Dear Chairwoman Partridge and the rest of the House Agriculture and Forestry Committee,

I listened to the Agriculture and Forestry Committee meeting held on Friday, February 3, 2022 and heard testimony that was provided to the committee which was not completely accurate, incomplete and potentially misleading. I wish to address these statements. As a Vermont beekeeper for 30 years who served on the Vermont Pollinator Protection Committee and has been a past president of the Vermont Beekeepers Association, I have been following the issue of neonicotinoids and pollinators closely.

Early in the meeting, Morgan displayed slides that showed the amount of pesticides that were detected in the operations of 7 Vermont Beekeepers. She stated more than once that the chemicals that were detected at levels above a trace level are chemicals that are used by beekeepers in hives. This is true for most of the pesticides listed with high detectable levels (e.g. Thymol, Fluvalinate, 2,4-DMPF, coumophos and coumophos oxon), but not at all true for Atrizine. Atrazine is an herbicide that is not approved for use in bee hives and beekeepers do not use it to control pests or disease in the hive.

In addition, Brook was right that there is little-to-no evidence of acute neonicotinoid harm to bee hives in Vermont, but she did not mention the chronic low dose damage that is known to occur to honey bees from studies and from beekeeper experience. Acute exposure to bees from neonicotinoids is not really a big issue in Vermont. The real problem is the ongoing low-dose chronic exposures. Research conducted in conjunction with USDA found that trace levels that are not considered to be harmful to bees and are NOT DETECTABLE made colonies significantly more vulnerable to disease. The only reason researchers knew that the bees being studied had been exposed to low levels of neonicotinoids is because they exposed the bees themselves. (Pettis et. al. 2012) Testing could not detect the ultra low doses used in the study. Just because VAAFM is unable to detect neonics in hive samples they test, does not mean the pesticide is not there and causing harm to bees. The reason VAAFM's field studies are not able to make the link between treated articles and pollinator health is because the tools they are using are simply not up to the task.

Published peer-reviewed studies show that 80% or more of the pesticide on a treated seed enters the soil and can be picked up by the water that filters through the soil. Once again, just because VAAFM has not been able to duplicate these results with their limited budget and staffing does not mean it is not happening.

Cary spoke about the unintended consequences that occur when "tools" are removed from the farmers toolbox, but nothing was said about the unintended consequences that beekeepers are dealing with as a result of farmers use of nenonics as a tool. This is especially alarming since several long-term studies, and a recent review of the literature indicates that not only are neonics not needed most of the time but they make farmers less profitable. (Gout et. al. 2020; Labrie et. al. 2020; Pecenka et. al. 2021; Smith et. al. 2020)

While there are several factors negatively impacting honey bee colonies, it is clear from the research that the yearly losses of bee hives increased dramatically precisely at the time farmers use of treated seed increased dramatically. This was demonstrated to Cary and the rest of the Pollinator Protection Committee when we were provided testimony that showed graphs of the use of treated articles in the U.S. which coincides precisely with the dramatic increase in honey

bee losses beekeepers first began experiencing around 2006-2007 (Douglas and Tooker 2015). This correlation was confirmed through independent research in Europe that found when the use of treated seeds increased, so did pollinator decline. (Budge et. al. 2015)

Testimony was provided that showed proposed regulations that would help protect pollinators by restricting applications when pollinators may be present. Please note that the buffers, application times and methods designed to avoid pollinator exposure that appear in the proposed regulations, DO NOT APPLY to systemic pesticides such as neonicotinoids. Once a systemic pesticide is in a plants system, the plant is toxic to any insect that visits the plant for the rest of that plant's life which can potentially be a year or more. There is no preventing pollinator exposure to systemic neonicotinoid pesticides through the timing of application if that application occurs at any time prior to flowering. It was stated that Syngenta testified that neonics only last in a plant grown from treated seed for about 6 weeks. This claim flies in the face of numerous independent studies and trials that have shown that neonics can still be detectable in plants treated years earlier. I would encourage committee members to request copies of the study Syngenta use to substantiate their claims of a 6 week life-span for neonics when used in a treated article. If such a thing exists, I suspect that it is not a peer reviewed published study.

During previous testimony on H.626, Cary indicated that today's pesticides are not much more harmful to pollinators than previously used chemicals. This opinion is not justified by the scientific data. Neonicotinoid pesticides are an evolutionary leap in pesticide technology. Since humans are able to metabolize nicotine better than insects, neonicotinoid pesticides are not as harmful to people as most other pesticides, however they are hyper-toxic to insects. Researchers have found that the neonicotinoid insecticide Thiacloprid is twice as toxic to insects as DDT. The most commonly used neonic, Imidacloprid is 7,000 times as toxic as DDT, and at 10,000 times the toxicity of DDT, Clothianidin is the most toxic of all neonicotinoids. (Pisa et. al. 2015 https://link.springer.com/article/10.1007/s11356-014-3471-x/tables/1 )

VAAFM efforts to use their authority to regulate treated articles has so far been limited to monitoring. This basically means doing nothing but watching and waiting while using testing methods and tools that are not sufficient to adequately identify potential issues, meanwhile pollinators and beekeepers continue to bear the consequences of the lack of more forceful and meaningful action.

The passage of H.626 An Act Related to the Sale, Use and Application of Neonicotinoid Pesticides would be meaningful action that would provide welcome relief to Vermont's beekeeping community. I urge you to pass this out of committee. Thank you for your time and consideration in this matter.

Citations:

Budge, G., Garthwaite, D., Crowe, A. *et al.* Evidence for pollinator cost and farming benefits of neonicotinoid seed coatings on oilseed rape. *Sci Rep* 5, 12574 (2015). https://doi.org/10.1038/srep12574

Douglas, Margaret, R., John F. Tooker (2015) Large-Scale deployment of seed treatments has driven rapid increase n use of neonicotinoid insecticides and preemptive pest management in U.S. field crops, Environmental Science & Technology, 49(8): 50888-5097. DOI: 10.1021/es506141g

Gout, T.A., P. A. Koenig, J. K. Kapuvari, S. H. McArt (2020) Neonicotinoid insecticides in New York: Economic benefits and risk to pollinators, 432 pp. https://pollinator.cals.cornell.edu/sites/pollinator.cals.cornell.edu/files/shared/documents/0727%20Accessible%20Neonicotinoid%20Assessment%20compressed.pdf

Labrie G, Gagnon AÈ, Vanasse A, Latraverse A, Tremblay G (2020) Impacts of neonicotinoid seed treatments on soil-dwelling pest populations and agronomic parameters in corn and soybean in Quebec (Canada). PLOS ONE 15(2): e0229136. https://doi.org/10.1371/journal.pone.0229136

Pecenka, J. R., L. L. Ingwell, R. E. Foster, C. H. Krupke, I. Kaplan (2021) IPM reduces insecticide applications by 95% while maintaining or enhancing crop yields through wild pollinator conservation. Proceedings of the National Academy of Sciences.

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Bees be with you,
Ross Conrad (he, him, his)
Dancing Bee Gardens