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

MEETING MINUTES

DATE: June 26, 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
Bradshaw, Terry		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		
David Kosztyo (Pioneer Corteva Agriscience) Stephanie Smith Jill Goss Zach Szczukowski Brooke Decker Christine Hazel (Corteva Agriscience) Elson Shields (Cornell University) Derrick Deadwyler (Government and Regulatory Affairs, Corteva Agriscience) Matt Wood Lisa Fantelli Bradley Van Kooten (Corteva Agriscience) Lucas Rhoads (Natural Resources Defense Council) Jonathan Wolff (Biotechnology Innovation Organization / CropLife America) Dillon Gabbert (Bayer Crop Science) David Huber Tracey Baute (Ontario Ministry of Agriculture, Food and Rural Affairs) Doug Johnstone Clark Parmelee		

Meeting called to order: 1:00 PM EST

Meeting adjourned: 3:51 PM EST

Next meeting: Monday July 24, 2023

Agenda:

1:00 PM – Welcome, introductions, agenda, previous meeting minutes & action item review

1:05 PM – Brad Van Kooten, US Category Lead, Seed Applied Technologies, Pioneer® Corteva Agriscience & David Kosztyo, District Sales Leader, Pioneer® Corteva Agriscience
Treated Seed Availability and Sales Logistics

1:50 PM – Christine Hazel, Global Regulatory Leader, Corteva Agriscience
Efficacy and Economic benefits of neonicotinoid seed treatments

2:35 PM – Tracey Baute, Field Crop Entomologist, Ontario Ministry of Agriculture, Food and Rural Affairs
Ontario Neonic Treated Seed Regulations and Related Research

3:20 PM – Elson Shields, Entomology Professor Emeritus, Cornell University
Seed Corn Maggot, Stand Losses and The Need for Insecticide Seed Treatments

3:50 PM – Workplan status, future meeting agendas

3:55 PM – Public Comments

4:00 PM – Adjourn

New Action Items

Action	Responsible Party	Complete? (date)
AIB members please send any additional questions we would like answered about Ontario and Quebec regulations by June 26 meeting	AIB members	

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	
Look into possibility of AIB hearing presentation about economic impact of loss of pollinators to food crops. Wendy Sue will reach out to her colleague to ask if they were interested in presenting to AIB	Wendy Sue Harper	6/21/2023
Provide AIB members with registration information for Annual Field Day at Borderview Research Farm on July 27	AAFM	6/20/2023
Organize state legislation information in a spreadsheet of other states' activities	AAFM	5/31/2023
Summarize Canada's PMRA overview of pollinator protection initiatives and BMPs on a federal level	AAFM	To be included on 7/24/23 agenda

AAFM will ask Agency Counsel for interpretation of Topic G in work plan	AAFM	6/15/23

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

- Terry Bradshaw asked to step down because of appointment as Chair of UVM Plant and Soil Science Department. Ann Hazelrigg will replace Terry as member representing vegetable and berry growers. Ann is Extension Associate Professor at UVM. Change in membership is effective July 1.
- 5/22/2023 meeting minutes accepted without edits
- No additions/modifications to agenda

Brad Van Kooten, US Category Lead, Seed Applied Technologies, Pioneer® Corteva Agriscience & David Kosztyo, District Sales Leader, Pioneer® Corteva Agriscience: Treated Seed Availability and Sales Logistics

- Rick Deadwyler, appreciates approach AIB is taking as we consider policy relevant to neonic treated seeds
- Objective to identify nontreated/non-neonic treated seeds that are available to VT farmers
- Current corn seed treatment options
    - Standard premium package (majority of seed)
    - Enhanced corn rootworm package (smaller percentage of seed)
    - No seed treatment
        - 0.6% of current orders
        - Because adds complexity a special order is required and must be made early. There is no price saving.
        - Reduces options for farmers if they want to switch maturity closer to planting
- Lots of active ingredients using: fungicides, nematicides, insecticides , biological to give broad spectrum protection
- Insecticides typically in neonic family based on effectiveness for farmers, is industry standard
    - Premium package has 2 insecticide active ingredients: one neonic, one non-neonic
    - Enhanced corn rootworm package has 1 neonic insecticide
- 58 different facilities that treat seeds in North America, over 1300 products means lots of complexity
- Each unique corn hybrid platform generates 52 SKUs as treatments get added and in different package size options, also different kernel sizes
- 215,598 SKUs for corn, 101,381 for soybean, if add one more treatment option then adds to this already very complex distribution logistics
    - Adding to the complexity, corn hybrids have a 5-7 year life cycle
- Integrated refuge to improve sustainability, is typically a different hybrid that is included in each bag at 5-10%
    - Included to reduce resistance among insect populations
- Seed production planning starts over 2 years in advance of sales
- Limiting seed options puts VT farmers at a disadvantage
    - Seed performance

    - Seed choices
    - More difficult to adapt to climate change
- Seed production is a multistep and multiyear process
- Adding more seed treatment options creates exponential complexity
- Dave Kosztyo, Pioneer Representative
    - 80 different corn hybrids for VT price list, 72-120 day maturity range so really complex list of products available
    - Yes, you can get untreated seed, but the complexity of getting it and planning for it makes it difficult. Untreated seed ordered in sept/oct and it all works out perfectly then we can do that, but switching maturities and hybrids or switching from grain to silage makes that option more complex.
        - More times than not farmers are looking to switch maturities or hybrids depending on how the growing season is closer to planting time
        - The flexibility is not available for untreated seeds
- Question: impact of NY state Birds and Bees bill that recently passed?
    - Have been working closely on this bill, lead by Rick Deadwyler. Don't know actual financial impacts to Corteva yet. Lots of proposals in place to provide access to treated seed technology with IPM considerations to allow for continued use of these products.
- Question: how involved were you in the passage of the NY bill and reasons you think this was passed? Was there an area where more education or scientific data would have been helpful?
    - Bill was first seen as part of subpoena to distributers in the state to better understand use of neonic treated seed in NY. Was no rationale or reason to collect that information at that time.
    - Passage of bill was fueled by political science as opposed to actual science
    - This bill has been a 4 year process with legislation with similar language, so was just a different political landscape that allowed for passage this year
- Cornell has started a NY specific study

Christine Hazel, Global Regulatory Leader, Corteva Agriscience: Efficacy and Economic Benefits of Neonicotinoid Seed Treatments

- Seed Treatment Technology – efficacy & economics
- Seed treatments include: biologicals to enhance germination, nematicides, fungicides, dye/colorant, binder to help active ingredients adhere and control release, inoculants, insecticides
- What is critical for customer
    - Flowability and plantability – through Corteva equipment when applying the treatments, but also through planting equipment
    - Dust-off below prescribed level
        - EU regulates this dust-off level
    - Seed germination
    - Coverage, perception of value
- Benefits, foliar or in-furrow application can use up to 10x higher amount of active ingredient than seed treatment.
    - Direct target to pest at time when need it, minimizes potential exposure to beneficial insects

    - Lowers operator exposure, because treated at facility not on farm
    - Effective at reduced rates
    - Reduces carbon footprint because less foliar sprays and less fertilizer applications, so less tractor passes
    - Increases adoption of cover crops because seeds are protected against soil pests that may be enhanced with cover cropping practices
    - Less packaging material used
- Key benefits of neonics i.e. Lumisure™ (clothianidin active ingredient)
    - Broad spectrum crop protection against early pests of corn, soybean, rice, cereals
    - Fits with insect resistance management plans
    - Protects against wide range of early season pests, including hard to control pests
    - Uniform and healthy plant stand establishment
    - Promotes early season vigor and solid root structure under early season insect pressure
    - Controls insect populations resistant to other insecticides (carbamates, organophosphates, pytethroids)
    - Favorable mammalian safety profile
- Cornell comprehensive neonic study highlights that 2 of 12 comparisons observed a significant increase in yield for neonic treated vs un-treated or fungicide only treated
    - The other 10 of 12 comparisons observed no differences in yield
    - None of the 4 comparisons between neonic treated seed and alternative soil-applied insecticides observed differences in yield
- Corteva Soybean data
    - Corteva has 10 years of data from research trials that show neonic insecticide seed treatments protect soybean yield by >3%
    - University of Wisconsin Extension 2014 study indicates >4% increase in soybean yield due to neonic seed treatments
- Growers would need 5 lbs of older chemicals to replace 1lb of neonic insecticide
- Economists estimate that a loss of seed treatments would cost North American consumers >$4 billion annually in higher food prices
    - Information from AgInfomatics report: The Value of Neonicotinoids in North American Agriculture: An Economic Assessment of the Benefits of Nitroguanidine Neonicotinoid Insecticides in the United States and Canada
- Seed treatment benefits beyond farming
    - Ever-increasing demand for food is global challenge
        - USDA estimates 70-100% increase in food demand by 2050, but US also losing millions of acres that grow it
- Seed treatments reduce off-target movement compared to over the top applications
- Advanced polymer coatings and properties of treatments themselves help ensure treatments stay with the seed
- Recent study from Vermont neonics not moving into waterways
    - VT Legislative testimony: Surface Water Monitoring for Neonicotinoids 2017-2021
- USDA reports that as use of treated seed increased between 2012 and 2017, cover crop planted to cropland increased 50% and conventional tillage practices decreased 24%
- Safety: when used according to label, treated seeds are safe for handlers, farmers, general public and environment

    - Industry provides training for farmers about proper use and publishes user labels on every bag of seed
        - Industry Guide to Seed Treatment Stewardship
- What is industry doing to make safer for pollinators and other wildlife?
    - Undergo rigorous testing and EPA review prior to commercial availability
    - Closed application systems when applying active ingredients to seed
    - Enhancing coating polymers to reduce dust-off
    - Creating new flow agents for use when planting to help further minimize dust-off
    - Implementing an ISO planting equipment standard to better control dust emissions
- Dust-off measurements for treated seed – Heubach Dustmeters to quantify dust being released. Corteva using this to test new coatings
    - Measures g dust/100,000 seeds emitted during planting
    - EFSA (European) standard is 0.75 g/100,000 seeds for corn
        - European Seed Treatment Assurance industry dust reference values
    - Corteva testing mean result is 60mg (0.06) = 4 grains of sand per 100,000 seed so 1.5 grains of sand that is measurable from 1 bag of seed
- Neonic insecticides do not impact colony health when used according to the label.
    - When used in typical field applications and according to label instructions, neonics do not pose a significant hazard to bees, even though some neonics are toxic to bees
        - At normal field doses, potential exposure to bees is below levels that would cause concern
    - Large scales studies in Europe and North America show poor bee health correlates well with parasites and diseases, not with pesticides
- Number of honey bee colonies (and honey and beeswax production) is increasing: US 13% Canada 18% in past 5 years
- Honey Bee Health Coalition brings together crop protection and seed industries with beekeepers, growers, researchers, government agencies, conservation groups, etc. to help improve pollinator habitat and forage, creating hive management tools and strategies to control crop pests while safeguarding pollinator health
    - Crop best practices: crop and product-specific IPM practices and messaging to improve bee and pollinator safety (apple, canola, corn, soybean, hive health)
    - Promotes communication and understanding among stakeholders
- Corteva Grows Pollinator Habitat program – goal to instill awareness, passion and skills in our youth as responsible stewards of our planet
    - Established >31 pollinator habitats (about 90 acres) established across the US
- Question: referenced study of economics **Christine will send to Morgan
    - AgInfomatics report: The Value of Neonicotinoids in North American Agriculture: An Economic Assessment of the Benefits of Nitroguanidine Neonicotinoid Insecticides in the United States and Canada
- Question: honey production graph was population growth accounted for?
    - Will have to look further into that data
- Question: ASTA benefits from seeds?
    - Yes

- Question: seed treatments 10x less? Is it assumed used at maximum rates? Seems is exaggeration because farmers unlikely to apply maximum rates of all fungicide, nematicide, insecticide.
    - Is more general
    - If you look at it pest by pest it is an oz vs a lb for insecticide for wireworm
    - Yes, if look up Lumisure label you can see the application rate per acre to compare
- Comment: (Elson) crash of honey bee colonies around 1990 correlates to introduction of varroa mites
- Comment: (Elson) 10x is conservative based on Geneva Lab
- Industry is looking for neonic replacements currently, it is very challenging. We are looking at 6-8 year timeline for alternative. The biggest challenge is finding same breadth of action with similar safety.

Tracy Baute, Field Crop Entomologist, Ontario Ministry of Agriculture, Food and Rural Affairs: Ontario Neonic Treated Seed Regulations and Related Research

- Ontario saw significant bee kills about 10 years ago.
- Tried to introduce policy that was evidence based
- Insecticide seed treatment use: 2013 Ontario corn 99% NST, Soy 65% NST
    - Were not really conducting spring assessments for presence of pests
- Among early season pests, some can be treated with alternatives treatments to NST, i.e. foliar insecticides, soil applied insecticides, Bt corn, crop rotation, biocontrol nematodes
    - Turning to seed treatments for wireworm, grubs, seed corn maggot
- Regulatory agencies associated with pesticides and/or pests - Federal
    - Health Canada's Pest Management Regulatory Agency (PMRA) register active ingredients, 15 year cycle to review
    - Canadian Food Inspection Agency (CFIA) regulates all seeds
- Provincial - Ontario
    - Ministry of Environment, Conservation, and Parks (MECP)
        - Regulates sale, storage, use, transportation, disposal of pesticides
    - Ministry if Agriculture, food, and rural affairs (OMAFRA)
        - Bees Act – regulate beekeeping, conducts bee inspections
        - Plant Diseases Act – ensures control of specific plant pests
        - Weed Control Act – ensures control of noxious weeds on agricultural or horticultural land
        - Educate growers on IPM
- Bee Kills reported in Ontario and Quebec in spring of 2012 and 2013
    - PMRA investigated and analysis of pesticide residues suggested that exposure to neonics in dust from planting with vacuum planters contributed to mortalities observed.
    - Had warm march that year so led to early planting, so maybe correlated when blooms out
    - Noticed correlation between negative vacuum planters (70% of corn planted with these but only 5% of canola planted with vacuum) didn't see bee kill incidents associated with canola planting, only corn
- Policy Development
    - Focused to corn and soybean because that was where the issue was

    - Practice IPM when choosing seed treatments
    - Improve and maintain communication with beekeepers
    - Key improvement was from use of seed flow lubricant (no talc or graphite allowed)
    - Ontario Neonic Regulations - July 1 2015, Pesticide Act (63/09 Revisions)
        - Corn or soy treated with clothianidin, imidacloprid, thiamethoxam (class 12 pesticides)
        - Obtain Treated Seed Vendor's License from MECP to sell, offer to sell, or transfer class 12
        - Vendors required to report annual sales of class 12 to MECP by Oct 31
        - In order to purchase and use a person must complete IPM coarse (food for 5 year) and complete Pest Assessment report (PAR)
        - MECP aspirational target of 80% reduction
        - PAR
            - Inspection of soil – annual, professional pest advisor (PPA) doing it every 3rd year
                - Threshold to access class 12s: avg 1 wireworm per bait (min 5 stations) or avg of 1 wireworm or 2 grubs across 5 digs
            - Inspection of crop
                - PPA must conduct crop loss assessment
                - Stand loss assessments comparing 5 good and 5 bad areas of untreated field
                - Threshold is 15% corn stand loss or 30% soybean stand loss
                - If threshold reached gain access seed for 100 acre plot the pest assessment was done in
    - Phased-In approach to policy requirements
- Quebec could conduct certified PPA inspections more efficiently because they have more agronomists available
- Saw 35% reduction in neonic treated corn by 2018, 43% reduction in neonic treated soybean planted in Ontario by 2018 (based on vendor sales reports sent to MECP)
    - Ontario yields for corn and soybean did not see significant changes 2015-2022
- With these restrictions found different treatments, i.e. diamides
- Very little to no use neonics now in Ontario
- Yields are not affected
- Diamides Insecticide seed treatments
    - Not classified as class E so no restrictions
    - Less harmful to bees, but similar toxicity to aquatic invertebrates
    - i.e. Fortenza (cyantraniliprole) registered in 2015
    - i.e. Lumivia (chlorantraniliprole) registered in 2016
- 2020 Amendments to Ontario Pesticides Act
    - Class 12 changed to Class E
    - Burden reduction:
        - IPM certification just 1 time no expiration
        - PAR could be used every year (don't expire annually) and can be used to gain access to class E for entire farm property, not just 100 acre plot

        - PAR don't have to be submitted to OMAFRA, vendors don't have to submit annual sales to MECP
        - No more paperwork - Could check box to indicate had high risk
- BUT very few acres treated with Neonics coz alternatives introduced
    - Cimegra for wireworms
        - Spray in-furrow on seed
        - Broflanilide
        - 20-26 days after planting protection
        - BUT planters are not often equipped to make this type of application since introduction of treated seed
- PMRAs recent decision on neonics
    - Special reviews and re-evaluations completed 2021
    - Identified potential risks to aquatic invertebrates exposed to clothianidin, thiamethoxam and imidacloprid so required changes:
        - Reduced max seed treatment rate (clothianidin, thiamethoxam)
        - Cancellation of use for planting in Canada for corn rootworm
        - Cancellation of imidacloprid seed treatment for corn flea beetle on field and sweet corn.
- Ontario Research
    - 5 papers published
    - Neonic exposures from
        - Exhausted dust from planters
        - Soil dust carried over from previous season moved by any activity in the field and by also contributing to abrasion of seed
        - Surface water after rain events and fields from fugitive dust
        - Residue blown onto flowering resources (weeds and trees)
    - Study comparing talc lubricant vs fluency agent
        - Corn fields adjacent to bee yards
        - Pre-study soil samples showed neonics present in soil prior to planting (from previous season) and significant increase after planting
        - 13x higher concentrations in surface dust prior to planting than in parent soil, indicating upward movement in soil
        - Seed abrasion in vacuum planters from use of talc and from field dust
            - 15 kg/ha of abrasive dust going through vacuum system
                - 98% comes from field through intake
        - 0.003-0.11 g ai/ha in exhaust
            - 92-99.95% originating from seed
        - Dust from planter exhaust accounts for >92% of neonics moving in and around fields
        - Saw 40% reduction of neonic on dandelions adjacent when used fluency agent compared to talc
            - But trees are majority of flowering resources out during planting time
        - Residues in water – tested any standing water in and around field
            - Residues within field significantly higher 1-4 weeks after planting

    - Mitigating Seed Treatment Drift – goal is that active ingredients stay on seed and any dust removed or placed in the soil. Reduction by:
        - Fluency agent = 50-60%
        - Deflectors = 70-90% but on surface and redistribution risk
        - Polymers = >80%
        - Scrubbing/filtering = >>90%
    - 98% of abrasion comes from field dust through intake – solution is to pre-filter followed by post filter
    - Study to understand what pest risk was
        - 4 year study monitoring for wireworm in adjacent strips that were fungicide only (FST) vs neonic treated seed (NST)
        - Vigor effect (i.e. plants look greener), but not difference in root injury, yield
        - Had 10 sites that NST outyielded FST, but 6 FST outyielded NST
        - Yield vs profitability – is extra neonic cost covered by more yield?
            - 47% of sites cost covered for corn 23% of sites for soy
        - Diamide seed treatment (DST) results were inconsistent – no clear advantage to the DST over FST or NST
        - No sites were over threshold for wireworms or grubs
        - No significant relationships between pest numbers and yield
        - Seed treatments were insurance pest management
        - Legislated thresholds did not represent economic injury levels
        - Early season insect pests in Ontario are generally minor, causing sub-economic injury
        - Use rates are not aligned with pest risk
- Similar results from Labrie et al. Quebec study 2020
    - Trials 2012-2016 in 84 fields in Quebec
    - 92.6% of corn fields and 69.0% of soybean fields had less than 1 wireworm per bait trap
    - No significant differences in plant stand or yield between treated and untreated corn or soybean
    - Neonic seed treatments in field crops in Quebec are useful in < 5% of cases – low level of pest pressure and damage
- Could this happen again?
    - If use remains prophylactic we could have perfect storm again because still need to address air intake issue on planters
    - Diamides being detected in water monitoring studies and have similar toxicity to aquatic invertebrates, even though less toxic to pollinators
- Key learnings
    - Follow IPM – find ways to reduce use where risk is low or manageable
    - Would be better to have product available/be able to order product closer to season so that monitoring could be used as indication of what seed is needed for planting
    - Need more in furrow products so treatment can be adjusted
    - Use other cultural tools i.e. cover crop biofumigation, adjust planting time according to prediction tools
    - Standardize BMPs for beekeeping to help identify risks from cropping systems
        - Risk to native bees higher and less manageable

    - Need ability to track seed treatment usage – for environmental and resistance risks but also awareness of growers needs
    - Work together to advocate where these products needed the most so usage in line with pest risk and potential loss
- Question: what bee health tracking?
    - Still track over winter survival, just hard to identify when it is a pesticide exposure
    - More documentation of what is going on with growers and beekeepers
- Question: did soybean seeding rate go down?
    - Still experimenting with seeding rates, but in general no, there is still a range of rates
    - Before neonics NY seeding rates 200k then dropped when neonics introduced (Elson)
- Question: were yields stable after new policies introduced?
    - Was a chance to try non-neonic, and others just found paperwork too burdensome so planted non-treated
- Question: how much are fields benefiting from residual neonics in studies?
    - We did not study that. It is doubtful that residues can be taken up by plant. So it is there but not active to be taken up by plants.
- Question: were you using the same hybrids and varieties of seed in your treatment comparisons?
    - Yes, same hybrids and varieties for the most part, in the dust studies the hybrids/varieties were paired up so comparing apples to apples
    - There was difference in heat units among some sites so not all same varieties
- Question: do you have overview of any changes in bee losses with the change of product?
    - Tracey not as connected with that
    - Overwinter losses improved
    - The kills that are occurring are attributed to varroa mite

Elson Shields, Entomology Professor Emeritus, Cornell University: Seed Corn Maggot, Stand Losses and The Need for Insecticide Seed Treatments

- Seed corn maggot (SCM) is a very unpredictable pest
    - Insect attracted to the environment, not the crop
    - Overwinter outside the field
    - Attracted to high organic matter
    - Only first 2 generations important to field crops
- Success of cover crops because we have successfully controlled our early season population of pest
- Is IPM an option to seed treatment?
    - What happens if SCM adults appear shortly after planting?
    - Corn 30-7 days window of vulnerability
    - No insecticide rescue treatment
    - Replanting not a viable option because growing season is too short, yield reduction, extra expense
    - If less than 50% stand loss less money is lost if the stand is retained than the expense of a replant
- Is an IPM threshold for SCM feasible?
    - SCM adults can appear before or after planting

    - Planting delays result in yield reduction due to shorter growing season
    - No insecticide rescue treatment
- 2 year study at Cornell Research farm
    - Continuous corn (corn for 7 years)
    - Corn following cover crop
    - Single rows
        - Non Bt corn no neonic seed treatment
        - Non Bt corn with neonic seed treatment
        - Bt corn no neonic seed treatment
        - Bt corn with neonic seed treatment
    - Impact in continuous corn
        - Debate on what % stand loss correlates to yield loss
        - 38% of planting pairs had > 10% stand loss
            - Some agronomists feel yield loss starts at this level
        - 33% of planting pairs had > 14% stand loss
            - Most agronomists feel yield loss starts at this level
        - 25% of planting pairs had > 20% stand loss
            - All agronomists feel yield loss starts at this level
        - Assume
            - 20-ton yield and $40/ton value
            - 1% yield loss = $8 loss/acre
            - 5% yield loss = $40 loss/acre
            - Cost of seed treatment = $5/acre
    - Following cover crop
        - 54% of planting pairs had >10% stand loss
        - 38% of planting pairs had > 14% stand loss
        - 29% of planting pairs had > 20% stand loss
    - Summary
        - Seed treatment has helped us adopt use of cover crops
- Alternatives
    - Do nothing and suffer losses (24-54% of the fields)
    - Diamides (currently 3x the cost of neonics)
    - Liquid insecticide with popup fertilizer planting
    - In-furrow soil insecticide
- Brian Nault (Cornell Geneva colleague) study 2021
    - ~43% plants damaged with untreated seed
    - ~5% plants damaged with thiamethoxam treated seed (Cruiser 5 FS) (88% control with neonic)
    - ~18-21% plants damaged with cyantraniliprole (diamide) treatd seed (57% control with diamide)
- Nault & Harding 2019
    - 50% reduction in SCM damage on snap beans with bifenthrin - so not as effective as neonic
- Mitigate risks
    - Dust from planters

        - In NY, 30% of corn planted with vacuum, 70% finger pick-up planters
    - Neonic in water from tile lines
    - Neonic residues in plant nectar (no conclusive scientific studies to date)
- Cornell Report
    - Very little research data from Northeastern US
    - Many cited sources are statistically inappropriate for the analysis utilized
    - My own research was misrepresented in the report
- Question: when monitoring for SCM, is there advantage in area vs individual fields to get idea of general population?
    - Trapping is variable from field to field hard to monitor when neonics nearby
    - We have found pupae in field, but no damage. It depends on what organic matter they are attracted to. They are attracted to the environment not the specific plant.
    - Difficult because there is no rescue treatment
    - No I don't believe in general population monitoring because they can chose your neighbors field, but not yours.
    - Flight is so variable
- Question: if you had no-till along with cover crop and manure what do you think would have happened?
    - Clover and grass cover crop tilled 1 week prior to planting then topped with manure
    - Continue corn was minimal till
    - How was field tilled, depends on organic matter
    - There may be issue with composition of cover crop, i.e. clover is more attractive than grass, so more research to see if grass cover crop would reduce the risk of SCM
- Question: Are pest pressures and composition much different between Ontario and northern NY/VT?
    - NY and VT are very similar, as you go further north there are lots of differences in pest composition
    - So I don't know what the pest composition is in Ontario, Quebec would be more similar to VT
    - Concern is having research plots within existing fields

Workplan status, future meeting agendas

- ** board member let me know if any more information they need to address our required topics.

Public Comments

- Lucas Rhoads (Natural Resources Defense Council)
    - Highlight peer-reviewed research about lack of benefit of neonic treated seeds on yields
    - Managed honey bee colonies numbers may be increasing, but research lacking for native bees
    - Neonics make honey bees more susceptible to varroa mites
    - Not aware of spray treatments decreasing with increased use of neonic treated seed
    - NY legislation passed Birds and Bees Act
    - ** will provide AIB with comments and specific research referenced.

** - indicates action item