



Farm Management Assessment Guide

An evaluation of compliance with Bee Better Certified™ Production Guidelines

Farm: _____

Farmer name(s): _____

Location: _____

Crop(s) grown and crop bloom periods (if applicable):

Assessor name(s): _____

Date assessed: _____

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Purpose

This assessment is meant to help farmers and landowners identify:

1. How their farms are already meeting the Bee Better Certified™ standards and
2. Where practices need to be altered or habitat added in order to bring the property into compliance.

This tool can be used in the field to help with the habitat planning and pesticide mitigation processes. The results of this tool can be incorporated into the Bee Better Certified™ Plan, which is a required component of the certification process. Additional information about the plan can be found at in the Document Center of the Bee Better Certified website, beebettercertified.org.

How to Use this Guide

- This farm assessment can be used in orchard and field crop settings.
- The photos and notes in this document can help farmers identify and assess whether their existing habitat or pesticide management practices comply with Bee Better Certified Production Standards.
- This tool can also be used to determine practices that will help farms come into compliance with Bee Better Certified Production Standards.
- The assessment should be repeated prior to re-certification to confirm that the standards are still being met.
- We recommend printing out aerial photographs of the property to help with the assessment.

All Bee Better Certified forms and documents mentioned in this Assessment Guide are available from the Document Center on beebettercertified.org.

Definitions

Habitat

Pollinator habitat Areas containing flowering plants and/or nesting sites. Remnant natural habitat and newly created habitat are both considered pollinator habitat. Invasive or noxious species cannot be considered part of pollinator habitat.

Permanent habitat Habitat that is present year-round, although the plants may be in a vegetative or dormant state during the winter. Examples of permanent habitat: Hedgerows, perennial or re-seeding wildflower strips, riparian forests, filter strips.

Temporary habitat Habitat that may die back annually or be moved around the farm (as is the case with rotating cover crops). Examples of temporary habitat: cover crops, insectary strips, mass-flowering crops. For cover crops, at least 50% bloom must be achieved prior to termination.

New habitat Any habitat less than 3 years old or habitat created following initial certification by a farm entity

Plants

Bloom The time period from when first blooms open until petal drop or closure of all blooms (e.g., squash blossoms are open for a single day, but spent flowers can remain attached for a long period after they cease to be viable).

Flowering species Plants, including trees, shrubs, and forbs, known to provide pollen and/or nectar to pollinators.

Mass-flowering crops Crops that provide abundant floral resources during their bloom period, which is often short. When differentiating between mass-flowering crops and temporary habitat, we consider whether the crop a) was already a core part of the crops planted, and b) whether the primary purpose of the crop is revenue. Examples of mass-flowering crops are almond, blueberry, canola, and sunflower.

Native plants Species that are indigenous—occur naturally without human intervention—to a region.

Ecologically appropriate sources Plants that are collected from similar climatic or ecological region to the one present on your property.

Pesticides

Pest Any insect, rodent, nematode, fungus, weed, or other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other micro-organism (except viruses, bacteria, or other micro-organisms on or in living man or other living animals) that could cause economic harm or some other threat.

Pesticide Any substance or mixture of substances intended for preventing, destroying, repelling or mitigating a pest or disease. Pesticides can also be plant regulators, defoliant, desiccants, or nitrogen stabilizers. The term pesticide includes bactericides, fungicides, herbicides, insecticides, miticides, molluscicides, nematocides, and piscicides.

Pesticide applications Any activity that introduces a pesticide into the environment for the purposes of controlling pests, including but not limited to spraying, dusting, and chemigation. We also consider the planting of pesticide-coated seed a pesticide application.

Justified use of pesticides Use that is supported by evidence that a severe pest or disease outbreak exists or has strong potential to exist. Farm-specific monitoring records can be used to demonstrate an outbreak. Additional documentation (e.g., extension publications, newspaper articles) that supports the severity of the issue may also be submitted. Documentation should provide evidence that an economic threshold has been exceeded. If no threshold is available, provide an expert opinion. Experts may include a certified pest control adviser, accredited crop consultant, Extension agent, or other credentialed independent pest management specialist. Advice or recommendations from pesticide company representatives is not considered sufficient evidence to justify pesticide use.

Spatial buffer An unsprayed space, such as a road or equipment turnaround, or a section of crop that remains unsprayed. Spatial buffers are required within your own property between habitat and area where pesticides are applied *and* between habitat on your property adjacent to neighboring farms or land where insecticides are known or suspected to be applied.

Vegetative buffer A border of plants not attractive to pollinators, such as conifers, grown between pollinator habitat and crop fields. It is designed to capture pesticide drift.

Section 1: Habitat

1.1 Basic Habitat Requirements

a. Minimum amount of pollinator habitat

Requirement: At least 5% of the total acreage requested for certification certified must be in pollinator habitat. At least one-fifth of the required habitat (i.e., 1% of the parcel acreage) must be permanent habitat; the remainder may be in temporary habitat.

- To determine how to calculate the habitat areas of different habitat types, see Appendix B: Habitat Measurement Guidelines, in the Bee Better Certified Production Standards.
- See the Definitions section for an explanation of permanent and temporary habitat types.

Note: If mass-flowering, pollinator-attractive crops are identified as part of the temporary habitat, they may not account for more than one-fifth of the required habitat (i.e., no more than 1% of the parcel acreage).

Steps to calculate amount of additional pollinator habitat required to meet standards:

- Record the total amount of acreage to be certified by Bee Better Certified.
- Assess existing habitat to determine if it meets the standards for viable pollinator habitat (habitat that includes appropriate plants and nesting resources), and determine if existing habitat is permanent or temporary. (If unsure, move to sections 1.2–1.5 below before completing this section).
- Record the total amount of permanent pollinator habitat currently on the property.
- Record the total acreage of temporary pollinator habitat currently on the property.

If amount of current habitat does not meet certification requirements, propose some habitat types in each category that could help the farm meet the required percentage. Mark the proposed habitat locations on the aerial map.

If the quality of existing habitat does not meet certification standards (e.g., not enough floral cover, dominated by nonnative or weedy vegetation), mark these areas on the map as “in need of improvement.” They may not be counted as current habitat, but may be able to be improved in order to meet standards.

In the following table, note the percentages of different habitat categories and any ideas for increasing habitat (if necessary). We recommend using aerial photos, Google Earth measurements, or on-the-ground measurements to assess the amount of existing habitat on your farm or the acreage of proposed new habitats. The photos below illustrate the different percent of a farm that may be covered in habitat.

Category	Acres	Percentage of certified acres	Ideas to Increase Habitat (if minimum % requirements are not currently met)
Total Acres to be Certified		NA	
Permanent Habitat			
Temporary Habitat			

1.2 Bloom

a. Seasonality

Requirement: In order to be considered pollinator habitat, at least three species must be in bloom during each season.

- Count the number of flowering species in each season: spring, summer, and fall.

Season	Number of Species	Species Identity
Spring		
Summer		
Fall		

b. Native status

Requirement: Permanent pollinator habitat must contain a significant portion of native, pollinator-attractive plants. For new permanent habitat, at least 70% of the vegetation established must be native to the region and acquired from local sources. In natural or mature created permanent habitats, at least 35% of the species must be native.

- See the Definitions section for an explanation of new habitat.
- Note: When buying plants for new habitat, ensure that the materials are from ecologically appropriate sources and are purchased within a 150 (or 300) mile radius of the property where they will be planted, in compliance with our sourcing guidelines. Also see section 1.3 below.

Habitat area	New/proposed or existing/mature	% of Native species

c. Floral cover

Requirement: In order to be considered ‘pollinator habitat’ the combined vegetative cover of the plant species in bloom should be classified “common” or “abundant” in each season.

- Since you will likely conduct the assessment at one time of year, you can estimate the abundance categories for each season (but try to verify them at a later date).
- For more information, see Appendix C: Bloom Abundance Categories, in the Bee Better Certified Production Standards

Abundance categories

Absent: No flowering species are present (0%).

Sparse: Only a few individuals of the flowering species are present (1–10%).

Common: Several individuals of the flowering species are present (11–50%).

Abundant: Numerous individuals of the flowering species are present (51–100%).



Photographs by The Xerces Society/Jessa Kay Cruz.

Season	Abundance Category
Spring	
Summer	
Fall	

1.3 Plants and Seed

a. Sourcing plants and seed

Requirement: Source plant materials for permanent pollinator habitat from ecologically appropriate sources. Plants in new habitats must be sourced from within 150 miles of the property to be certified. If no plant materials are available, document that no suppliers exist or that the nurseries you contacted did not stock appropriate plant materials. You may then expand your sourcing radius to 300 miles.

- Use Bee Better Certified form BBC_2017-b Plant Materials Sourcing Record to provide information in support of this requirement when applying for certification.

Potential plant material supplier	Distance from property to be certified (miles)

1.4 Nesting Features

a. Nesting locations

Requirement: Identify and protect pollinator nesting sites. Known nesting areas outside crop fields must be left undisturbed. Mark nesting locations on an aerial map, which must be provided in the BBCP. Train farm workers in where nest sites are located and how to avoid disturbing them.

- Ground-nesting bees often nest in patches of bare or sparsely vegetated ground with well-drained soils. Above-ground nesting bees nest in pithy-stemmed plants and abandoned insect burrows in wood (e.g., snags, dead branches, fence posts). Bumble bees nest in small cavities, such as abandoned rodent burrows or beneath lodged bunch grasses. Large, rotting logs support *Augochlora* sweat bees, which are common east of the Mississippi.
- For more information about bee nest identification, including photographs, see Appendix D: Identifying Native Bee Nests, in the Bee Better Certified Production Standards.

b. Nesting materials

Requirement: At least 5% of new permanent pollinator habitat plantings must be comprised of pithy-stemmed plants, plants that are used for nest cell materials, and butterfly host plants; some of each category must be included.

- Assess plant species in existing habitat areas to determine if they satisfy the nesting materials requirements. Indicate these plant species below.
- For plant lists, see the following appendices in the Bee Better Certified Production Standards
 - Appendix E: Pithy-Stemmed Plants that Above-Ground Nesting Bees Use for Nest Sites;
 - Appendix F: Plants that Above-Ground Nesting Bees use as Nesting Materials to Create Cell Divisions; and
 - Appendix G: Butterfly Host Plant Resources.

Plant species	Nesting resource (pithy-stem, nest cell, or butterfly host plant)	% of habitat

1.5 Tillage

a. Tillage Standard Operating Procedure (SOP)

Requirement: Develop a standard operating procedure (SOP) for how to reduce the impact of tillage activities on ground-nesting bee nests located both within crop fields and in non-crop areas. The SOP should demonstrate that existing tillage practices are low risk or that new practices reduce the risk of disturbance to ground-nesting bees. The SOP should encompass at least one-third of the total certified acreage each year.

The SOPs must address at least 2 of the following (check those that apply):

- Tillage depth
 - Timing of tillage
 - Frequency of tillage
 - Equipment type
 - Location of tillage
- For more information, see Appendix H: Example Tillage SOPs, in the Bee Better Certified Production Standards.

Describe your current tillage/cultivation procedures within crop fields and along field edges. Write an SOP that brings your farm into compliance with reducing the impacts of tillage, as described above.

Current practices

Standard operating procedure (SOP)

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Section 2: Pesticide Mitigation

2.1. Preventive Non-Pesticide Management

a. Scouting and monitoring protocol

Requirement: Develop a written pest/disease scouting and monitoring protocol and demonstrate that scouting and monitoring occurs.

- For more information, see Appendix I: Pest Scouting and Monitoring Guidance, in the Bee Better Certified Production Standards.

Fill in the following table to describe your current pest monitoring protocol.

Crop(s) affected	Pest or disease	Action threshold (e.g., number of eggs/plant)	Threshold source (e.g., extension services, PCA, etc.)	Monitoring start date	Monitoring end date	Monitoring frequency (e.g., daily, weekly)

b. Non-pesticide strategies

Requirement: Implement and maintain at least two preventive non-pesticide pest management strategies.

- Check whether the strategies identified in the following tables are currently implemented. If only one is utilized, indicate which other(s) will be adopted and when to come into compliance with this requirement.
- More information, including examples of how to fill out the forms, can be found in Appendix J: List of Approved Non-Pesticide Management Strategies, in the Bee Better Certified Production Standards.

Habitat Enhancement Practices for Conservation Biocontrol				
Practice	Currently used?	Description of how practice <u>is</u> applied (where/when)	To be adopted?	Description of how the practices <u>will be</u> applied (when/where)
Conservation cover (in perennial crop systems, maintain permanent ground covers of native grasses and forbs for weed control and natural enemy refuge)				
Beetle banks (establish bunch grasses to promote predatory ground beetles)				
Companion planting (plant species next to one another that enhance one another's growth and protect on another from pests)				
Intercropping (with crops that are attractive or useful to beneficial insects)				
Other (please describe)				

Additional Preventive Practices (Physical, Cultural, Mechanical, or Biological)				
Practice	Currently used?	Description of how practice <u>is</u> applied (where/when)	To be adopted ?	Description of how the practices <u>will be</u> applied (when/where)
Pheromone traps				
Timing of planting or harvest				

Physical barriers (e.g., floating row covers, fruit bagging)				
Sanitation				
Trap cropping				
Crop rotation				
Mulching (for weed control)				
Eliminate alternate hosts or sites for pests and disease				
Resistant varieties (insect pest and disease control)†				
Soil solarization (for nematodes and soil borne diseases)				
Mating disruption				
Maturity date selection (to avoid pest populations)				
Kaolin clay				
Other (please describe)				

2.2. Pesticide Application

a. Justified use

Requirement: No unjustified use of pesticides.

- See Definitions section above for a description of what constitutes a justified use.

Indicate whether you use the following to determine whether a pesticide application is necessary:

- Scouting and monitoring records
- Documented damaged exceeding pre-determined thresholds
- Degree day models
- Moisture and temperature records

- Spore counts
- Extension publications/updates
- News articles about target pest
- Expert opinion (indicate type of expert):
 - Certified Pest Control Advisor
 - Accredited Crop Consultant
 - Extension agent
 - Other (please describe) _____

If you have a certified pest control or crop advisor, list their information here. Note that pesticide or seed company representatives are not eligible for establishing justified use of pesticides.

Name of expert: _____

Title: _____

Company: _____

Accreditation #: _____

Phone number: _____

Email address: _____

b–g. Restricted pesticides

Requirements: Bee Better Certified limits the use of certain pesticides completely or during certain time periods when the risk of exposure to bees is highest.

- Please see the additional restricted pesticide resources section below for more information the practices indicated in the “restricted practice” column of the following table.

Fill out the following table to indicate whether any restricted pesticides are use. If they are, indicate how you plan to come into compliance with these requirements.

Restricted practice within crop fields	Currently used? Indicate practice(s)/product(s), active ingredient(s), and implementation.	Plan to come into compliance if currently used
Application of pesticides classified as highly toxic or moderately toxic to bees by EPA during bloom for crops		

that are visited by or pollinated by insects		
Application of DeMethylation Inhibitor (DMI), multi-site contact activity or carboxamide fungicides to crops during bloom		
Application of pesticides that jointly may increase toxicity to bees within three days of one another		
Use of nitroguanidine neonicotinoids (clothianidin, dinotefuran, imidacloprid and thiamethoxam), including the planting of treated seeds		
Genetically modified crops that express pesticides or are resistant to herbicides		
Soil fumigants		

Additional restricted pesticide resources

- Relevant appendices on the Bee Better Certified Production Standards
 - Appendix K: List of Pesticides Rated by the EPA as Moderately or Highly Toxic to Pollinators
 - Appendix L: List of Restricted Fungicides
 - Appendix M: Crops that are Exempt from Bloom-Time Pesticide Application Standard
 - Appendix N: Bee Precaution Use Instructions
 - Appendix O: List of Soil Fumigants
- To determine whether pesticides applied jointly (or within three days of each other) can increase toxicity, use the Bee Precaution tool ([link](#)) from the University of California Integrated Pest Management program. (A description of how to use the tool can be found in Appendix N, listed above.)

2.3. Minimizing Off-Site Movement of Pesticides

a. Aerial application

Requirement: No aerial applications of pesticides.

- Is aerial application used to apply pesticides?
 - YES
 - NO

If yes, describe how you will transition away aerial applications _____

b. Equipment calibration

Requirement: Pesticide application equipment must be calibrated to manufacturer specifications at least on an annual basis.

List application equipment used and calibration frequency in the following table.

Equipment type	Calibration frequency

c. Buffers

Requirement: Establish pesticide-free spatial buffer around permanent pollinator habitat:

- 40 feet for most ground-based applications.
- 60 feet for airblast applications.
- 125 feet for seed treated with nitroguanidine neonicotinoids.

- Vegetative buffers (drift fences) of species that are not attractive to pollinators may also be used instead of setbacks, or if setback distances cannot meet the above requirements.
- Buffers are required within your own property around all permanent pollinator habitat. Buffers are also required between all permanent habitat on your property and neighboring farms or land where insecticides are known or suspected to be applied.

Additional specifications

- Nitroguanidine seed treatment buffer requirements must be followed adjacent to the following crops—canola, corn, cotton, soy, sunflower, wheat. However, neonicotinoid buffer requirements do not apply if there is proof that neighboring farms are not treated with nitroguanidine neonicotinoids (for example if the adjacent farmland is certified organic).
- Within setbacks, herbicides—except paraquat dichloride—may be applied.
- Existing habitat adjacent to a neighboring property where pesticide application practices change following habitat creation is not required to meet setback requirements, although when feasible, we recommend incorporating a vegetative buffer.
- Vegetative buffers should be:
 - comprised of densely planted, small-needled evergreen species,
 - maintain airflow, and
 - designed to grow above spray release height. Until the buffer is above spray release height any pesticide applications on your property must be in accordance with the drift and runoff precautions on the label in order to minimize potential for movement into permanent pollinator habitat.

Enter information on buffers adjacent to each habitat area in the following table.

Habitat area (clearly identify location)	Application type (ground, airblast, neonic-treated seed)	Spatial or vegetative buffer	If spatial, note distance to field where pesticides are applied	If vegetative, has it been planted or is it planned

2.4. Pesticide Use in Pollinator Habitat

a. Restricted Pesticides

Requirements: Do not use pesticides other than herbicides in designated permanent pollinator habitat. Do not apply herbicides to plants in bloom, including weeds. Paraquat dichloride may not be used within permanent pollinator habitat.

- Do you use herbicides in designated pollinator habitat?
 - Yes
 - No
- If yes, indicate whether you:
 - Apply herbicides to plants in bloom
 - Use paraquat dichloride

Describe how you plan to adapt your pesticide use practices within permanent pollinator habitats on your farm to compliance with this standard.

Proposed changes

b. Restricted Pesticides

Requirements: Do not apply highly or moderately toxic pesticides as classified by U.S. EPA or herbicides to temporary blooming in-field habitat (e.g., cover crops, insectary strips) or to crops with temporary in-field blooming habitat growing beneath or adjacent.

- Note that if pesticide applications need to occur during the bloom period of temporary in-field habitats, mow or otherwise remove blooms at least 24 hours prior to any pesticide applications.

Section 3: Managed Bumble Bees

3.1 Commercial Bumble Bees

a–b. Use of commercial bumble bees

Requirements: Commercial bumble bees may only be used in secure indoor facilities (no open field use), such as screened greenhouses. If managed bumble bees are used in greenhouses, only use native species that are produced within their native ranges.

In the table below, indicate which practices are utilized to ensure managed bumble bees are kept within indoor facilities and which changes are needed in order to meet Bee Better Certified production standards.

Practice in and around pollinator habitat	Currently used?	Plan to come into compliance, if not currently used
Vents are screened or sealed		
Greenhouse entrances are protected		
Queen excluders are inserted on all colonies		
Individual bumble bees are not released into the wild		
All individual bumble bees are disposed of through incineration, freezing, or hot soapy water (complete submersion for at least two minutes).		
All materials (pollen, nectar, bedding and cardboard) are disposed of through incineration.		

Section 4: Record-Keeping

The following records must be submitted with your Bee Better Certified Plan and made available to inspectors during on-site inspections. Check all boxes to indicate whether these records are currently maintained. If not, begin keeping records using the forms indicated.

a. Habitat records

- 8.5" x 11" map(s) of the parcels to be certified. The map may be an Assessor's Parcel Map, an aerial photo, or other map that clearly shows the boundaries of the parcel.
 - The following information must also be included on the map:
 - Parcel name or code
 - Indication of north
 - Locations of temporary habitat with identifiers
 - Locations of permanent habitat with identifiers
 - Locations of spatial and vegetative buffers
 - Neighboring land uses to permanent habitat areas
 - Useful landmarks (e.g., other buildings, distinctive features, etc.)
 - Location of known nest sites, as applicable
 - Location of tillage practices described in this plan
 - Location of greenhouses where commercial bumble bees are housed, as applicable
- Names of the businesses where plant materials were sourced.
 - Use the Plant Material Sourcing Record to document plant material origin and native status.
- Lists of species included in permanent and temporary habitats
 - Use the Plant List Record.

b. Pesticide mitigation records

- Pest scouting and monitoring protocol.
 - Additional information about what to include in the protocol can be found Appendix I: Pest Scouting and Monitoring Guidance, in the Bee Better Certified Production Standards.
- Records of pest monitoring and scouting.
 - Examples are provided Appendix I: Pest Scouting and Monitoring Guidance, in the Bee Better Certified Production Standards.

- Records must contain the following information:
 - Crop
 - Pest
 - Date
 - Number counted or severity category (low/moderate/high; define how categories relate to action threshold)
 - Unit (e.g., per leaf, per plant, per row)
 - Whether action threshold defined in protocol was reached

- Records of preventative non-pesticide management strategies using Bee Better Certified form BBC_2017-d Non-Pesticide Management Record.

- Pesticide application records, including the planting of seeds treated with pesticides.
 - If your state requires reporting, you may use those forms. Otherwise, use Bee Better Certified form BBC_2017-a Pesticide Use Record or ensure your records contain the following information:
 - Date
 - Location (block ID, habitat area)
 - Crop
 - Crop Bloom Time (approx.)
 - Product Trade Name
 - Pesticide type (e.g., fungicide, herbicide, insecticide)
 - EPA Registration #
 - Active Ingredient(s)
 - Application Method (e.g., airblast, backpack, ground)
 - Target Pest(s)

- Other documentation to support a justified use, including the name, license number (if applicable) and contact information for experts.
 - For more details on required information and expert qualifications, see Appendix I: Pest Scouting and Monitoring Guidance, in the Bee Better Certified Production Standards.

- Seed purchase records.
 - Make them available upon request from the certifier and at inspection.

c. Bumble bee records

- Records of all colony purchases.
- Steps taken to secure greenhouses, and disposal dates/procedures.