricant adding about $0.60/ corn seed bag
- Talc $28.29/3-4lb jug (1 jug = 500 acres)
- All products had different recommended use rates

- Nobody using anything other than talc and graphite in VT right now.
- Maybe use graphite for finger pick up planter machines
    - Finger pick up planter does emit some neonics to the air, but is less than what is released from pneumatic planters
- Use lubricants to get the seed to move, but use them to help with uniform drop of seed as planting. When have seed that is different shape performs different in planter. VT gets seed that is left over, so planters aren't always optimized for uniform planting so lubricant addresses this shape performance different. Planter manufacturers recommend use of lubcricant.
    - Goal is 100% singulation within a row and across the rows. The lubricant helps planters pick up the seed.
- Fluency Agent and Talc and graphite lubricants would not be used in combination.
- Jeff reached out to seed manufacturers to learn more about seed coating improvements, a more durable seed coating would also reduce abrasion and emission of dust containing neonics.
- Question: Are talc and graphite an issue to environment?
    - Jeff indicated he did not know, but 2 cups talc for seeding 30 acres, so environmentally probably minute effects since talc is an inert product.
- Planter modification logistics
    - Were you able to modify a planter to capture/filter intake or exhaust? Or to direct dust down to the ground?
        - UVM also demonstrated a "bee friendly" planter blew air down onto the ground instead of up into the air.
        - Heather and UVM was considering retrofitting their planter, but learned that feasible modification (direct to ground) would cause other problems (higher potential for runoff and negative impact on ground beneficial insects like ground beetles) after talking with colleagues in Canada and US.
        - Cyclone dust collection from the planters is not feasible in the field
- Question: Talc SDS indicates it is a carcinogen are we (AIB) tasked with including health concerns for growers too?
    - Yes, it's part of our considerations
    - Sarah Owen, State Toxicologist and AIB member:
        - Talc is not included in assessment of EPA evaluation of treated seed active ingredients
        - Neonics, in terms of percent active ingredient are not inconsequential, but have low toxicity to humans so we aren't really concerned
        - But in terms of talc exposure we should in the least be thinking about PPE that should be used to reduce risk of inhalation
    - Practically when you scoop and put on corn seed, there is virtually no dust so little dust exposure to grower using lubricant. Could be an issue if working on planter with air still on, but it is common practice to shut off air to work on equipment
- **Heather & Jeff will summarize these dust reducing lubricant observations for AIB
- Question: have you seen any difference in dust-off from 2010 compared to 2023? Seed industry has said they are working on better seed coating
    - Dillon Gabbert – industry has been making advances in technology in the process of how seed gets treated which has shown to reduced dust-off from treated seeds and change in polymer coatings has shown to reduce the abrasion of the treated seeds.

    - Dr Coletti (Bayer) made presentation in 2022 and happy to share with AIB.
    - **Morgan will send information/research and articles shared by Dillon with AIB members about Bayer's efforts to reduce dust.
- Question: are more VT using vacuum/pneumatic planters? Any development in assistance with modification?
    - Most planters sold today are some variation of a vacuum/pneumatic planter
    - Nothing commercially available to modify planters to reduce dust on planters. Jeff has researched leads on this for hours, thinks that people who tried it did not see results and therefore retrofitting planters and any financial assistance programs did not go anywhere.
    - Blowing dust on ground caused other issues – higher potential for runoff, impact to beneficials (i.e. ground beetles).,
    - UVM has steered away from this being a viable option to reduce risk to pollinators.
        - UVM thinks that Fluency Agents are best, more feasible and practical, option
- Question: are you (UVM) going to use Fluency Agents this year?
    - Yes, had to buy in large quantities, so will use on test plots and will give some to Farmers to try in the next growing season
    - Will be hard to officially study because is hard to measure what is released to the air
- UVM Research update, Alburgh
    - Started harvesting last week, evaluating the impact of treated seed (neonic + fungicide vs fungicide only) same variety
    - Planted on 5 different planting dates, trying to coincide when corn seed maggot (CSM) populations would be occurring.
    - 2006 was last time corn was planted in that field, but corn planted in all adjacent fields
    - Harvesting corn to measure yield now
    - No significant differences seen across treated and fungicide-only seeds within planting dates, highest fly populations was between planting dates 2 and 3.
    - Where plants were missing dug up the seeds and found 1 wireworm, but no other insect predation on seeds was observed throughout the study.
    - Also didn't see differences where planted at other locations
    - Harvested planting date 1 (PD1) and planting date 2 (PD2)
        - PD1 no difference at all in yield
        - PD2 no significant difference in yield
        - This makes sense since populations were basically the same earlier in season.
    - We know CSM is highly variable, is very attractive to fields with high organic matter, cover crop turned over, etc.
        - This field had no manure and no cover crop, not a lot of residue, so was not an attractive location for CSM
        - Did have several participating farms with plots of treated vs fungicide-only seed that were previously green sod, but both of those fields were no till to herbicide killed sod, so sod was not flipped and therefore was less attractive to CSM
        - Overall, the study did not have any highly conducive sites for CSM
        - Some sites had manure applications, but did not see CSM damage in this particular year.
    - Plan to repeat study again next year

    - Only damage to population at sites was by birds, did not see much insect pressure at all
    - Collected soil cores and separated 0-2.5in and 2.5-6in to test for neonic residuals in soil
        - Has not had corn planted there for many years
        - Pre-planting results
            - Top portion of soil no neonics detected
            - 2.5-6in portion had detections (75%) averaging 6ppb (RL=2ppb) at pre-planting
        - Don't have other soil sample results from later in the growing season yet
- Research update, St Albans – 3rd year of corn silage with cover crop, previous crop was alfalfa, historic use of neonic treated seed
    - Sampling soil and water from surface runoff and water emitted from tile drainage
        - Don't have any water sample results back from lab (have been collecting since beginning of season)
        - Soil samples pre-plant
            - No treatment difference between different watersheds

Frequency and concentration of clothianidin at different soil depths prior to corn planting, St. Albans, VT, 2022.

	0 - 2.5 in.		*2.5 - 6 in.*	
Watershed	Detects†	Average concentration‡	Detects	Average concentration
	%	ppb	%	ppb
1	100	3.7	37.5	4.9
2	75	4.2	50.0	4.4

† The number of samples with concentration greater than reporting limit (2.0 ug/kg or ppb) divided by total number of samples (n=8), reported as a percentage of samples where analyte was detected.
‡ Average concentration of samples where concentration was greater than reporting limit.

Soil type: Covington clay, poorly drained.

Crop history:
3rd year of corn silage with cover crop

Historic use of neonicotinoid treated seed

Previous crop- alfalfa

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            - Saw less detection in deeper soil samples (2.5-6in)
            - One month after planting soil sample results, levels were relatively low and similar to pre-planting levels.
- Is there a "Halo effect" from regular usage of neonic treated seeds?
    - Heather has not seen any relevant research to this question in literature, although the halo effect of GMO traits has been extensively reported
        - GMO to reduce corn borer has reduced overall population of corn borer moth (well documented in literature) so use of GMO has benefited farms that don't use GMO corn because of overall population reduction
    - Broadscale use of neonics may have reduced populations so we may have benefited from this in the UVM reseach. Heather has not seen any recent literature on this. But is aware that it could cause issue in their research
- Field plots on farms have not been harvested yet, but this year corn could be in rough shape, the fields are in really poor shape so they are not going to record yields for those sites. So they will revisit for next year. Unfortunately it was a very wet year.
- Question: in a typical study, how many years before make determination on impact and the seriousness of such impacts?

    - Heather thinks at least 4 years for this type of study since it depends on insect pests and environmental influences. Most studies can publish after 2 years, but we know that insect pest pressures and weather/environmental conditions influence whether they will have major impact.
- Question: is there research available on the economic impact of CSM?
    - Yes, there has been a lot of research on CSM. Heather has seen fields completely decimated by CSM before there were neonic treated seeds
    - ** Heather will send paper that was published this year about CSM impacts.
- This year didn't see CSM flight when a lot of VT was planting their corn.
- UVM feels that focusing on how to reduce dust should be priority since this is biggest risk.
    - Alternative lubricants to abrasive talc and graphite is a good, feasible place to start since they are widely used
- Question: would access to uniform round seed help?
    - That would be difficult because the corn ear has much more flat shaped seed than round kernels so that is why round kernels are harder to get.
    - Newer tech planters don't need as much consistency among seeds, so industry has become less focused on providing it
    - Shape can greatly influence planting populations
- People are currently ordering seed now (by Sept 30) to take advantage of the largest discounts
- Question: are vacuum planters more flexible with different shaped kernels
    - Yes, they are more robust with different shaped seeds, at the least they are better at telling you when something is wrong (i.e. there are inconsistencies in the planting)
- AIB discussion
    - Very interesting results
    - UVM project is funded for 2 years

AIB Member Discussion – Seed label review, Existing BMP pick list member comments, Neonicotinoid treated seed recommendation brainstorm, work plan status & next steps

- Seed tag review
    - Members reviewed the label components of 2 different brands of treated seed
        - Labels had information regarding seed size, shape, treatments (brand name and active ingredients), variety, days to maturity, type of refuge and how much refuge contained in bag
        - Pioneer seed bag example has a barcode that growers can scan to access information about recommendations and initial planter settings for vacuum pressure that then are fine tuned as grower plants.
        - The percent of refuge in the bag is a different color and has the same herbicide tolerance trait, but has no, different rate, or different mode of action for insect protection
            - Refuge is included to protect the technology from insect resistance
        - The tech use agreement and protection of licensing is not specific to brand of treated seed, growers just have one on file that is checked by seed dealer
        - Plant back restrictions are due to EPA tolerances for the active ingredients. Those specific crops either exceed the tolerance for an active ingredient, or no tolerance exists.

        - EPA is in the process of seeing if they can make seed tag language enforceable and are expected to release an anticipated Advance Notice of Proposed Rulemaking (ANPR) in the next month. This will help make the FIFRA required information on the seed tag enforceable.
        - Sarah Owen has asked EPA about the amount of residue on food grown from treated seed and EPA's answer was a minimal amount (approximately < 0.1% of overall exposure risk to imidacloprid). The risk of exposure from other routes is more significant.
    - Question: is there time spent with the farmer decoding these seed tag labels?
        - Jonathan Chamberlin's experience is that the person who is purchasing the seed is aware of label language
        - Grower knows what they want for herbicide and above/below ground insect protection
        - Without, low rate, high rate depends on goals for that product
            - High rate gets to below ground insect protection
        - Label information is on every single bag they purchase, in terms of plant back restriction, growers know to look there if have crop failure, but in VT they don't have option for most of those second crop restrictions.
        - Growers are aware of PPE
    - Question: how are seeds loaded into box?
        - Most of the time seed purchased and brought to the farm in boxes that is conveyed into their units mechanically. Although some growers empty individual bags into seed hoppers in the planters. They pull tag to open bags and dump into planter by hand.
        - Typically 2 bags per box. Central fill systems handle boxes (40-50 units seed)
    - Question: do most producers plant their own fields?
        - Yes, the majority plant for themselves, because the window to plant has gotten too small for crop consultants or technical service providers to be able to offer planting services.
    - Planters cost around $250,000
- Neonicotinoid treated seed recommendation brainstorm
    - Question: Is organic growers' strategy of planting later to avoid insect pressure a solution for treated seeds?
        - This could be a question we receive from legislature and we need to be prepared with references to what we have learned to answer
            - Farmers are going to be concerned if regulated to specific planting dates. It will take away their limited flexibility during a busy important time of trying to get all their fields planted within a narrow window.
            - Amanda speaking on behalf of farmers as sensitive/concerned to incorporating recommendation of planting later
            - Some of the varieties that farmers want/need may not be accommodating to later planter dates
            - We would need to understand what short day varieties are available
                - A 75 day silage corn exists, but that might not be what state needs or wants for optimal feed.

        - Farmers need the flexibility to plant to conditions and around hay 1st cut.
        - Planting later would potentially increase corn acreage required
        - Shorter day varieties may not be available, VT already receives less options for available seed, adding short day requirement would further reduce their options.
    - Question: Can we have BMPs that are not regulatory and BMPs that are required?
        - Yes
    - Question: Is our pest pressure a result of our climate or "halo effect"?
        - We don't know the long term consequences yet, and we don't have the research to help inform our decision.
        - How fast will the pest pressure come back if neonicotinoid treated seeds are not used within VT? Or will it come back at all?
        - There is no rescue treatment for CSM
        - **next meeting is review/highlight of what we know (recap session)
            - Will be helpful to organize thoughts to respond to potential questions from legislature
            - Draw conclusions based on key topics listed in 2022 Act 145 and what we have learned relevant to those topics
            - **Morgan will include what we learned from research that compared neonic treated seed to diamide treated seed
        - **Jill will look through the research to see if any papers address the question of halo effect
            - Did Elson Shields address this in his presentation?
    -
- Work plan status & next steps
    - Move Oct 23rd meeting – potential Monday dates Oct 16, Oct 30, Nov 6
        - Member agreement on the following future meeting dates and times:
            - Oct 16 1-4pm
            - Nov 13 1-4pm
            - Dec 4 1-4pm
        - **Morgan will revise invites and update website
    - We have annual report due in December 2023
    - We must have recommendation to Anson by December 2023 to fulfill legislative charge.

Public Comments

- None

** - indicates action item