NATIONAL POTATO COUNCIL
50 F Street, NW, Suite 900
Washington, DC 20001
(202) 682-9456 phone
www.nationalpotatocouncil.org

October 25, 2021

OPP Docket
Environmental Protection Agency Docket Center
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0001

Re: 2021, Draft Biological Evaluations of Three Neonicotinoids (EPA-HQ-OPP-2021-0575).

The following comments on Dockett: EPA-HQ-OPP-2021-0575 are offered by the National Potato Council (NPC) and the following affiliate state organizations on behalf of our potato grower members.

- Colorado Potato Administrative Committee Area II
- Empire State Potato Growers (New York)
- Maine Potato Board
- Idaho Potato Commission
- Northern Plains Potato Growers Association
- Oregon Potato Commission
- Potato Growers of Michigan
- United Potato Growers of America
- Washington State Potato Commission
- Wisconsin Potato and Vegetable Growers

NPC grower members are responsible for the production of more than 95 percent of the potatoes grown in the United States. The value of that production is more than $4.1 billion dollars at farm gate and is increased dramatically because of distribution and further processing.

Commercial potato production in the U.S. occurs in the majority of states and requires protection of the crop for 90-120 days from planting until harvest. The earliest planting starts in southern states in late December and typically finishes in northern states in early June. Harvest begins in southern states in late April and typically finishes in late October in northern states. Depth of planting for seed pieces vary by soil texture and potato variety but are usually placed 4-6 inches below the soil at planting.

Potato production in the United States relies on the use of neonicotinoids (including clothianidin, imidacloprid and thiamethoxam) as part of an Integrated Pest Management (IPM) plan. Therefore, our industry wants to ensure that this evaluation is grounded in the real-world application of these products as such activities reflect the actual environmental impact of their continued use.

In reviewing the Draft Biological Evaluations for clothianidin, imidacloprid and thiamethoxam, we believe that the assessment of the potential biological impact on endangered species from the use of

these products is inaccurate. This inaccuracy is a result of the erroneous assumption that ALL acres are treated with registered active ingredients at the FULL labeled rate. This assumption is simply not the case and grossly overstates the potential environmental impact of the continued use of the products. **In order to correct this foundational error, we ask that both EPA and the "services" utilize real world usage data in their assessments to refine the biological impact of these critical insecticides in potato production.**

Neonicotinoid insecticides have advantages in terms of human and animal health consequences over other current chemical alternatives including the organophosphates, carbamates, pyrethroids and chlorinated hydrocarbons. While foliar applications are labeled, approximately 90+% of the neonicotinoid insecticides applications to potato are soil-applied either at-plant, in-furrow, or as a seed treatment. These use patterns increase the efficiency of their use by concentrating active ingredient within vascular elements of the crop (e.g., xylem). Delivery in these manners target a very discrete range of insect and mite taxa and limits both acute and chronic, non-target effects associated with foliar applications. At-plant uses also lengthen the duration of control ranging from 21-60 days across the production system, minimizing the need for foliar applications of other products.

These soil-applied applications are very targeted with coarse droplet sprays applied to the potato pieces close to the ground then immediately covered by 4-6 inches of soil. As the potatoes grow, additional soil is added (hilling) meaning additional buffering the treatment area from movement off-site

Neonicotinoid insecticides are an important component of potato programs in controlling (1) sucking insect pests, (2) root and stem-feeding pests, and (3) leaf-feeding pests in potato production systems.

1. Targeted sucking insect pests include colonizing aphid species, leafhoppers, psyllids and whitefly. Neonicotinoid insecticides are known to prevent the spread of insect-transmitted viral, bacterial and mollicute pathogens commonly occurring in potato crops from these pests. Examples of insect-transmitted pathogens include Candidatus Liberibacter solanacearum (CLas, Zebra chip), Candidatus phytoplasma asteris (AY, Aster Yellows), and Potato leafroll virus (PLRV). These disease vectors have a very low economic threshold level and have the potential to disrupt marketability of seed potatoes along with potatoes destined for export markets, in some cases with a zero-tolerance level.

   In-season applications of insecticides such as Beleaf (flonicamid), Fulfill (pymetrozine), and Movento (spirmtetramat) are effective at suppressing late season aphids after the neonicotinoid has done the "heavy lifting". In the absence of neonicotinoids and using only the above chemistry, one grower indicated that they would have yield loss from aphids estimated at $100/acre, plus spend an extra $100/acre on the above insecticides equaling a $200/acre impact.

   Similar to aphids and CPB, there are other chemistries such as Torac (tolfenpyrad), Agrimek (abamectin), Fulfil l(pymetrozine), Movento (spiroetramat), Beleaf (flonicamid) that suppress psyllids, but control is greatly improved when there is a "background" level of neonicotinoids early-season.
   - The first psyllids to arrive are more likely to be "hot" (carry *Liberibacter*, which causes internal defects aka Zebra Chip), and an early-season neonicotinoid is crucial to suppress these "hot psyllids" that are extremely difficult to identify and minimize their impact by scouting. Foliar psyllid chemistries are very effective against mid- and late-season

psyllid flights, but neonicotinoid play a crucial role in minimizing damage from early-season psyllid flights.

- In 2017, several growers eliminated neonicotinoid from their early-season psyllid management because research was showing that psyllids were developing resistance. These same growers have gone back to using neonicotinoid, even though as with CPB, the neonicotinoids might only kill 35-70% of the psyllid population. One grower has estimated the economic loss due to reduced psyllid control at $500/acre in "bad psyllid years" (estimated as one in five years) resulting in a $100/acre average.

2. Difficult to control root and stem-feeding insects are among other pest systems which the neonicotinoids have advantages, and these include white grub complexes (Phyllophaga, Maladera spp.) and wireworms (Agriotus, Melanotis spp.).

3. While not the primary pests targeted with the use of neonicotinoid insecticides at planting (imidacloprid), control of these pest occurs because of the systemic controls provided without additional chemistries being needed in most years. Alternatives to include Mocap (ethoprophos), Regent (fipronil), Movento (spirotetramat), Brigade (bifenthrin), and Telone (1,3-dichloropropene).

4. Neonicotinoid insecticides applied at planting (imidacloprid and thiamethoxam) are an integral part to controlling leaf-feeding pests including the 1st generation of the Colorado potato beetle (CPB), an insect with a high potential for resistance development.

   Foliar in-season applications of Torac (tolfenpyrad), Rimon (novaluron), Agrimek (abamectin), Exirel (cyantraniloprole), Coragen (chlorantraniliprole), and Delegate (Spinetoram) can help suppress CPB and are an excellent addition to the neonicotinoid applied early-season.

   However, there is no replacement for early-season neonicotinoid applications in potato production systems, which are so critical for managing the "extended diapause" of CPB and resistance management of other newer chemistries.

   One grower shared they anticipate an additional cost without neonicotinoids early season if the other current foliar insecticides maintain their efficacy. These losses are because of yield loss at $100/acre, additional chemistry cost at $150/acre, and extra application costs in-season (some insecticides are incompatible with fungicides and a separate pass with an airplane or ground rig is required) at $30/acre, for a total = $280/acre.

The following examples are being shared by growers on how imidacloprid, thiamethoxam, and clothianidin are used as a part of their Integrated Pest Management systems and are believed to be representative of standard production systems.

<u>Pacific Northwest (WA)</u> – In Washington state, over 80% of potato fields are treated with neonicotinoids, all early in the season between late February and May. The most common type of treatment is to seed potato, tuber pieces that are planted to generate the commercial crop. This application is made in closed chambers as seed potato pieces are being prepared for planting after they are cut to the appropriate size. These closed chambers reduce worker and environmental exposure. Fewer growers apply narrow bands of a neonicotinoid solution into furrows in raised beds at planting that are immediately covered with 10 inches of soil. And even fewer growers apply neonicotinoids with a ground rig or by chemigation just after potato plants emerge from the soil. WA potato growers use the maximum amount of active ingredient per acre

allowed for a single application early in the season, but do not use the maximum active ingredient allowed per acre per season. WA potato growers rarely, if ever, apply neonicotinoids after the early part of the season due to their regard for managing resistance to neonicotinoids particularly by the Colorado potato beetle. Thus, their use is limited to one application per growing season. Potatoes are typically on a four to five-year rotation with other annual crops many of which do not use neonicotinoids. We estimate that in a four or five year cycle a neonicotinoid insecticide might be used on potatoes and possibly one other crop during that cycle making accumulation and persistence over time in these fields unlikely.

A variation of this, an individual grower indicated that as a seed treatment, either 0.28 oz/cwt of Admire (**imidacloprid**) or 0.19 oz/cwt of Cruiser (**thiamethoxam**) is applied to the seed piece in the seed cutter in an enclosed system that the seed passes through. It is applied between March 1 and April 15. These chemistries are used as the bedrock of the farm's IPM program and minimizes the total insecticide applications. With application of either product, no other neonicotinoid is applied to the crop during the growing season to prevent resistance. Either application provides adequate control of targeted pest of 60-90 days after planting of the targeted pests: Colorado Potato Beetle, Green Peach Aphid, and Leaf hopper.

Both **thiamethoxam** and **imidacloprid** may be applied foliar if not used on the seed or applied in furrow at planting. When foliar-applied, based on scouting, it is applied long before bloom (bloom is around 60-days after planting, depending on variety) and is only applied once. Due to the way they are used, there is no buffer needed.

As a late season (August or September) foliar application, Belay (**clothianidin**) may be used as it has a 0-day PHI and 12-day REI. It is only used if thiamethoxam or imidacloprid was not used as a seed treatment. If applied, is used to eliminate pest right before harvest. When used for late season control, buffers are maintained in any location where off-target insects may be encountered and is not used anywhere that adjacent fields have flowering crops or bee colonies. This is an effective, low-cost control as alternatives would require two products at 3-4 times the costs. When more selective alternatives are used, the results often don't achieve the threshold and this strategy is needed to rescue the field.

Pacific Northwest (OR) – Admire Pro 42.8% (**imidacloprid**) is applied in furrow with a flat fan nozzle on the planter at a rate of 5-7 fl. oz/acre as a critical early to mid-season control of Colorado Potato Beetle, Green Peach Aphid, and Psyllids. Alternatives to this strategy would conservatively require 4-5 foliar applications of other active ingredients including pyrethroids for similar control. This alternative would increase exposure to untargeted pest and increase worker exposure risks due to increase product handling.

Maine – CruiserMaxx Vibrance (**thiamethoxam**) is applied as a seed treatment at in the seed cutter at a rate of 0.5 fl. oz./cwt. This is the only application applied to the crop. A Milestone liquid seed treater is used and is calibrated 1-2 times daily as seed is being treated. As a part of the farms IPM strategy, the use of thiamethoxam as a seed treatment lowers the total amount of active ingredient used on the crop.

Regular scouting of fields is used to determine the need for late season control for CPB, aphids, flea beetles or leaf hoppers only based on University of Maine established economic thresholds. Using the labeled rates, one insecticide application for European Corn Borer (ECB) early July and typically no other insecticide applications occurs until late August/early September and only on long season varieties. The insecticide for ECB is a different class of chemistry (non-neonicotinoid) to help delay resistance.

Michigan – Most of the acres apply either imidacloprid or **thiamethoxam**, at labeled rate, as a seed treatment in the seed cutter operation, but some in-furrow applications are still used on both commercial and seed farms. Rates per cwt are varied based on each variety's planting density. The application is used to control Colorado Potato Beetle, and aphids.

One grower indicated that an application of Belay (**clothianidin**) is then applied aerially and by TeeJet ground boom border sprayer with a 20 gal/acre total volume. The ground boom border sprayer is used to ensure coverage of the field edges that cannot be covered with the aerial application. All aerial and ground rig sprays have "drift-reduction" chemicals added to increase droplet size.

The farm uses the maximum labeled rate when thresholds are reached to minimize the risk of "escapes" that quickly lead to insecticide resistance.

As a part of the farms Integrated Pest Management plan, it incorporates the follow practices:

- Colorado Potato Beetles
    - Scouting 1-2 times weekly
    - Control volunteer potatoes in neighboring fields
    - Coordinated approach with neighboring potato farmers on chemistry use/rotation
    - Maximize the distance between this year's potato fields from last year's fields (One grower indicated a goal of one or more miles from prior year potato fields if possible).
    - Do NOT use group 28s (diamides; Exirel or Coragen) on 1st generation to preserve this very effective chemistry for 2nd generation. Do NOT use neonicotinoids or other "1st generation" chemistries (Agrimek, Rimon, Blackhawk, Torac) on 2nd generation beetles.
- Aphids
    - Scouting weekly
    - "Green buffers" around field edges (aphids are attracted to the contrast between bare soil and potato plants).
    - Use consecutive applications of the same foliar chemistry if aphids survive the first application to minimize chemical resistance.
    - Limit the use of pyrethroid insecticides.
    - Cover crops have been selected which do not attract aphids. Some cover crops that are great for soil health are bad at attracting aphids.

Wisconsin – An estimated 90-95% of potato acres in Wisconsin are treated with an at-plant (seed & in-furrow) application of a neonicotinoid insecticide. Given the measured levels of insensitivity (resistance) among populations of the Colorado potato beetle (CPB) in the state, these active ingredients (imidacloprid, thiamethoxam and clothianidin) have become insufficient to provide season-long control of the pest similar to control efficacy observed in the 20 years (1996-2016) following initial registrations. They continue to be considered a valuable tool for the control of annually problematic, sucking insect pests in potato including colonizing aphid species (*Myzus persice, Macrosiphum euphorbiae*) and the potato leafhopper (*Empoasca fabae*).

Provided the resistance management guidelines present on all labels, producers in Wisconsin infrequently use neonicotinoids as foliar control options on top of an at-plant use. Moreover, labels also contain published seasonal total maximum use rates (g ai/ac) that cannot legally be exceeded, and this

restriction further limits most foliar neonicotinoid applications over the top of at-plant uses in the current season.

Applications of **clothianidin** (Belay Insecticide) are increasing an infrequent use as a foliar product applied to potato given the pollinator protection language on the label stating, "*Bees must be removed, covered or otherwise protected for 5 days following application",* and "*Do not apply this product to blooming, pollen-shedding or nectar-producing parts of plants if bees may forage on the plants during this time period".* These restrictions have significantly limited Belay as a foliar option, other than as a late season aphicide and particularly in seed production areas during periods of high risk for PVY transmission (see comments below).

To increase the efficacy of the currently registered, and reduced-risk insecticides now more frequently used as foliar control options in potato, producers abide by several integrated pest management (IPM) approaches:

- Mode of Action (MoA) class product rotations among generations and across years for the Colorado potato beetle (CPB) and outlined by the Insecticide Resistance Action coalition (https://www.irac-online.org).
- Crop rotations in space (> 800km) over successive years of potato production to limit colonization intensity in subsequent years.
- Contract and producer-led field scouting to identify infestation 'hot spots', and insect development stages present in the crop. Matching active ingredient with predominant insect stage of development has become a critical part of precision pest management in Wisconsin.
- Restated, matching product use with sensitive stages of insect development. Some active ingredients have greater efficacy against adults, others against eggs, and still others against nymphs or larvae of select pests.
- Implementation of perimeter or border spaces to limit season total maximum and to target specific stages of population development (e.g. colonizing adult CPB and eggs).
- Limited use of foliar insecticides upon seed potato acres given the timely uses of paraffinic oils which act as feeding deterrents and behavioral modifiers for alighting aphids.
- Use of spatially explicit, insect phenology models to aid producers in knowing when and where insect populations have reached specific stages of population development. The Wisconsin Vegetable Disease and Insect Forecasting Network is an example of this tool for potato and vegetable producers (VDIFN: https://agweather.cals.wisc.edu/vdifn). Among preset models available at the site, a Potato virus Y risk model is available to aid producers in anticipating when aphid flights into seed crops.
- Strict adherence to pollinator protection language recently published (and updated) on several insecticide labels, with specific reference to risk avoidance during the bloom periods of potato and other vegetable crops.

Southeast (GA, SC, IN) - **Imidacloprid** is applied, at labeled rate, in-furrow at planting with a flat nozzle, in-row with a total volume of 15 gal/acre. The application is used to control CPB, and aphids.

An application of Belay (**clothianidin**) is then applied aerially and by TeeJet (typically air induction or nozzles that deliver a medium to coarse droplet) ground boom border sprayer with a 20 gal/acre total

volume. The ground boom border sprayer is used to ensure coverage of the field edge not covered with the aerial application. All aerial and ground rig sprays have "drift-reduction" chemicals added to increase droplet size.

The farm uses the maximum labeled rate when thresholds are reached to minimize the risk of "escapes" that quickly lead to insecticide resistance.

As a part of the farm's Integrated Pest Management plan, it incorporates the follow practices:

- Colorado Potato Beetles
    - Scouting 1-2 times weekly
    - Control volunteer potatoes in neighboring fields
    - Coordinated approach with neighboring potato farmers on chemistry use/rotation
    - Potato fields one or more miles from prior year fields if possible
    - Do NOT use group 28s (diamides; Exirel or Coragen) on 1st generation to preserve this very effective chemistry for 2nd generation. Do NOT use neonicotinoids or other "1st generation" chemistries (Agrimek, Rimon, Blackhawk, Torac) on 2nd generation beetles.
- Aphids
    - Scouting weekly
    - "Green buffers" around field edges (aphids are attracted to the contrast between bare soil and potato plants).
    - Use consecutive applications of the same foliar chemistry if aphids survive the first application to minimize chemical resistance.
    - Limit the use of pyrethroid insecticides.
    - Cover crops have been selected which do not attract aphids. Some cover crops that are great for soil health are bad at attracting aphids.

<u>West/Southwest (ID, TX, OK, KS, NE)</u> - **Imidacloprid** is applied, at labeled rate, in-furrow at planting with a flat nozzle, in-row with a total volume of 15 gal/acre. The application is used to control CPB, psyllids, and aphids. *Note:* On the Idaho farm, half of the acreage used **Thiamethoxam** applied at labeled rate, as a seed treatment during seed cutting.

An application of Belay (**clothianidin**) is then applied aerially and by TeeJet ground boom border sprayer with a 20 gal/acre total volume. The ground boom border sprayer is used to ensure coverage of the field edge not covered with the aerial application. All aerial and ground rig sprays have "drift-reduction" chemicals added to increase droplet size.

The farm uses the maximum labeled rate when thresholds are reached to minimize the risk of "escapes" that quickly lead to insecticide resistance.

As a part of the farms Integrated Pest Management plan, it incorporates the follow practices:

- Colorado Potato Beetles
    - Scouting 1-2 times weekly
    - Control volunteer potatoes in neighboring fields
    - Coordinated approach with neighboring potato farmers on chemistry use/rotation
    - Potato fields one or more miles from prior year fields if possible
    - Do NOT use group 28 pesticides including diamides, Exirel (cyantraniliprole) or Coragen (chlorantraniliprole) on the 1st generation to preserve this very effective chemistry for

the 2nd generation. Do NOT use neonicotinoids or other "1st generation" chemistries: Agrimek (abamectin), Rimon (novaluron), Blackhawk (spinosad), Torac (tolfenpyrad) on 2nd generation beetles.

- Aphids
  - Scouting weekly
  - "Green buffers" around field edges (aphids are attracted to the contrast between bare soil and potato plants).
  - Use consecutive applications of the same foliar chemistry if aphids survive the first application to minimize chemical resistance.
  - Limit the use of pyrethroid insecticides.
  - Cover crops have been selected which do not attract aphids. Some cover crops that are great for soil health are bad at attracting aphids.
- Psyllids
  - Scouting twice weekly
  - Psyllid trapping and lab analysis and results sharing with other potato farmers through High Plains Psyllid Management Group
  - Shifting away from ultra-susceptible varieties whenever customers allow
  - Aerial application of fish guts (smell is repulsive to psyllids as well as humans)
  - Do NOT use pyrethroids, to mitigate risk to populations of beneficial insects.
  - Foliar chemistries are always used successively to minimize cross-generational resistance. For example: Two applications of Fulfill (pymetrozine), followed by two applications of Beleaf (flonicamid) sprays, followed by two applications of Movento (spirotetramat) to keep nymph populations suppressed. Agrimek (abamectin) is used when adult populations exceed thresholds. Torac (tolfenpyrad) is used late season if adults or nymphs flare-ups but is not used early season because to mitigate risk to beneficial insects.

Again, we ask both EPA and the "services" utilize real world usage data in their assessments of the biological impact of these critical insecticides in potato production. We further believe these real-world examples of actual use, including the use of a variety of mitigation tools as a part of a farm's Integrated Pest Management strategy will result in minimized impacts on endangered species from the managed use of clothianidin, imidacloprid and thiamethoxam in potato production systems.

The National Potato Council and the affiliated state organizations welcome the opportunity to further share with EPA and the "services" additional details on how these key pesticides are used in the production of potatoes in the United States.

The National Potato Council sincerely appreciates EPA's consideration of these comments.

Sincerely,

Michael R. Wenkel
Chief Operating Officer