

# GOVERNOR'S COMMITTEE ON POLLINATOR PROTECTION

## Draft Recommendations

As of 8/3/2018

DESIRED OVERALL RESULT: HEALTHY, DIVERSE POLLINATOR  
POPULATIONS THAT SUSTAIN AND ENHANCE MINNESOTA'S  
ENVIRONMENT, ECONOMY, AND QUALITY OF LIFE.

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Rationale: Healthy, diverse pollinators require good, clean food. This means that all Minnesotans should increase flowering habitats that provide good nutritional resources for pollinators, and take concrete steps to protect these habitats from undue pesticide exposure. These recommendations provide a variety of means to increase and maintain uncontaminated pollinator habitat across rural and urban areas of Minnesota, while enhancing Minnesota's economy and quality of life. Focusing solely on habitat, or solely on pesticide exposure, will not be sufficient to sustain and enhance pollinator populations.

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## GOAL 1: LANDS THROUGHOUT MINNESOTA SUPPORT HEALTHY, DIVERSE, AND ABUNDANT POLLINATOR POPULATIONS

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Rationale: The diversity, abundance, and health of pollinators requires access to sufficient and diverse flowers that bloom throughout the growing season, as well as undisturbed and uncontaminated habitat for foraging, nesting, and overwintering.

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### ***A. Maintain, restore, and enhance pollinator habitat on permanently protected natural lands***

#### **1) Expedite the update of the MNDNR's wildlife food plot policy with a focus on pollinator habitat to address pollinator concerns (1A1)**

**Recommendation summary:**

**Rationale:** There are currently about 15,000 acres of wildlife food plots managed by the DNR in Minnesota, mostly planted to monoculture corn and soybeans. Neonicotinoid insecticide seed treatments are prohibited in these plots, but are likely still commonplace because coordination, follow-up, and enforcement efforts present a challenge. There is a need for better education for cooperative farmers about the management requirements and where to purchase untreated seed, and/or the need to shift away from crops that are typically treated with neonicotinoid insecticides and instead plant species that can benefit a broader spectrum of wildlife. If designed and managed to promote a diversity of plants that benefit pollinators, these plots have the potential to provide valuable, pesticide-free habitat for pollinators and other wildlife including foraging, nesting, breeding, and overwintering habitat. We see these food plots as a relatively easy opportunity to benefit pollinators and other wildlife on public lands by diversifying the crops grown, including crops/cover crops that flower, and ensuring that the plantings are protected from pollinator-toxic pesticides. These plots also offer an opportunity for farmers/researchers to trial new cover crop blends, alternative crops, etc. on public lands (there is no cost for farmers to use this land).

**Responsible entity:** MN Department of Natural Resources. Once policy changes are in place, technical assistance through local Soil and Water Conservation Districts (SWCDs) and other local groups with relevant expertise may help move this recommendation forward.

**Implementation:** MNDNR is three years into the process of developing new policy on food plots, including phasing out of monocultures and a new emphasis on multispecies covers. Expediting this process, and ensuring that changes take into account pollinators' best interests, is within the power of the DNR. Policy updates should specifically address pollinator resource concerns (forage, nesting, and protection from pesticides). Note: some changes to management cropping systems on these plots may come with implementation costs; e.g., there may be funding needs for seed if plots do not pay for themselves.

**Funding:** N/A

**Timeline:** To be completed within 1 year of the publication of this report.

**Evaluation:** Success evaluated in terms of acreage planted to species that provides valuable nesting and foraging resources for bees.

**Challenges:** Increased seed costs for participating farmers; farmers may need technical assistance for planting new species; some farmers expected to be resistant to changing crop species; others may see this as an opportunity to trial new approaches/seed mixes on public land.

## ***B. Maintain, restore, and enhance pollinator habitat on urban and developed lands***

### **1. Establish a turf conversion program focused on replacing or enhancing turf with flowering habitat in urban, suburban, and rural non-agricultural lands (1B1)**

**Recommendation description:**

**Rationale:** Urban habitat and rural-non-farm habitat have been identified as major gaps in pollinator habitat in Minnesota in terms of (1) land use categories not currently eligible for habitat conversion under most existing state and federal programs, and (2) numerous opportunities for partnership with a high level of interest/demand. Also, conversion of state-owned turf was identified as part of Goal 1 (habitat) in the 2017 MN State Agency Pollinator report. Turf-conversion is a relatively easy, rapid, and low-cost form of restoration, and would have immediate benefits to pollinators, as well as high visibility and potential for “ripple effects” through neighborhoods and communities. Urban habitats currently support the endangered rusty-patched bumble bee, but in very low numbers relative to previous decades. Existing populations of this species (and other bees) require abundant forage and nesting opportunities to rebound in numbers.

**Responsible entities:** Board of Water and Soil Resources (BWSR) and partners. Potential partners include other state agencies, UMN Extension, UMN Bee Lab, Xerces Society Urban Habitat Program, Local Non-Government Organizations (NGOs) already involved in urban habitat installations and/or education (Metro Blooms, Wild Ones, Pollinator Friendly Alliance, etc.), Neighborhood Associations, Homeowner Associations, and Schools/Corporate Campuses, and Municipalities that have passed pollinator friendly ordinances or are simply interested in pollinator friendly practices. MN Zoo could serve as a partner for outreach efforts.

**Implementation:** Create a Turf Conversion Pollinator Habitat Program to allocate funding for pollinator habitat projects on urban, rural, and other lands currently not eligible for existing state/federal programs. Focus on both education and funding for conversion of managed turf grass in MN to flowering habitat. This includes opportunities on public lands (parks/trails/WMA/schools/government buildings) and private lands (yards, golf courses, corporate campuses, private schools/colleges). This could also include plantings in rural areas without crop history or lands that are not currently eligible for existing programs. Habitat options include bee-lawns, native flowering habitat, native shrub plantings, rain gardens, and other pollinator-friendly options. Pesticide drift issues are to be addressed via education/outreach and in habitat placement decisions. Habitat mapping of existing and potential habitat could help identify priority spots for projects, based on habitat connectivity, at-

risk species distributions, and protection from pesticides. Installations could be tailored to support select species (e.g., monarchs, rusty patched bumble bees, honey bees) or be general.

**Funding:** There would be staffing costs to run the program (e.g., project management, turf conversion specialists; outreach) as well as implementation costs for habitat. Some entities (e.g. corporate campuses) will be able to bring implementation funding to the table, while others (e.g. public schools) won't. Could seek 2020 LCCMR funding with numerous partners; budget needs development, but \$300K every two years is a ballpark. Additional potential funders include Parks and Trails Legacy Fund Coalition and the Lessard-Sams Outdoor Legacy Fund.

**Timeline:** Planning meetings to refine program objectives and initiate funding mechanisms should occur within 1 year of the publication of this report.

**Evaluation:** Success to be evaluated in terms of acres planted to habitat. Outreach objectives could also be developed/quantified.

**Challenges:** Urban habitat may not offer as much acreage for habitat improvements as other landscapes, and also tends to be higher maintenance to meet aesthetic criteria. Weed-free turf is a cultural, and in some cases a mandated, norm and widespread acceptance may be difficult (although city of St. Paul reports mostly positive feedback from citizens regarding turf management approaches that allows for flowering weeds). Significant outreach and signage will be needed. Sod production and turf maintenance industries may be impacted. LCCMR funding is not a reliable source of funding for program staff or long-term programs in general. Partners will need to come together in a coordinated way to increase effectiveness in seeking funding.

## **2. Require that new public education facilities (schools, colleges, and universities) and major remodeling projects include a certain percentage of pollinator landscaping and encourage the same for private education facilities (1B2)**

### **Recommendation summary:**

**Rationale:** To engage students and school neighborhoods and provide pollinator education and awareness of the need for pollinator habitat through demonstration and hands-on participation. Also to provide an on-site venue to utilize when teaching concepts related to insects, plants, and ecology.

**Responsible entities:** MN Department of Education, ISD's, University of Minnesota, and Minnesota State colleges and universities

**Implementation:** Could include a recognition program (would need funding or a sponsor.) Utilize agency resources to increase outreach/technical/maintenance assistance to educational facilities that wish to establish pollinator-friendly habitat

**Funding:** School district levies; public, non-profit, or corporate sponsorship.

**Timeline:** This would be a long-term initiative.

**Evaluation:** Percentage of schools that meet landscaping requirement, number of acres of pollinator habitat on school properties, number of students impacted.

**Challenges:** Who will be in charge at each facility?; While there may be considerable interest initially, these types of "gardens" require significant maintenance and tend to decline in quality

over time so a commitment to long-term maintenance would need to be required; probably no measurable, site-specific benefit for pollinators.

### **3. Increase funding for BWSR to assess and certify solar developments for pollinator-friendly habitat (1B3)**

#### **Recommendation summary:**

**Rationale:** Solar farms are an important opportunity to leverage private-sector dollars to create thousands of new acres of high-quality pollinator habitat. Solar farms have the potential to provide valuable pollinator habitat in a variety of Minnesota habitats.

**Responsible entities:** Governor’s Committee on Pollinator Protection, BWSR, Minnesota Department of Commerce (Division of Energy Resources), Minnesota Department of Agriculture, Minnesota Department of Natural Resources.

**Implementation:** Issue a statement supporting solar development on sites with a high potential to provide exemplary pollinator habitat (score of 85 or greater on BWSR solar assessment) and an increase in BWSR’s capacity to assess and certify sites. Encourage all state agencies, state universities and colleges, and municipalities, to include pollinator-friendly vegetation in their RFP criteria when soliciting bids for solar energy procurement. Encourage and increase BWSR’s, as well as the Department of Agriculture and Department of Natural Resources, staff capacity to educate counties, townships, and soil and water conservation districts about the state standard for pollinator-friendly solar.

**Funding:** Increasing staff capacity will require funding. This could come from various sources such as a pollinator license plate.

**Timeline:** Partner with an energy nonprofit to produce a report calculating the total number of acres of pollinator habitat that could be created by state agencies, universities, colleges, and municipalities being powered by pollinator-friendly solar arrays. It would be great to do this at or before the University of Minnesota Pollinator Summit on Oct. 12, 2018.

#### **Evaluation:**

**Challenges:** Knowledge of the program will be a barrier to implementation and cost and time to implement.

## ***C. Maintain, restore, and enhance pollinator habitat on private lands***

### **1. Expand funding and eligibility criteria for pollinator habitat and management practices on rural lands (1C1)**

#### **Recommendation summary:**

**Rationale:** Given the number and scope of existing farm habitat programs (see BWSR and Xerces resources) we do not believe a new “native habitat on farms” program is needed, but we do recommend that a certain amount of funding be made available to work with farmers or rural landowners who meet one or more of the following criteria

- Ineligible for existing state and federal programs (e.g., NRCS, FSA, BWSR).

- In range of at-risk pollinator species & interested in going above & beyond with seed mixes, management practices, etc.
- In need of funding for select practices (including habitat management actions) that benefit pollinators, but fall outside of the scope of current programs.

**Responsible entities:** BWSR, Xerces Society, other interested partners, ideally working in coordination with USDA field staff to connect interested producers with state resources and technical support.

**Implementation:** Application process to identify/prioritize partners. Once partners are selected, technical assistance would be provided and funding needs for plant materials (e.g., seed mix enhancements) or other practices would be determined and allocated to the project.

**Funding:** Funding for implementation and staff time/ technical assistance are both needed. Private funding may be an option, in addition to (or instead of) state dollars?

**Timeline:** Timeline may be dependent on needs, as determined by new Farm Bill.

**Evaluation:** Evaluation of success could be in terms of improvements to seed mixes planted in MN. Monarch benefits would be a relatively easy metric to narrow in on (number of milkweed stems, high quality nectar plants, etc., since there are protocols in place for measuring this, and since there are specific goals set for our state).

**Challenges:** Since it is unclear what funding will be available for on-farm habitat under next Farm Bill, it's difficult to know at this point how much of a need there will be for funding of these types of "supplemental" efforts. Probably the need will be significant. One hesitation might be working in an arena (farm habitat) that is already getting attention via a number of programs, however it is also clear that the needs are currently being adequately met. Pesticide drift in this landscape is another concern that would ideally be mitigated by thoughtful habitat placement or other strategies.

## 2. Increased Use of Flowering Cover Crops/Establish an MDA-directed Cover Crop Initiative incentivizing flowering cover crops (1C2)

### **Recommendation summary:**

**Rationale:** The Minnesota Department of Agriculture (MDA) reports that 2% or less of Minnesota cropland acres have a cover crop based on data from the National Ag Statistic Survey (NASS), discussions with the University of Minnesota, and "driving the countryside." Most cover crops are planted on acres where potatoes, edible beans, peas, sweet corn, and corn silage are grown. Although the integration of cover crops into crop rotations can be challenging, such efforts are well-known to provide a wide range of landscape benefits to water, soil, and wildlife, including pollinators and beneficial insects for pest control. It is recommended that the MDA set goals for acres planted to cover crops in MN, and develop programs (outreach material, technical assistance, funding pools) to achieve these goals. To benefit pollinators, cover crop goals should focus on flowering cover crop species (e.g., red clover, alfalfa, buckwheat) integrated into cropping systems in which systemic insecticides have not been in use for at least one growing season. Benefits of non-native legumes to honey bees would be particularly significant, and could address a much needed resource concern for this group.

**Responsible entities:** Minnesota Department of Agriculture, working with crop consulting professionals and other local partners (e.g., LSP, SFA, NRCS, Conservation Districts). BWSR is also focusing increased attention on cover crops and would be interested in playing a role in promoting and implementing cover crops. Cover crops are currently being funded as an eligible activity through state cost-share funding, but these General Funds have been decreased over time.

**Implementation:** As a starting point, we recommend that the state fund an MDA-directed Cover Crop Initiative - a program to promote farmer participation, working with crop advisers or other local partners (e.g., LSP, SFA, NRCS, Conservation Districts), in cover crop trials on their operations. A blanket incentive payment would be provided to participants to help cover seed cost, time/maintenance/equipment involved, potential (although unlikely yield loss, etc. The MDA currently has a similar, very successful initiative focused on nutrient management that this program could be modeled after. The MDA has previously put forward a request for Cover Crop Initiative funding to the Clean Water Council, but this funding was not approved. We recommend this initiative as a high priority for funding, given the overlap with our pollinator habitat objectives. We also recommend that this initiative have a certain amount of resources specifically earmarked for flowering covers (e.g., red clover, alfalfa, buckwheat, brassicas, cocktail blends) integrated into organic or other cropping systems in which pollinator-toxic pesticides are not in use to provide the most benefit to pollinators. As part of this work, the initiative will develop and showcase examples of cover cropping systems/rotations that work economically, and complete an Assessment of Needs (market development, infrastructure, crop insurance, research, transition year period incentives, etc.).

**Funding:** Clean Water Council funding is one option that has been proposed.

**Timeline:**

**Evaluation:** One simple pollinator metric would be acres of habitat planted per year to flowering cover crops allowed to bloom (i.e., acres providing foraging resources for honey bees and other insects).

**Challenges:** Considerable research has focused on cover crops and their integration into agricultural systems, but the idea has not been widely accepted. Better incentives are needed and would likely include a need for significant funding. Benefits of non-native flowering cover crops to a wide array of native pollinators may be limited, so it should be clear that these plantings supplement but do not replace the need for native habitat on farms. That said, the honey bee benefits provided by this type of habitat could be quite high, relative to native habitat. It would be important to avoid impacts from neonicotinoids where flowering cover crops would be used, as they can persist in the soil and be taken into the flowering plants. Finding enough opportunities to plant flowering covers systems without recent neonicotinoid use may be challenging, and may also require an education/outreach component. Benefits to pollinators need to be balanced with the other benefits offered by cover crops and the logistics of establishment (e.g., in some situations, termination may need to happen before bloom, to achieve other goals).

### **3. Increase conservation based grazing (1C3)**

**Recommendation summary:**

**Rationale:** Prairie used to encompass over 1/3 of the state, today less than 2% remain according to the MNDNR Prairie Conservation Plan. Prairie is used by a variety of wildlife and was managed through the use of fire, and grazed by large ungulates which provided a large vegetation matrix of grass and floral species that pollinators rely on. Today, many of these areas are now dominated by row crop agriculture, many of which use herbicides that eliminate nectar resources for pollinators. In order to protect and increase pollinator populations of species of greatest conservation need (SGCN) more grassland habitat is needed. Policy makers should provide private landowners with incentives to increase grassland habitat via tax breaks, assisting with start-up, tax breaks, fence installation and water tanks, market development, or removing barriers for grazing operations.

**Responsible entities:**

- Minnesota Department of Agriculture - identify incentives, barriers
- Minnesota Department of Natural Resources - work with MDA to identify private land parcels to increase grazing surrounding remnant prairie containing at risk species to reduce pesticide risk. Integrate Prairie and Pheasant plans to identify locations where grazing could increase habitat/reduce pesticide drift.
- Minnesota Board of Water and Soil Resources - Support their Working Lands Program
- University of MN - Support research on grazing with Cattle or Bison to increase floral resources
- Minnesota Pollution Control Agency - Review Policies, identify barriers and areas for implementation
- Minnesota Department of Revenue - work with MDA to identify tax break incentive solutions
- Governor, State Representatives, State Senators, Residents of MN

**Implementation:** Up to state agencies, legislators to identify the incentives to implement. To refine this further, it can be region specific, focusing on increasing grazing lands around high quality habitats, or at risk species, which need protection from pesticide drift (i.e. such as areas identified in the MN Prairie Plan, and BWSR Pollinator Habitat mapping efforts). This would have a large impact on pollinators by increasing habitat, reducing pesticide drift impacts, improving water quality if properly managed, and support other grassland birds.

**Funding:** Clean Water Land and Legacy Amendment, LCCMR, General Fund (Program implementation, tax breaks, etc.)

**Timeline:**

**Evaluation:** Set region specific goal based on acres

**Challenges:** Appropriate stocking rates to ensure flowering resources remain and are still productive enough to make a living wage, as well as ensuring no adverse impacts on drinking water resources. Lack of research on prairie flowers on cattle diet. Barrier - Farm Bill, crop subsidies, markets.

## 4. Surface Water Corridor-Based Pollinator Habitat Enhancement and Creation (1C4)

### Recommendation summary:

**Rationale:** Recognizing the importance of pollinator habitat in maintaining pollinator diversity and health, the significant loss of high-quality pollinator habitat that has occurred across much of the state as a result of human activities, and concerns about declines in pollinator populations, the State of Minnesota should develop an integrated, comprehensive, surface-water-corridor-based strategy for the enhancement, creation, and maintenance of high-quality pollinator habitat (appropriately diverse, connected, functional, safe, etc.), in all the necessary forms (i.e., prairie, forest, savanna, and wetlands with the required habitat components – native plant diversity and enhanced floristic diversity with a special focus on pollinator-specific species, bare soil, woody debris, snags, etc.), in and adjacent to surface-water corridors (rivers, streams, lakes, and wetlands) in combination with suitable road, utility, and rail corridors and other public (DNR lands, parks, natural areas, etc.) and private lands with a primary focus on rural areas.

As envisioned, the proposed initiative would provide multiple environmental and socioeconomic benefits including protected and improved water quality, enhanced wildlife habitat, and the creation and maintenance of high-quality pollinator habitat.

Once a network of primary habitat corridors has been identified, the habitat corridors should be expanded to include additional adjacent lands permanently acquired and placed in the public's trust, including private lands on a voluntary basis through donations, donated and purchased conservation easements, and fee-for-title purchases in combination with existing and future federal, state, and private conservation programs and efforts and incentivized and enhanced on-farm initiatives (cover/companion crops, windbreaks/hedgerows, crop diversification, etc.).

Farmstead and other rural lands are the primary focus of this recommended initiative because they occupy the largest footprint in Minnesota (approximately 26 million acres; 54% of the Minnesota landscape) and have had the biggest impact on pollinator habitat across the state (including in the Eastern Broadleaf Forest Region that has been selected as the state agency priority at this time). As a result, these lands offer the greatest potential for substantively re-establishing quality and connected pollinator habitat on a landscape scale in the State of Minnesota.

Although promoting and creating pollinator habitat in urban areas has important educational and public engagement value and shouldn't be discouraged, the reality is that the urban footprint is small (approximately 4.7% of the land cover in Minnesota) and the potential and opportunities for the creation of connected, high-quality pollinator habitat in urban areas are fairly limited. In addition and in general, urban areas are also not the ideal environment for pollinator habitat and probably shouldn't be a high priority for the creation of pollinator habitat using public dollars.

Finally, a strategic program with a rural-habitat-corridor focus builds on an existing base of publicly-owned and other protected lands and fits within the framework of a variety of existing federal, state, and local priorities including USDA programs like the Wetland Reserve Program (WRP), Environmental Quality Incentives Program (EQIP), Agricultural Conservation Easement Program (ACEP), Conservation Reserve Program (CRP), and the Conservation Stewardship Program (CSP), the NRCS Monarch Butterfly Habitat Development Project and Mid-America

Monarch Conservation Strategy (an increased habitat and milkweed stem initiative with a goal of 1.3 to >1.8 billion additional milkweed stems), Governor Dayton’s clean water initiative, and Minnesota Department of Natural Resources, Board of Water and Soil Resources, local government, and private land conservation programs (The Nature Conservancy, Ducks Unlimited, Pheasants Forever, Trout Unlimited, etc.).

From a habitat perspective, the reality is that large, contiguous tracts of land will ultimately be needed to create the pollinator habitat that is needed and agricultural lands (54% statewide and an even higher percentage in the Eastern Broadleaf Forest Province and in western and southern Minnesota) and other rural lands occupy the largest footprints and have the most potential for restoring pollinator habitat. While they may have educational value that should not be ignored, piecemeal efforts are unlikely to be successful and would be an inefficient use of the funding and other resources needed to create pollinator habitat on a landscape scale. The long-term maintenance of the restored habitat must be a key aspect of this initiative. Should these areas and prioritizing funding be the primary focus from a habitat perspective?

**Responsible entities:** The Minnesota Departments of Natural Resources (MNDNR), Agriculture (MDA), and Transportation (MnDOT), and the Minnesota Board of Water and Soil Resources (BWSR; along with soil and water conservation districts and watershed districts and other water management organizations) would likely be the lead agencies in the implementation of this recommendation, but the MN Pollution Control Agency and the MN Department of Health, as well as other state agencies, may also have a role.

**Funding:** Potential funding mechanisms might include prioritized Clean Water, Land, and Legacy Amendment funds, given the constitutional purpose of these funds – “to protect drinking water sources; to protect, enhance, and restore prairies, forests, and fish, game, and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance, and restore lakes, rivers, streams, and groundwater,” specific projects approved by the Minnesota State Legislature, state agency funding, conservation easements, property tax credits, and other sources.

**Timeline:**

**Evaluation:** Documentation of the number of acres of quality pollinator habitat created/restored on an annual basis with 5-year, 10-year, and longer term and ultimate targets.

**Challenges:** A long-term program with long-term funding needs and a significant funding commitment.

## ***D. Increase pollinator habitat on right-of-way land***

### **1. Implement the recommendations in the MnDOT Mowing and Haying in the State Trunk Highway Right-of-Way document (1D1)**

**Recommendation summary:**

**Rationale:** Increasingly, roadsides provide some of the only pollinator habitat on the landscape and offer nectar resources for a variety of pollinators. They also link landscapes and can serve as important corridors. They are also public land that the state manages. Haying is an important tool that can be used to mimic grazing if timed appropriately and be used to save road user money on vegetation maintenance. Although not the original purpose of the group, the state

statute pertaining to the mowing and haying date came up throughout the stakeholder meetings. The compromise out of the stakeholder group involved a concept called take half leave half. Where the adjacent landowner could hay some areas earlier for more quality hay in the first 16' of the shoulder, while still preserving corridors of habitat in the right of way. This system would be flexible, and allow the MnDOT regional permit staff to educate permit applicants about the importance of leaving quality habitat and rotational mowing for wildlife and pollinators.

**Responsible entities:** Minnesota Department of Transportation (MnDOT). Minnesota Department of Natural Resources (DNR).

**Implementation:** Report is completed.

**Funding:** No funding needed.

**Timeline:**

**Evaluation:** Voluntary adoption by farmers

**Challenges:** Attitudes on 1) public use of private land and 2) public funds to mow/hay what a private landowner would; lack of plant knowledge; mowing/haying can reduce habitat if timed poorly; lack of enforcement.

## ***E. Recognize the value of flowering non-native species***

### **1. Recognize the value of flowering non-native species (1E1)**

**Recommendation summary:**

**Rationale:** Native plant species serve a critical role in providing habitat for a large array of pollinators. Without them, species populations would begin to decrease, like they are today due to habitat loss through changing land use practices. Almost all land stewardship agencies recognize the importance of native plants, and use them in seed mixes when creating habitat which they should continue to do. However, there is currently a lack of floral resources on the landscape, which has led to the development of the following considerations to land stewards of non-native species that provide nectar resources.

A. Recognize the value associated with non-native species which may provide the only nectar resources for pollinators in an area devoid of native plant species.

B. Recognize that non-native species are providing nectar, and efforts should be made to re-seed with native flowering species to replace this ecosystem service.

C. Use of non-native species in hay fields, pastures, energy installations, ROW, Utility, or Parks should be considered if conditions do not allow for successful establishment of native species.

D. Recognize that non-native species, can provide habitat for pollinators, reduce herbicide use in harsh environments, and provide an ecosystem service.

**Responsible entities:** Minnesota Department of Agriculture, Land Stewards

**Implementation:** Recognition of ecosystem services

**Funding:** None

**Timeline:**

**Evaluation:**

**Challenges:** Attitudes on plant impact, institutional, lack of plant knowledge. Concern: Economic impact

## GOAL 2: MINNESOTANS USE PESTICIDES JUDICIOUSLY AND ONLY WHEN NECESSARY, IN ORDER TO REDUCE THE HARM TO POLLINATORS FROM PESTICIDES WHILE RETAINING ECONOMIC STRENGTH

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**Rationale:** While Minnesotans increase flowering habitats that provide good nutritional resources for pollinators, we must protect these habitats from undue pesticide exposure in both urban and rural areas. Insecticide application on flowers and plants that pollinators use for food or nesting materials can harm pollinators directly (via acute toxicity) or indirectly (via sublethal effects on behavior and physiology). Herbicide exposure can kill off the flowering habitat directly. Some fungicides disrupt pollinators' natural microbiota, leading to their increased susceptibility to pathogens and parasites).

The grand challenge moving forward is figuring out how to protect pollinator habitat from pesticide exposures while protecting crops, gardens, and human occupied areas from undue pest and pathogen exposure: How do we encourage beneficial pollinators while discouraging harmful pests?

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### ***A. Reducing risk of pesticide exposure to pollinators through education on pollinator best practices***

**Rationale:** These three recommendations strive to increase awareness and education to ensure all Minnesotans use insecticides, herbicides, fungicides properly, and within an Integrated Pest Management (IPM) framework, as defined on last page. Recognizing that pesticide exposure is a serious problem facing pollinators, education forms the basis to protect them in our current and into future generations.

#### **1. Increase education on Integrated Pest Management practices and proper pesticide application (2A1)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** MN Dept. of Agric. and U of MN Extension

**Implementation:** This educational campaign would be a coordinated effort among key "information sources" to deliver consistent IPM messaging (including: scouting, thresholds, alternate tactics) and proper pesticide application to stakeholders. These stakeholders include farmers, beekeepers, businesses (commercial landscaping, golf courses, etc.), state and county roadside managers, (others??), and homeowners, in rural and urban areas. For agriculture sector, for example, these "information sources" could comprise grower associations, state agencies, extension and industry providing consistent messaging to the state's growers and

agricultural professionals. Information dissemination through this recommendation would leverage the stakeholder networks and education/ communication/media infrastructure of the participating “information sources.” The novelty of this suggestion is in bringing the various information sources together to identify gaps in IPM training materials and funding requirements. Furthermore, having these information sources disseminate unified messaging on IPM would be precedent setting.

IPM definitions: [University of Minnesota Radcliffe IPM World Textbook](#) and [EPA Integrated Pest Management Principles](#)

**Funding:**

**Timeline:** These efforts would continue as part of certification and training programs and at professional development programs hosted by sector organizations including, commodity groups, beekeeper associations, turf grass and golf course management organizations, master gardener program, extension education and outreach. These education materials will be updated as new materials are developed and ready for distribution.

**Evaluation:**

**Challenges:**

## 2. Promote incentives for increasing adoption of IPM strategies (2A2)

**Recommendation summary:**

**Rationale:**

**Responsible entities:**

**Implementation:**

**Funding:**

**Timeline:**

**Evaluation:**

**Challenges:**

**Responsible:** MDA and relevant agencies.

**Implementation:** Identify programs currently available that would incentivize adoption of IPM strategies. Where gaps exist, MDA (or other agency) would consider development of an incentive program to increase adoption of practices not covered by existing programs. Example of IPM strategies that could be considered is use of pest-resistant crops and crop rotations and cropping systems. This effort is precedent setting as it would facilitate/increase adoption of a diversity of management tactics and other IPM practices. This effort would complement the educational programs (A1) and further increase the rate of adoption while removing any perceived risk associated with a given change in management strategies.

IPM definitions: [University of Minnesota Radcliffe IPM World Textbook](#) and [EPA Integrated Pest Management Principles](#)

## ***B. Reducing risk to pollinators by controlling drift and off-target movement of pesticides leading to undue exposure***

**Rationale:** These recommendations strive to reduce or eliminate drift and off-target movement of insecticides, fungicides and herbicides, through education and training, voluntary incentives, and/or MDA funding for enforcement of label. The expectation is that reducing above and below-ground movement of pesticides to flowering plants would reduce pollinator exposure and protect pollinator habitat.

### **1. Increase MDA enforcement of pesticide labels for pollinator protection (2B1)**

**Recommendation summary:**

**Rationale:**

**Responsible entity:** MDA

**Implementation:** The MDA shall ensure that pesticide labels are enforced in a manner that ensures pollinator protection, with a focus on changing future behavior if a pesticide applicator violates the label. Enforcement should include special attention to violations that occur when pesticides are applied while crops are in bloom and pollinators are foraging (in violation of bee hazard label). This may include: increased random enforcement checks during specific periods, as defined by the MDA and stakeholders; increased random enforcement checks in specific places, as defined by the MDA and stakeholders. Fines should be levied when there are label violations, with the intent of changing future behavior.

**Funding:**

**Timeline:** Immediately.

**Evaluation:**

**Challenges:**

### **2. Provide the MDA with the resources and tools to assure that EPA label requirements intended to protect pollinators are followed in Minnesota (2B2)**

**Recommendation summary:**

**Rationale:**

**Responsible entity:** MN Legislature

**Implementation:** The MDA should be charged with making pollinator protection EPA label compliance an agency priority. MDA should define resources and tools needed and be fully funded to do what they need to do.

**Funding:**

**Timeline:** 2019 Legislative Session.

**Evaluation:**

**Challenges:**

### **3. Reduce/eliminate off-target movement of pesticides through applicator training, BMPs, demonstration, and continued research (2B3)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** MDA and U of MN Extension.

**Implementation:** This educational campaign would be a coordinated effort among key “information sources” to deliver consistent messaging on the reduction of drift/off target movement through stakeholder networks. MDA and University of MN Extension would include drift reduction strategies as part of pesticide applicator training, pollinator best management practices, field demonstration and research. These stakeholders include farmers, businesses (commercial landscaping, golf courses, etc.), state and county roadside managers, (others??), and homeowners in rural and urban areas. For agriculture sector, for example, these “information sources” could comprise MDA, Equipment Manufacturers, ASTA, CropLife America, Grower Groups, Seed Dealers and Extension providing consistent messaging to the state’s growers and agricultural professionals. Drift reduction recommendations will include the latest research-based information on practical steps to reduce off-target movement and will provide consistent educational messaging for stakeholders. As part of this approach, entities such as BWSR and DNR could make localized maps of sensitive sites (e.g., remnant prairie with threatened skipper populations) available to landowners, applicators and agricultural producers. Information dissemination through this recommendation would leverage the stakeholder networks and education/ communication/media infrastructure of the participating “information sources.”

The novelty of this suggestion is in bringing the various information sources together to identify gaps in drift reduction training materials and funding requirements. Furthermore, having these information sources disseminate unified messaging on drift reduction would be precedent setting.

**Funding:**

**Timeline:**

**Evaluation:**

**Challenges:**

### **4. Promote incentives to increase adoption of drift-reduction technologies (2B4)**

**Recommendation summary:**

**Rationale:**

**Responsible entity:** MDA

**Implementation:** MDA should convene a stakeholder working group of Equipment Manufacturers, ASTA, CropLife America, Grower Groups, Seed Dealers to identify drift-reduction technologies (e.g., fluency agents and planter technologies) where incentives would benefit and drive adoption. As an example, the incentives could cover the difference between a standard seed lubricant and a new alternative lubricant with proven dust-reduction characteristics. Incentives of this kind would be a new approach to reduce drift and adoption would be measurable. This is precedent setting as it could include practices and strategies that go beyond label requirements.

**Funding:**

**Timeline:**

**Evaluation:**

**Challenges:**

### ***C. Reduce pesticide use overall (insecticides, herbicides, fungicides)***

**Rationale:** These recommendations strive to reduce use of pollinator harming pesticides in general (including insecticides, herbicides and fungicides) through establishing an indemnity fund for farmers who experience crop loss as a result of not using pollinator harming pesticides; setting a goal to reduce use of pollinator harming insecticides in MN within 3 years; and supporting efforts to prevent the spread of invasive species.

#### **1. Establish an MDA Crop Pest Loss Indemnity Fund for farmers avoiding pollinator-harming pesticides (2C1)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, MDA

**Implementation:** The Legislature should create a Crop Pest Loss Indemnity Fund, managed by the MDA, that will reimburse voluntarily participating farmers for partial crop losses on enrolled acres (for losses below the level covered by traditional Multi-Peril Crop Insurance), which could have been prevented by the use of pesticides when the farmer chooses not to use pollinator harming pesticides. This program should be created on a trial basis with claim payments made available for four crop years. This program shall be available at no cost to participating farmers. Funding for claims and program administration should come from the Pesticide Regulatory Account or a newly created Pollinator Protection Account. The Department of Agriculture is authorized to make rules to implement provisions of the legislation.

**Responsible entities:**

**Implementation:**

**Funding:**

**Timeline:** 2019 Legislature, 2020 crop year.

**Evaluation:**

**Challenges:**

**2. Adopt in statute a goal to reduce overall use of pesticides harmful to pollinators and designate an agency to create and implement a plan to meet the target (2C2)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, implemented by all state agencies.

**Implementation:** MN Legislature should adopt in statute a goal to reduce the overall use, both public and private, of pesticides harmful to pollinators within 3 years of state adoption of the goal. The goal of this proposal is to decrease overall pesticide use, with no increase in use of products that are toxic to pollinators or to human health, and favoring the use of short residual pesticides (less than 8 hours) over those with extended residual properties. A “reduction” means both a decrease in total volume of pesticides used including seed treatments, *and* no increase in toxicity of products used. For example, using a lesser volume of a more toxic product does not constitute a successful reduction in pesticide use.

The legislation should designate a lead state agency to accomplish this goal and include a charge to every state agency involved in pesticide monitoring and or regulation be directed in statute to prepare an Agency Plan of Action to be submitted to the legislature prior to the next legislative session that includes at least the following:

- Steps the agency intends to take to reduce the use of pollinator-harming pesticides through regulation, educational outreach, improved reporting requirements, and other steps determined by the agency;
- New or expanded statutory agency authority needed to implement its Agency Plan of Action;
- Plans for reduction of pollinator-harming pesticide use by the agency itself;
- Additional resources needed by the agency to fully implement its Agency Plan of Action, including identification of any necessary research on alternatives to pesticides currently in use;
- UMN shall be charged with identifying the most significant pests and diseases for which pollinator-harming pesticides are used, and identifying non-chemical IPM practices for managing pest and disease issues identified, and further;
- The Legislature should provide reasonable appropriations to fund the development of the required Agency and University Plans of Action.

Agencies and the University may also explore other strategies to facilitate this reduction, which may include development of new BMPs, new insurance or compensation programs to minimize financial impacts on farmers, increased Extension outreach on non-chemical alternatives, etc. Additionally, MDA will update pollinator lethal pesticide list every 2 years.

*Explanatory notes:* This recommendation assumes that the program will be claim based. The agency responsible for implementing this recommendation will need to create a set of claim criteria and a claim process, probably one that mirrors MPCI. This agency must be provided with

new additional resources to fulfil this work and to pay claims. This would be similar to losses paid for wolf depredation of livestock. The farmer would need to prove or document that he/she did not use the prohibited chemicals and that the losses result from pests that would have been controlled by using a commercially available pesticide/insecticide. Acres impacted depends on budget of the program, also on voluntary program registration.

**Funding:**

**Timeline:** While this will take time to implement, agencies will begin implementation in 2020.

**Evaluation:** The MDA and UMN should collaborate to create metrics to measure reductions. This includes:

- generating or updating a list of pesticides known to be harmful to pollinators
- creating measurement systems to determine if and how reductions are made

**Challenges:**

### **3. Increase awareness and adoption of the new federal CSP Enhancement E595116Z2 program and develop a similar state-level program for non-CSP farmers for planting corn/soy seeds not treated with neonicotinoids (2C3)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** Education/outreach should be completed by corn and soy growers associations, extension offices, IPM educators, farm agency staff, conservation planners, etc. New state-level program that models federal program but is more widely accessible to any MN corn/bean farmer (not just those enrolled in CSP) should be developed by s [sic]

**Implementation:** Through trainings and outreach efforts, ensure that MN corn and soybean growers are aware of the new federal CSP Enhancement E595116Z2, and have the guidance they need to decide if this enhancement is a good fit for their cropland (given historic pest pressure, etc.). Since this enhancement is currently only available to farmers enrolled in the CSP program (roughly 5% of MN farms), develop similar state-level program to provide compensation for the same action taken by non-CSP farmers (a change from neonic-treated to untreated seed, for up to five years). Assess compensation rate provided under CSP enhancement (\$4.95 in MN) to determine if this amount is adequate to encourage a significant number of MN farmers to enroll.

This strategy could result in a meaningful reduction of pollinator-toxic neonicotinoids applied in our state, and would be achieved in farmer-friendly way (rewards farmers for positive environmental action vs. penalizing for detrimental action).

**Funding:** Outreach on existing program is low or no cost. Creation of new state level program would need funding allocated to this issue.

**Timeline:** This work should begin ASAP. Federal CSP enhancement is available for farmers this growing season, and onward.

**Evaluation:**

**Challenges:**

**4. Prevent the establishment and spread of new and existing invasive species to reduce the need for pesticide applications and their unintended environmental impacts (2C4)**

**Recommendation summary:**

**Rationale:** Invasive species are a driving force behind pesticide use and pesticide use can have unintended environmental consequences including potential effects on pollinators. From both a short and long-term perspective, preventing the introduction and spread of invasive species (invasive plants/weeds, insects, and diseases), with a stronger focus on prevention and eradication, may be the most important recommendation relative to the protection of pollinators if pesticide use is a significant factor in pollinator health and declines in pollinator populations.

The socioeconomic and environmental costs of managing invasive species are huge and growing and mitigating the effects of invasive species is a constant and growing battle. As a result, a more serious and sustained commitment to manage existing and new invasive species is needed and has the potential to reduce pesticide use over time and avoid the need for increased pesticide use in the future (all pesticides – insecticides, herbicides, fungicides, miticides, etc.).

For example, invasive species like Varroa mites (*Varroa destructor*) and other pests of European honey bees and bumble bees are a serious concern and pests of managed bumble bees can spread to native bumble bee populations; these are significant concerns that need to be addressed.

While invasive species prevention and management programs already exist, they lack the funding, and sometimes the will, needed to proactively prevent the introduction and establishment of new invasive species too often results in inadequate prevention and management initiatives and failed efforts. The necessity to rely on pesticides to maintain quality, yields, and profitability can also result in pesticide resistance which complicates the ability to combat invasive species threats.

**Responsible entities:** Minnesota Department of Agriculture (MDA), Minnesota Department of Natural Resources (MNDNR), Minnesota Board of Water and Soil Resources (BWSR), Minnesota Invasive Species Advisory Council (MISAC), Minnesota Invasive Terrestrial Plants and Pests Center (MITPPC), and other relevant agencies and groups.

**Implementation:** To be effective, the state must recognize the importance of invasive species prevention and management efforts as a means to decrease current and future pesticide use and embrace the need for a comprehensive, targeted, statewide, outcome-focused invasive species prevention and management strategy. The state agencies should identify gaps in invasive species identification and management, and gaps in funding for these efforts. An increased commitment and increased support of the existing and enhanced, outcome-based efforts to prevent the establishment and spread of new and existing invasive species is needed to reduce the need for pesticide applications and the potential for negative environmental impacts.

**Funding:** Agency budgets supported by legislative funding.

**Timeline:** An ongoing initiative, shorter-term results are also possible with adequate funding and a focused strategy.

**Evaluation:**

**Challenges:** Funding is the primary challenge; a poor understanding of the seriousness of the growing invasive species threat; potential impacts on commerce and other human activities; and too often, can't be done attitude.

## ***D. Reduce use of neonicotinoid insecticides***

**Rationale:** These recommendations strive to reduce use of neonicotinoid insecticides, in particular. The expectation is that reducing this class of pollinator-toxic insecticides would have measurable benefits to pollinators.

### **1. Restrict the use and sale of neonicotinoid insecticides to licensed applicators (2D1)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** Minnesota Department of Agriculture

**Implementation:** The MDA should restrict the use and sale of neonicotinoids so that they can only be purchased and applied by licensed applicators. MDA can use its current authority to restrict the sale and use of neonicotinoids to licensed applicators.

**Funding:**

**Timeline:** Within one year of the publication of this report.

**Evaluation:**

**Challenges:** Although resistance is a growing concern in some cases, what about pests like bedbugs, and flies and cockroaches (bait-based applications), that are controlled with neonicotinoid insecticides? These types of uses where pollinators will not be exposed should not be designated as restricted use pesticides.

### **2. Fully implement the MDA's recommendations in the Neonicotinoid Review (2D2)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature and MDA

**Implementation:** To the extent that these recommendations are not already being implemented, or covered in other GCPP recommendations, the subcommittee recommends full implementation of the 8 recommendations from the Minnesota Department of Agriculture's Review of Neonicotinoid Use, Registration, and Insect Pollinator Impacts in Minnesota, as listed here, and included in specific recommendations below.

1. Pursue the creation of a Treated Seed program
2. Pursue the creation of a dedicated pollinator protection account
3. Require formal verification of need prior to use of neonicotinoid pesticides, where appropriate
4. Develop an educational campaign for homeowners and residential users of insecticides
5. Review product labels for appropriate use of neonicotinoids for homeowners and residential users
6. Develop Minnesota specific pollinator stewardship materials
7. Increase use inspections for insecticides that are highly toxic to pollinators.
8. Review label requirements for individual neonicotinoid products

To move this forward... more information...on how the MDA plans to implement “verification of need,” to ensure that it’s both workable for farmers and rigorous in providing pollinator protection.

**Funding:**

**Timeline:** 2019 Legislative session, 2020 crop year

**Evaluation:**

**Challenges:**

**3. Limit use of neonicotinoid insecticides on plants to crops grown for food production except where needed (2D3)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** Likely Legislature, to be implemented by MDA.

**Implementation:** Through statute or administrative rule, limit use of neonicotinoid insecticides on plants to crops grown for food production or as part of the human food chain except when needed, pursuant to MDA decision, to provide protection against a specific pest and then applied in pre-approved methods for that pest and plant.

**Funding:**

**Timeline:** 2019 Legislative session, implemented January 1, 2020.

**Evaluation:**

**Challenges:**

**4. Ban neonicotinoids for use in Minnesota for production, cultivation, or growing of decorative gardening or landscaping plants and nursery stock (2D4)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** Likely Legislature, to be implemented by MDA.

**Implementation:** Through statute or administrative rule, Ban neonicotinoids for use in Minnesota for production, cultivation, or growing of decorative gardening or landscaping plants and nursery stock. An exception should be provided for regulated application to address a specific pest, such as emerald ash borer, when a pest presence has been demonstrated.

**Funding:**

**Timeline:** 2019 Legislative session, implemented January 1, 2020.

**Evaluation:**

**Challenges:**

**5. Institute an immediate moratorium against all outdoor uses of neonicotinoid pesticides in Minnesota (2D5)**

**Recommendation summary:**

**Rationale:** This would provide the greatest most immediate protection for all pollinators. Strong evidence exists of damage to pollinators, including honey bees, monarch butterflies and other native pollinating species. When combined with evidence of damage to aquatic insect larvae and crustaceans, immediate suspension of use of this class of chemistry is warranted until such time as safe uses can be developed.

**Responsible entities:** Governor's Executive Order or 2019 Legislature, to be implemented by MDA.

**Implementation:**

**Funding:**

**Timeline:** Should be fully implemented by the 2020 planting season

**Evaluation:**

**Challenges:**

***E. Reduce use of neonicotinoid-treated seeds***

**Rationale:** These recommendations strive to reduce the use of neonicotinoid seed treatments, in particular. The expectation is that strategic reductions in seed treatments would have measurable benefits to pollinators, without impacting crop yield.

**1. Require seed companies, wholesalers, or retailers to offer non-neonicotinoid treated versions of top corn seed varieties (2E1)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, to be implemented by MDA.

**Implementation:** Minnesota ought to require, by statute or administrative rule, seed companies, wholesalers or retailers, to offer non-neonicotinoid treated versions of their top corn seed varieties at all levels of or days to maturity.

**Funding:**

**Timeline:** Should be fully implemented by the 2020 planting season

**Evaluation:**

**Challenges:**

## 2. Discontinue neonicotinoid seed treatments in soybeans (2E2)

**Recommendation summary:**

**Rationale:** Discontinue the use of neonicotinoid seed treatments, or other methods of pre-emergent insecticide applications, in soybeans, as University Extension researchers have found that neonicotinoid seed treatments are rarely effective as soybean seed treatments in Minnesota – and sometimes harmful by accelerating resistance or killing beneficial insects.

**Responsible entities:** 2019 Legislature, or to be implemented by MDA by rulemaking authority.

**Implementation:**

**Funding:**

**Timeline:** 2020 planting season

**Evaluation:**

**Challenges:**

## 3. Adopt in statute a goal to reduce the use of neonicotinoid seed treatments to only those justified by current or historical pest pressure (2E3)

**Recommendation summary:** The MN Legislature should adopt in statute a goal to reduce the use of neonicotinoid seed treatments to only those justified by current or historical pest pressure, not to be replaced with another neonicotinoid treatment method.

**Rationale:**

**Responsible entities:** 2019 Legislature, to be implemented by MDA.

**Implementation:** MN Legislature should grant the MDA regulatory authority over pesticide application through the use of treated seeds. The MDA should be directed to begin to track the use of pesticide seed treatments immediately. Explore other strategies to facilitate this reduction, which may include development of new BMPs, new insurance or compensation programs to minimize financial impacts on farmers, increased Extension outreach on non-chemical alternatives, etc. *References and resources:* Ontario's approach

**Funding:**

**Timeline:** Goal adopted in the 2019 Legislative Session, full implementation by 2025 planting season

**Evaluation:** After three years, the MDA shall assess:

- The reduction in the use of neonicotinoid seed treatments, not replaced by another neonicotinoid treatment method.
- The economic impact, positive or negative, on farmer livelihoods in Minnesota resulting from reduced use of neonicotinoids, and
- Pollinator populations.

**Challenges:**

#### **4. Significantly reduce use of neonicotinoid insecticide seed treatments in corn (2E4)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, or to be implemented by MDA by rulemaking authority.

**Implementation:** Neonicotinoid-treated corn, or other pre-emergent neonicotinoid insecticide applications, will be available whenever needed by farmers for planting acres where a demonstrated pest presence that can be addressed

**Funding:**

**Timeline:** 2020 planting season

**Evaluation:**

**Challenges:**

#### **5. Discontinue neonicotinoid insecticide seed treatments in other Minnesota crops that are highly attractive to pollinators (2E5)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, or to be implemented by MDA by rulemaking authority.

**Implementation:** Discontinue use of neonicotinoid insecticide seed treatments, without substituting a different pre-emergent neonicotinoid application method, in other Minnesota crops that are highly attractive to pollinators, like canola, sunflower, and other fruit and vegetable crops where neonicotinoid insecticide seed treatments are currently used.

**Funding:**

**Timeline:** Goal adopted in the 2019 Legislative Session, full implementation by 2025 planting season.

**Evaluation:**

**Challenges:**

## GOAL 3: MINNESOTANS UNDERSTAND, VALUE, AND ACTIVELY SUPPORT POLLINATOR POPULATIONS

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**Rationale:** To conserve and enhance pollinator populations for future generations, it is vital to educate all Minnesotans about the value of pollinators to our food systems and ecosystems. These recommendations strive to promote education about the biology of pollinators, their habitat needs, and the use of pesticides through our state.

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### ***A. Increase education in K-12***

#### **1. Include Science Standards reflecting the importance of pollinators and their habitat (3A1)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** MDE/Science Standard Review Committee (Starting August 1-3, 2018)

**Implementation:** The 2018-2019 Science Standard revision process should include standards reflecting the importance of pollinators and their habitat and/or include benchmark language that references pollinator-related issues where appropriate. This recommendation comes from the GCPP committee, and may be furthered by member(s) of the committee working directly with Minnesota Department of Education (MDE) staff and/or the Science Curriculum Review Committee (Application Process - March, 2018) including examples that utilize pollinator habitat.

Identify/contact members of the Science Standard Review Committee to discuss the process and approaches to integrating pollinator references / benchmarks into revised standards. Multiple input periods for public comment, of which the GCPP could be a part.

Identify areas where referencing pollinators in benchmark language is appropriate and enhances a standard area. Develop and/or share existing curricular materials through the SciMathMN framework resource webpage and other portals that provide curricular resources to teach using pollinators as a subject and resource.

**Funding:** Minimal staff time/expense

**Timeline:**

**Evaluation:**

**Challenge:** Lots of suggestions for alternative topics/language where this could be accomplished.

## ***B. Increase the availability of pollinator resources to the general public***

### **1. Increase availability of pollinator-related resources in libraries (3B1)**

**Recommendation summary:**

**Rationale:**

**Responsible entity:** MDE

**Implementation:** State agencies, federal, and university partners should work with the MDE to ensure that all resources related to pollinators, pollinator habitat, and pollinator research published in the format required by the MDE Library are made available through the Minnesota Library System to the greatest extent possible, including hard copies, eBooks, and other appropriate formats. Identify format/sourcing requisites and then compile list of materials that fits these parameters. Example: eBooks – a DNR staff member has been working with the MDE to get some pollinator resources into ebooks format (available online).

**Funding:** Utilize existing resource sharing/distribution channels

**Timeline:**

**Evaluation:**

**Challenges:** Compiling the list itself, delivering materials to the library system for inclusion

### **2. Amend Minnesota statute to designate all currently reported pesticide use data as public (3B2)**

**Recommendation summary:**

**Rationale:**

**Responsible entities:** 2019 Legislature, implemented by the MDA.

**Implementation:** Current certified pesticide applicators in MN are required to keep records of pesticide applications and submit records upon MDA request. This amendment would require that these records be available to the public. These reports are already required by MN Statute.

**Funding:**

**Timeline:** 2019 Legislature, implemented January 1, 2020.

**Evaluation:**

**Challenges:**

### **3. Provide continued funding for a Pollinator Extension Educator position at the University of Minnesota along with the funding needed to maximize pollinator education (3B3)**

**Recommendation summary:**

**Rationale:** Recognizing the importance of education in the protection of managed and native bees and other pollinators, the Minnesota Department of Agriculture, together with University

of Minnesota Extension and other state and local partners (including input from agricultural and other industry partners), should develop a science-based, statewide, pollinator-specific education plan for pesticide manufacturers, sellers and applicators (certification), beekeepers, agricultural producers, land managers, and the general public; the resulting education plan should focus on pollinator best management practices including the provision of quality pollinator habitat and the proper and judicious use of pesticides; a permanent, statewide, pollinator-specific, extension educator position should be created to coordinate and lead the implementation of this recommendation.

**Responsible entity:** University of Minnesota Extension

**Implementation:**

**Funding:**

**Timeline:**

**Evaluation:** Documentation of educational activities and their impacts.

**Challenges:**

### ***C. Increase education of beekeepers***

#### **1. Create a bee registry with education and inspection (3C1)**

**Recommendation summary:**

**Rationale:** Given the ongoing concerns about honey bees and their central role in the pollination of a variety of agronomic and horticultural crops, actions that are specifically designed to address the protection of managed bees including European honey bees and other managed bees are needed. Most pollinator protection plans include specific recommendations for honey bees and should not be overlooked in efforts to protect honey bees in the State of Minnesota.

The value of the pollination services provided by honey bees and concerns about honey bee health are issues that are specifically included in the Governor's Executive Order 16-07 (*Directing Steps to Reverse Pollinator Decline and Restore Pollinator Health in Minnesota*; August 2016) and should, therefore, not be ignored.

**Responsible entities:** Minnesota Department of Agriculture (MDA); Minnesota beekeepers.

**Implementation:** Specific to European honey bees (*Apis mellifera*) and other bees, including bumble bees (*Bombus* spp.), that are managed to provide pollination services and/or the production of honey, pollen, and other bee-related products, and in support of education, pest tracking, and research efforts focused on bee health and pest management, the Minnesota Department of Agriculture (MDA) should create an online bee registry and a requirement that all resident bee colonies be individually labelled and registered with the MDA and inspected for health purposes on an annual basis (fee-based).

The MDA apiary program should also require that contemporaneous, colony-specific records related to the source of the bees, management practices, pesticide treatments and outcomes, and colony losses be kept and the information gathered should be used to track managed pollinator populations and health, pest abundance, and pesticide use and efficacy. A key component of the program should also be education focused on the status of managed

pollinators and pollinator pests in the state, bee management best practices, and pollination protection advocates and resources like [BeeCheck](#), [DriftWatch](#), and [FieldWatch](#).

Begin by seeking input from beekeepers and others involved in bee research and management as guidance for creating the framework of the program; consider the creation of a bee health advisory committee.

**Funding:** As is the case for the MDA nursery inspection program, the proposed apiary program should generally be self-supporting through fees and possibly a percentage of the sales of bee products and services.

**Timeline:** The basic program should be active within two years (December 2020).

**Evaluation:** Potential metrics include colony and health statistics, a summary of education activities and resources produced, and an annual status report to the commissioner of agriculture and the governor (available to the general public).

**Challenges:** Opposition from beekeepers

## **2. Commit as an active partner in the national strategy to improve honey bee health (3C2)**

### **Recommendation summary:**

**Rationale:** To avoid duplication of effort, maximize resources and impact, and promote enhanced outcomes related to improving pollinator populations and health, the various agencies of the State of Minnesota should proactively develop working partnerships with federal agencies and neighboring states to promote and enhance the implementation of the *National Strategy to Promote the Health of Honey Bees and Other Pollinators* (Pollinator Health Task Force, 2015;) within Minnesota and neighboring states with a focus on measurable outcomes and should report new and continuing initiatives and achievements to the Governor of the State of Minnesota and the Governor's Committee on Pollinator Protection on an annual basis.

**Responsible entities:** The Governor's Office and all pertinent state agencies.

**Implementation:**

**Funding:**

**Timeline:**

**Evaluation:**

**Challenge:** Meaningful cooperation can be difficult.

## ***D. Increase research and monitoring of native pollinator populations and habitat***

### **1. Create a native pollinator and habitat documentation and tracking program (3D1)**

**Recommendation summary:**

**Rationale:** Recognizing the importance of the services provided by native pollinators in agricultural systems and native ecosystems, that baseline documentation of the native species of bees and other insect pollinators in Minnesota is incomplete, and a need to track native pollinator populations and health, the State of Minnesota should create a program dedicated to documenting Minnesota-native pollinators, their habitat requirements, and existing pollinator habitat and habitat needs. The program should also actively promote and support research efforts focused on the identification, population dynamics (distribution and abundance), and habitat requirements of the pollinator species that are native to Minnesota in order to accurately document the species of pollinators that are native to Minnesota and understand their habitat needs. Some of these activities are ongoing, but are limited and need to be formalized as part of a strategic effort. These efforts will enhance our understanding of native bees and other pollinators and will provide the statistically-sound, baseline information on the distribution and abundance of these species that are needed to support ongoing efforts to accurately track changes in the population dynamics of native pollinators.

**Responsible entities:** The Minnesota Department of Natural Resources is already involved in these types of activities and should be the lead agency in these efforts.

**Implementation:**

**Funding:** The Clean Water, Land and Legacy Amendment may be a source of initial funding.

**Timeline:**

**Evaluation:**

**Challenges:** Recognition of the importance of these efforts and dedicated funding.

## RESOURCES

### ***Integrated Pest Management***

Integrated pest management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

The IPM approach can be applied to both agricultural and non-agricultural settings, such as the home, garden, and workplace. IPM takes advantage of all appropriate pest management options including, but not limited to, the judicious use of pesticides. In contrast, *organic* food production applies many of the same concepts as IPM but limits the use of pesticides to those that are produced from natural sources, as opposed to synthetic chemicals.

IPM is not a single pest control method but, rather, a series of pest management evaluations, decisions and controls. In practicing IPM, growers who are aware of the potential for pest infestation follow a four-tiered approach. The four steps include:

- **Set Action Thresholds.** Before taking any pest control action, IPM first sets an action threshold, a point at which pest populations or environmental conditions indicate that pest control action must be taken. Sighting a single pest does not always mean control is needed. The level at which pests will either become an economic threat is critical to guide future pest control decisions.
- **Monitor and Identify Pests.** Not all insects, weeds, and other living organisms require control. Many organisms are innocuous, and some are even beneficial. IPM programs work to monitor for pests and identify them accurately, so that appropriate control decisions can be made in conjunction with action thresholds. This monitoring and identification removes the possibility that pesticides will be used when they are not really needed or that the wrong kind of pesticide will be used.
- **Prevention.** As a first line of pest control, IPM programs work to manage the crop, lawn, or indoor space to prevent pests from becoming a threat. In an agricultural crop, this may mean using cultural methods, such as rotating between different crops, selecting pest-resistant varieties, and planting pest-free rootstocks. These control methods can be very effective and cost-efficient and present little to no risk to people or the environment.
- **Control.** Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper control method based on effectiveness and risk. Effective, less risky pest controls are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. If further monitoring, identifications and action thresholds indicate that less *risky* controls are not working, then additional pest control methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort.

Source: [EPA Integrated Pest Management Principles](#)