

CRANBERRY PRODUCTION APPLICATION MODULE

This application module should be submitted in combination with the “Application for Food Alliance Certification – Farms and Ranches”. The purpose of the application module is to provide Food Alliance and your site inspector with a description of your cranberry production system, and to explain measures taken to limit potential negative impacts of your production system on the surrounding ecosystem. Please note, the checkbox lists of practices are not exhaustive, and certain practices may not be applicable to all operations.

Farm Name: _____

Primary Contact: _____

Production System – Description

1. Using the table below, please provide a description of your cranberry beds. (Table is continued on next page.)

Bed Number(s) or Management Unit	Variety/Cultivar	Acres	Soil type	Water Management System	Any Outstanding Pest Pressures? (please identify high insect/disease/weed pressures, if applicable)	Average Yield (barrels/acre)	Years in Production	Type of Harvest (Dry/Wet)
<i>Example:</i> Beds 1-8, Management Unit 1A	<i>Example:</i> Stevens	<i>Example:</i> 10	<i>Example:</i> Mineral, Peat, Muck, Sand, Peat/Sand	<i>Example:</i> Flow-through, Closed	<i>Example:</i> Phytophthora root rot	<i>Example:</i> 120	<i>Example:</i> 15	<i>Example:</i> Dry

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2. During the current production year, or during the next two years, do you plan any of the following bed management activities?

- New bed construction/New planting(s)
- Renovation of existing beds
- Sanding of beds

3. Please indicate if you use any of the following practices.

- Irrigation
- Flooding or irrigation for pest, frost or heat control
- Flooding for de-trashing beds or wet harvest
- Chemigation
- Fertigation
- Use contracted pest management service for scouting, spraying, or consulting services
- Aerial applications of pesticides, herbicides, or fertilizer

Record Keeping and Written Plans

4. Please indicate if you maintain any of the following records (records may be maintained in electronic or written format).

- Soil test results
- Leaf tissue test results
- Fertilizer application records
- Pesticide application records
- Harvesting records (crop yields)
- Insect/disease scouting records
- Weed scouting records
- Weed maps
- Irrigation records
- Flooding records
- Sanding records
- Pruning records
- Other (please specify):

5. Please indicate if you have in place any of the following written management plans.

- Farm conservation plan
- Nutrient management plan
- Integrated Pest Management (IPM) plan
- Water quality protection plan
- Wildlife habitat conservation or biodiversity management plan
- Environmental Farm Plan
- Other (please specify):

6. Is your operation required to obtain any local, state, or federal permits? If yes, please list.

Crop Management

7. Please explain your general fertilization plan – including timing of applications, application method (aerial, single, split, banded, etc.), application equipment, and type of fertilizer used.

8. Please indicate if you use any of the following tests or monitoring techniques to help determine crop nutrient requirements/nutrient availability.

Type of Test/Monitoring Technique	"X" if used	Frequency of testing/monitoring
Leaf tissue tests		
Soil nutrient content tests		
Soil organic matter tests		
Soil pH		
Irrigation Water pH		
Plant phrenology		

9. Please indicate if you use any of the following additional factors to help determine fertilization needs.

- Age of beds
- Variety
- Bed/field history
- Average crop yields
- Soil type
- General appearance of plant (length and color of uprights)
- Weather predictions
- Other (please specify):

10. Please explain measures taken to limit the movement of crop nutrients (specifically N and P) into ground or surface waters.

11. Please indicate whether any of the following management practices are used before, during, or after harvest.

- Legally required pre-harvest intervals (as indicated on pesticide labels) and residue tolerances are observed.
- Harvesting equipment is cleaned of debris and weed seed between beds.
- Beds are cleaned using post harvest de-trashing floods.
- Water for wet-harvest and/or de-trashing floods is re-used.
- Slow release of harvest & post-harvest floods is used to minimize sediment discharge and maintain water quality.
- Late water is used to supplement or replace use of insecticides where applicable.
- Dry harvest vines are trained to the intended direction of picking and picking is consistent in the same direction to avoid damage to the vines.
- Fresh market fruit is intensively managed for storage and fresh eating quality.
- Keeping Quality Forecast (KQF) or equivalent model is used to help determine potential need for fungicide application to fruit to prevent storage rot.
- Other (please specify):

Water Management

12. Please indicate if any of the following water quality protection measures are in place.

- Beds are able to hold water, are constructed with a perched water table, or have thick organic layer over a natural water table.
- Water with sediment is held in beds or ditches, or diverted to a holding pond, for settling.
- Secondary containment is provided for any fuels or chemicals stored within 200' of surface water, or within 150' of wells.
- Pesticide applications are timed, and delayed as appropriate, according to weather predictions.
- Ditches are cribbed/lined to prevent soil erosion.
- Ditches are replaced with subsurface drainage pipe, where soil type permits.
- Ditches at risk of direct chemical contact during pesticide applications are covered.
- Spot or boom sprayers are used as an alternative to chemigation on limited sensitive areas of the bed.
- Sufficient vegetation is maintained in ditches during the growing season to provide initial filtering of ditch water.

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- Where no water holding requirement is specified on label, or recommended on pesticide charts, water is held for 1 day or more following chemical applications, to allow for degradation.
- New beds are constructed with closed water systems.
- Other (please specify):

13. If you have any flow-through water systems, please indicate if any of the following additional water quality protection measures are in place.

- N/A: No beds have flow-through systems.
- Where natural waterways continually flow through beds, or water is constantly discharged from property, practices are in place to protect and/or filter that water (please describe under “other” below).
- Discharge water quality is monitored.
- A riparian buffer is established along length of waterway.
- Ditch water is kept separated from waterway.
- Flow-through waterways are diverted from bogs during applications of nutrients and pesticides.
- Other (please specify):

14. Please indicate if any of the following water conservation measures are in place.

- Water system is designed to efficiently deliver and drain water for beds, to control the water table level, and to store and release water.
- Water structures (e.g. ditches, drains, canals, dikes, flumes, bulkheads, tide gates, pipelines, holding and recovery ponds, etc.) are maintained to minimize water losses or failures and to prevent erosion.
- Water is re-used on farm or discharged and made available to other users.
- Cooperation with nearby water users to schedule diversions and/or manage storage reservoirs.
- Flumes are fitted with anti-seep collars.
- Storage reservoirs/holding ponds are constructed to collect water during high-water season for later use.
- Beds are terraced for gravity flow to enable re-use of water from bed to bed.
- Surface water and runoff are captured and stored in a tail water recovery pond; water is returned to a holding pond for re-use.
- Other (please specify):

15. Irrigation scheduling and equipment – please indicate if any of the following practices are used.

- Irrigation system is designed and maintained for efficient delivery of water and has sufficient capacity for peak water use.
- Fuel tanks by pumps have secondary containment.

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- Sprinkler system performance (uniformity and rate of delivery) is monitored annually.
- Improvements are made to increase uniformity coefficient (e.g. nozzles, pumps, lines and riser spacing, coverage, etc.) and chemigation delivery (if used).
- Applications are scheduled in response to consumptive needs, and crop protection needs.
- Soil moisture and depth of water table are monitored for irrigation scheduling.
- Low gallonage sprinkler heads are used.
- Irrigation system is automated to monitor temperature and dew point for frost or heat crop protection needs.
- Automatic cycling of sprinklers for frost protection and cooling.
- Seasonal water use is tracked/documentated.
- Other (please specify):

16. If chemigation or fertigation is used, please indicate if any of the following additional practices are in place:

- System is calibrated every 1-3 years, or anytime significant changes are made to irrigation system, to determine time/duration of application (dye test).
- Chemigation/fertigation is typically scheduled during the night or early morning hours, or when atmospheric conditions are most stable.
- Pesticides do not contact open water unless ditch water can be held for degradation.
- Irrigation system and injection pumps are checked for leaks or other malfunctions prior to every application.
- Partial-circle sprinkler heads and spray guards are situated to limit drift and backsplash to ditches, streams and any other sensitive areas.
- Sprinklers are set back from ditches and dikes to limit contact with open water.
- Gate valves are installed to allow for treating partial units.
- Satellite injection ports are installed to improve injection times.
- Other (please specify):

Integrated Pest Management

NOTE: Integrated Pest Management (IPM) includes a wide array of crop and site specific **P**revention, **A**voidance (avoiding pest impacts), **M**onitoring, and **S**uppression (**PAMS**) management techniques. In the "Reducing Pesticide Usage" section of the general Food Alliance application, you answered several questions related to Monitoring and Suppression techniques (both chemical and non-chemical controls) used to reduce pest populations. Below, we would like to gather additional information on **P**revention and **A**voidance techniques you may use to manage weed, insect, disease, and vertebrate pests. Please indicate which of the following IPM management techniques you currently use, and/or list any additional techniques put into practice. *Please note – the lists below are not exhaustive, and certain techniques may not be applicable to all operations.*

17. Weed Management

- Weed mapping
- Targeted control of priority weeds
- Screens on inlet and outlets

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- Sandpits and stockpiles are covered and weeds controlled
- Adjacent area weed control
- Mowing (e.g., dikes) to prevent maturation of weed seed
- Cleaning of harvest equipment between beds
- High vine density planting rates
- Maintain optimal fertility levels for cranberry plants
- Sanding
- Pruning
- De-trashing floods
- Late Water
- Short Spring Flood
- Summer Flood
- Removal of vine trash from bed borders
- Hand pulling, clipping
- Maintain low soil pH
- Renovation
- Careful prevention of weed seed contamination during renovation
- Other(please specify):

18. Insect/Mite Management

- Maintain optimal fertility for cranberry
- Detrashing floods (e.g. for girdler control)
- Pruning of infested material and removal from beds
- Fresh fruit beds are managed to meet standards for zero tolerance for cranberry fruitworm
- Individual beds planted with varieties having uniform development and bloom time
- Periodic late water flood (control of mites, Gypsy moth, false armyworm, cranberry fruitworm, Southern red mite)
- Summer flood (e.g. control of grubs)
- Winter flood
- Other (please specify):

19. Disease Management

- Use of resistant varieties
- Planting disease free vines in new plantings (see Renovation section)
- Adequate drainage (e.g. lateral and perimeter ditches, subsurface drain tile)
- Morning irrigation scheduled to allow for drying of leaf surface
- Avoiding plant stress (too hot or dry, frost)
- Optimal fertility
- Pruning for optimal canopy conditions (adequate air movement and light)
- Removal of trees shading bogs to promote air flow and rapid drying.
- De-trashing flood and removal of vine trash from bed borders
- Periodic late water flood (control of fruit rot)

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- Sanding to bury infested leaf litter
- Pruning out infected woody growth, and removing prunings from beds
- Removal of mummies
- Mechanical injury of fruit during harvest avoided
- Harvest equipment is disinfected between use in different beds, especially when phytohpthora present
- Harvesting of infected bogs last (see harvest section)
- Percent bloom counts used to time fungicide
- Other (please specify):

20. Vertebrate Pest Management

- Damage monitored
- Exclusion fencing installed
- Repellants used
- Hazing used
- Netting used
- Traps used
- Baits used
- Owl or kestrel boxes, or raptor perches installed
- Predator dens left undisturbed
- Intermittent flooding of dry harvest beds to control voles, mice, etc.
- Preferred foods (e.g. nutsedge, red root, wild bean) and weeds controlled to discourage bird damage
- Legal hunting
- Other (please specify):

Pollinator and Adjacent Area Management

21. Please indicate if any of the following pollinator management practices are used:

- Bees are not placed in beds until blossoms are open (>10% bloom) OR bees are placed in beds prior to bloom but sufficient food supplies are provided.
- Blossoms in adjacent areas (non-crop) are mowed or removed before bees are placed.
- Pesticides hazardous to bees are not applied when blossoms are open on cranberries, or in adjacent areas where pesticides may drift, unless applied in such a manner as to not be hazardous.
- Pesticide applications are made at the appropriate or state-regulated time, when bees are not foraging (late evening to midnight for chemicals with less than an 8 hour residual hazard).
- If pesticides are applied that are highly toxic to bees and have a residual hazard of longer than 8 hours, hives are removed from bed prior to spray and returned only when safe for bees according to label, OR hives are covered in wet burlap prior to application and bees are kept inside covered hives until safe according to label.

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- Mulch or grass, or other plant species that do not have bee-attractant blooms are used for cover on dikes and roads.
- Chemicals are rinsed (irrigated) off vines prior to bees beginning to forage following nighttime application.
- Other (please specify):

22. Please indicate if any of the following practices are used - to manage pest problems that may be exacerbated by conditions in adjacent areas.

- Vine trash is removed from border areas of beds annually.
- Dike management is included in the IPM program.
- Adjacent areas are managed to reduce potential for pest immigration, and pesticide/ fertilizer movement off-site.
- Monitoring is done along edges of beds to detect pests moving in from adjacent areas.
- Dikes, roads and other vegetated areas are managed (e.g. mowed) to prevent weed seed production.
- Leaf trash piles are composted; compost piles are situated > ¼ mile from beds if possible.
- Sand piles are covered to prevent growth and dispersal of weed seed.
- Pumps, intakes and outlets are screened to prevent weed seed moving into bed or between beds.
- Other (please specify):

Additional Information (Optional)

While the information you provided on the preceding pages provides a fairly comprehensive overview of your cranberry production system, we recognize each cranberry operation may have unique attributes which were not captured. Below, please provide any additional information on your cranberry production system or management techniques you feel is pertinent to share with the Food Alliance application reviewer and/or your inspector: