Eco Stone Fruit Protocol and Grower Self-Assessment
Peaches, plums, apricots and nectarines

red tomato
Fresh produce. Fresh thinking.

For 2010 Growing Season – Version 1.5– 07/09/10
Please see revisions on pg. 28

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THE ECO STONE FRUIT PROTOCOL

In partnership with farmers, scientists and other agricultural professionals, Red Tomato has developed this protocol to achieve measurable reductions in the use of high-toxicity pesticides. Through our work, we hope to contribute to a bountiful supply of quality, local foods with minimal pesticide residues, and to improve our soil and water resources, wildlife biodiversity, farm worker safety, farm stability and farmland preservation in the Northeastern USA.

Our protocol is based on a reduced-risk program initially developed by researchers, consultants and growers, for the Eco Apple Project. Information on the Eco Apple Project is available online from Red Tomato, www.redtomato.org/ecoapple.php. The protocol generally follows guidelines for Integrated Production by the International Organization for Biological and Integrated Control of Noxious Animals and Plants (IOBC).

Practices contained in this protocol are considerably more expensive than conventional programs that rely on highly toxic pesticides. Our project works to incorporate economic incentives for farmers to adopt reduced-risk methods. We recognize that reducing toxicity is an ongoing process. Our goal is to improve continuously as we learn more about reduced-risk alternatives and what it takes to implement them *and* grow high quality peaches.

Red Tomato is a nonprofit organization that helps family farmers survive and thrive by connecting them to customers who want high-quality produce, by developing new markets and managing all the logistics and promotion needed to ensure success in a supermarket environment, and educating trade buyers and consumers to appreciate and seek out products that are ecologically grown by family farmers.

Roles and Procedures

Red Tomato is the lead organization. Decisions on the protocol, procedures and market approach will be made in concert with researchers, crop consultants, growers and others. The IPM Institute of North America, an independent non-profit organization, will maintain the protocol with advice from the project partners. The Institute will also coordinate inspection by independent, third-party IPM professionals, review materials submitted by growers and inspectors, and make final determination on certification approvals. To apply for and maintain certification, the following steps will be followed:

1. All growers complete this Self-Assessment and submit to the IPM Institute with required pesticide application records and fees by July 16. For first year growers, the Institute will appoint an inspector to verify the information provided during an on-site audit to be scheduled prior to marketing certified fruit and every third year thereafter. All minimum requirements must be in place (Section I), and the required minimum score must be earned on optional practices (Section II).

2. Each year thereafter, participating growers will update and submit this Self-Assessment along with the certification fee and scouting and pesticide, fertilizer, thinner and growth regulator application records to the Institute by July 16. If these are not received by July 16, the Institute will appoint an inspector to conduct a site visit for additional cost.

3. Application records must include at least the date of application, block(s), acreage, trade name and formulation of material applied (with EPA registration number and target pest for pesticides) and rate per acre (oz., gals. or lbs./acre). Cost per unit (lb., gallon) for each pesticide used must also be included. Scouting records must include date, block(s), pest and result, e.g., captures per trap, mites per leaf, etc.

4. Annually, Red Tomato and its partners will review and evaluate the project and make adjustments as needed to continue to achieve our goals. The IPM Institute will update the protocol and certification procedures as needed. This review will be very important to address changes in product availability and pests, and improve our performance.

ECO-PEACH SELF-EVALUATION COVER SHEET

Grower Name: _____

Business Name: _____

Physical address: _____

Phone: (___) _____ Fax: (___) _____

Cell Phone: (___) _____

Email address: _____

Website: _____

Orchard Block List. List orchard blocks covered by this self-assessment below. Blocks with the same management practices (that will earn same scores throughout this assessment) can be grouped together as one block. Attach additional pages if needed to list all blocks.
Important: If differences in the way individual blocks are managed impacts a response on this self-assessment, they should be listed as separate blocks. For example, if peachtree borer is controlled by trapping in only one block, list and score that block as a separate block.

1. Block name(s): _____

cultivar (s): _____

acres and estimated annual production (bu.): _____

2. Block name(s): _____

cultivar(s): _____

acres and estimated annual production (bu.): _____

3. Block name(s): _____

cultivar(s): _____

acres and estimated annual production (bu.): _____

4. Block name (s): _____

cultivars: _____

acres and estimated annual production (bu.): _____

5. Block name (s): _____

cultivars: _____

acres and estimated annual production (bu.): _____

I. Minimum Requirements – Enter Pass (P), Fail (F) or Not Applicable (NA) in the column provided for each block or group of blocks listed on the preceding page.
Grower must implement all of the following. Items rated as F must be addressed before certification is approved. Explain any F or NA scores. Attach additional pages as needed.

Provision for Emergencies: If an emergency situation arises during the growing season where you feel that a pest problem cannot be managed without violating the protocol, contact the IPM Institute immediately. An expert panel of project scientists will assess the problem and options, and determine if an exception to the protocol is justified.

Enter P, F or NA for each block in the columns to the right	***Block Number***				
1. Grower meets legal requirements	**1**	**2**	**3**	**4**	**5**
a. Pesticides used are legally available for the use and application rate.					
b. Applicators hold required licenses and certification.					
c. Pesticide storage meets legal requirements.					
d. Used pesticide container disposal and recycling meets legal requirements.					
e. Required pre-harvest intervals are observed.					
f. Worker housing meets legal requirements.					
g. Pesticide application records meet legal requirements.					
Worker Protection Standard-related legal requirements:					
h. Central posting includes safety poster, emergency contacts, pesticide information.					
i. Pesticide safety training is provided for workers.					
j. Decontamination equipment and supplies are available.					
k. Personal protective equipment is available to all workers and used according to requirements on pesticide label.					
l. Application notification and postings are made, including posting and observation of required re-entry times.					

Notes – Explain any F or N/A scores:

Enter P, F or NA for each block in the columns to the right	*Block Number*				
2. Soil and Water Conservation	**1**	**2**	**3**	**4**	**5**
a. Soil and foliar analysis are conducted at least every three years to determine available nutrients.					
b. Results from soil and/or foliar analysis are used to calculate nutrient application rates, to minimize nutrient use and limit potential for nutrient pollution.					
c. Nitrogen applications are made only between early April and early June.					
d. Total applied nitrogen should not exceed 100 lbs./acre. Nitrogen is applied in two applications of 50 lbs. or less, where each are made at least one week apart to minimize runoff risk.					
e. Soil pH is tested at least every three years and maintained between 6 and 7.					
f. The most recent soil/foliage test results are available for inspection.					
g. Nutrient application records for the past 12 months are available for inspection.					
h. Row middles (drive rows) are sod or mulch-covered year round.					
i. Visibly eroded areas are not present and immediately corrected if they occur.					
j. A vegetated buffer separates surface water from managed peach trees by at least 50 ft., or larger where required by the pesticide labels for materials applied.					

Notes – Explain any F or N/A scores:

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3. Pesticide Use and Hazard Reduction					
3A. General practices	**1**	**2**	**3**	**4**	**5**
a. Trees are well pruned to allow penetration of light, air and spray material.					
b. Prunings are destroyed or removed such that no residue remains after one year.					
c. Spray pattern application rates of pesticides are adjusted to tree size. (Any mandatory minimum applications rates specified on the product label must be met.)					
d. Pesticide application equipment is calibrated at least annually.					
e. Records from the most recent calibration are available for inspection.					
f. Pesticides no longer used (e.g., no longer registered for use) are returned to dealer or disposed of at the next collection. While in storage, obsolete pesticides are clearly marked and separated from pesticides in current use.					
g. Grower has access to current wind speeds (e.g., hand-held monitor, weather station, Skybit) and uses this information to reduce potential for drift. Label requirements referencing maximum wind speeds are followed.					
h. Prohibited pesticides (see Section III. 'Do Not Use' list) are not used.					
i. Scouting records for the current and previous season are available for inspection.					

Notes – Explain any F or N/A scores:

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3B. Pest-Specific Practices					
Note: **Systematic sampling** or monitoring requires following a standard and ideally written procedure, e.g., sampling a pre-determined number of leaves and trees in each block for mites, and where available, using a quantitative threshold to determine need to treat. The procedure should be one recommended by Extension where available and may be reasonably modified by grower and/or crop advisor experience. Modifications may include adjustments for weather conditions, or practicality of implementing the procedure and responding to results in the given orchard or block. Explain variance from Extension recommendations or protocol specifications in notes.					
Peach scab	**1**	**2**	**3**	**4**	**5**
a. Peaches are monitored for scab lesions from bloom through mid-July in blocks with a history of scab. Scab spores overwinter on shoots and monitoring is very important to determine presence of infections. If scab is found on fruit it will quickly spread unless appropriate treatments are made.					
Mites					
a. No more than two post-bloom applications of miticide are made per season. Noticeable leaf bronzing and/or the absence of predator mites should determine the necessity of miticide applications.					
Plant bugs and Stinkbugs (Tarnished, Oak and Hickory Plant Bugs)					
a. Orchard block treatments for tarnished plant bug (TPB) and stink bugs are based on thresholds from scouting. Critical sampling for tarnished plant bug and stink bugs is between petal-fall and shuck-fall. White sticky-boards have minimal success in peach orchards. Sample 100 to 200 fruit per block for feeding injury. The action threshold is 1% to 2% fresh damage.					
b. Orchard-floor-management to control TPB and stinkbugs, e.g., time mowing orchard rows after insecticide applications and control of alternate host broad-leaf weeds with mowing or herbicides.					
Apple maggot					
a. Treatment decisions for apple maggot are based on monitoring with three or more sticky traps placed in each block and a threshold of $\geq$1 per trap if using un-baited traps, or $\geq$ 5 per trap if using odor-baited traps. Use more traps per acre in small blocks and other blocks with lengthy perimeters vs. area. After treatment, wait 10 days, remove all captures from traps, and then begin counting captures towards the threshold.					

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3B. Pest-Specific Practices (continued)					
Brown rot (Blossom blight)	**1**	**2**	**3**	**4**	**5**
a. Cultural controls are used, e.g. removal of thinned fruit, infected twigs, mummified fruit and all fruit at harvest.					
b. Additional fungicide cover sprays after shuck-fall are based on scouting and monitoring results indicating a moderate-risk or greater for brown rot infections.					
c. Fungicides are rotated to include different modes of action between sprays to prevent brown rot resistance. Note: brown rot resistance to Indar has been documented in New York. Using the same fungicide classes should be avoided for controlling both blossom blight and fruit rots.					
Western flower thrips					
a. Chemical control of thrips is determined from monitoring data. Monitoring should occur from pink through shuck-fall. The action threshold is a presence of thrips on 10% of fruit samples.					
Green peach aphid (GPA)					
a. Chemical control of GPA is based on the presence of feeding injury to leaves, flowers and developing fruit. Monitor for GPA from petal-fall to one month after shuck-fall. Note for peaches: thresholds are two or more colonies per tree between petal-fall and shuck-split and five or more colonies by late May. Note for nectarines: threshold is one colony per tree at any given time on bearing trees.					
Japanese beetle					
a. Chemical control of Japanese beetle is based on the presence of feeding injury to leaves or fruit. Japanese beetle should be monitored from late-summer through early-fall. Note: Control of Japanese beetle damage is important to minimizing opportunity for brown rot infection from fruit feeding.					

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3B. Pest-Specific Practices (continued)	**1**	**2**	**3**	**4**	**5**
Obliquebanded leafroller (OBLR) Note: In orchards where Oriental Fruit Moth (OFM) is controlled chemically, control on OBLR should also be achieved. Where OFM is controlled with pheromone mating disruption, additional control may be necessary.					
a. OBLR is not treated unless need is indicated by systematic sampling for infested clusters or terminals (e.g., 3% infested using the sampling procedure described in the Cornell Guide for Pest Management of Tree Fruit). *Score as NA if there is no block or region history of economic injury due to OBLR.*					
b. If OBLR is treated, no more than one application is used against the overwintering generation (bloom or petal fall). Two applications may be used against second generation. Use degree days to calculate treatment timing with the first treatment applied at 360 degree days (base 43F) after the first pheromone trap catch (biofix) and a second applied 10-14 days later. *Score as NA if no treatments are made for OBLR.*					
Plum curculio					
a. After the first application of pesticide for plum curculio at or after apple petal fall, further treatment decisions are based on sampling fruit for any sign **of** fresh injury. Plum curculio immigration into the orchard will end at 308 degree days (base 50°F) from apple petal fall. Note: Degree day model for plum curculio is based on McIntosh petal-fall.					
Greater Peachtree Borer (GPTB) and Lesser Peachtree Borer (LPTB)					
Note: Pheromone traps are used to monitor both species. Traps for GPTB are not pest-specific and other clear-wing moths, e.g. dogwood borer and lilac borer, may be caught in traps. Pheromone traps for LPTB are different than GPTB traps.					
a. In blocks where mating disruption is not used, a trunk drench of Lorsban after harvest will provide control of GPTB and LPTB. The use of insecticides to control borers should be determined by pheromone trap catches and scouting. Trap catches with ten or more moths per week warrant control, or the presence of one or two larva or pupa casings per tree from scouting.					

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3B. Pest-Specific Practices (continued)	**1**	**2**	**3**	**4**	**5**
Oriental fruit moth (OFM)					
a. In blocks where high OFM populations do not warrant the use of pheromone mating disruption, timing and control is achieved using degree day models and Extension recommended thresholds. If OFM is treated, degree-days are used to calculate treatment timing with the first treatment applied at 150-200 degree days (DD) (base 45) after the first sustained pheromone trap catch (biofix) of first generation OFM. Second and third generation OFM can be controlled at 1150-1200 and then 2100-2200 DD from first generation biofix If pressure is severe as indicated by pheromone traps or fruit damage, additional applications may be made 10-14 days after these applications. The threshold for OFM trap catches are fifteen moths per week during first generation and ten moths per week during second and third generation. *Score as NA if no treatments are made for oriental fruit moth.*					
Bacterial spot Note: Control of bacterial spot must be achieved preventatively through use of a protectant spray program.					
a. Use copper application during the fall and/or spring to reduce bacterial spot inoculum.					
b. Control of bacterial spot after petal fall is determined monitoring for lesions on fruit and leaves and weather data indicating wetting periods that are favorable for bacterial spot infections.					
X-Disease					
a. Broadleaf weeds are controlled either through herbicide use or cultural controls (for e.g. mowing, mulching, weed badgering). Broadleaf weeds harbor leafhoppers which are X-Disease vectors.					
Black knot (Plums) Note: Achieving effective control requires implementation of a combination of cultural and chemical controls.					
a. Monitor for black knots on vegetative terminal shoots from dormancy through bloom.					
b. Prune infected shoots and limbs during dormancy. Pruning's should be destroyed (burned or buried to destroy inoculums)					
c. Chemical control of black knot is applied between white-bud and shuck-split and is based on monitoring results.					

Enter P, F or NA for each block in the columns to the right	*Block Number*				
3B. Pest-Specific Practices (continued)	**1**	**2**	**3**	**4**	**5**
Perennial canker (Also called: Valsa, Cytospora, Leucostoma canker)					
a. Cultural controls are used to prevent infections, e.g. maintaining wide branch angles, removal of infected cankers during dormancy, removing wild hosts or abandoned fruit trees.					
b. Insects and diseases (greater and lesser peachtree borers, brown rot and etc.) that serve as vectors to perennial canker are managed with chemical or non-chemical controls.					
Powdery mildew					
a. Control decisions is determined from scouting for the presence of white mycelia growth on young leaves. Fungicides are applied between petal-fall through pit-hardening. Once fruit have reached pit-hardening stage, susceptible cultivars become resistant.					
Peach leaf curl Note: Treatments for peach leaf curl are not effective once symptoms are present.					
a. Chemical control for peach leaf curl is applied in the fall after 90% foliage drop or in the spring before bud-swell.					
b. Monitor young leaves during bloom for foliar symptoms of peach leaf curl. Monitoring should be done to determine effectiveness of chemical control and determine necessity of fall pesticide application.					
Rodents/voles					
a. If grain-based rodenticides (corn, oats) are used, they are applied in bait stations or burrows only.					

Notes – Explain any F or N/A scores:

4. Grower Education and Self-Improvement	**P/F**
a. Grower has attended educational meetings within the last year. List at least one:	
b. Grower plans the following improvement(s) over the next three years. List at least one:	

Notes – Explain any F or N/A scores:

Enter P, F or NA for each block in the columns to the right	***Block Number***				
5. Food Safety and Product Quality	**1**	**2**	**3**	**4**	**5**
a. Clean toilet and hand-washing facilities are available to field, harvest and packing house staff.					
b. Livestock are not allowed in bearing orchards.					
c. Manure is not applied to bearing orchards.					
d. Only fruit of sound internal quality are sold as Eco-Peach label.					
e. Travel ways between trees and packinghouse/storage are smoothed prior to harvest.					
f. Fruit is harvested at correct maturity according to firmness or other accepted measures.					
g. Fruit bins and boxes are sound and clean of soil, plant or animal debris prior to use.					
h. Fruit that has fallen to the ground (drops) are not sold as Eco-Peaches.					
i. Filled harvest containers are transported immediately to packing and storage.					

Notes – Explain any F or NA scores:

II. Scored advanced practices. Enter points indicated under the appropriate block number if practice is implemented in that block or group of blocks. A minimum score of 20 points is required on this section for each block. Make note of any advanced practices implemented that are not listed here.

	Points available	***Points earned/block***				
1. Soil and water conservation.		**1**	**2**	**3**	**4**	**5**
a. If irrigation is used, drip or trickle is installed to ensure adequate water supply and minimize water use and foliage wetness. *If no irrigation is used, award 1 point.*	***1***					
b. If irrigation is used, a rain-activated shutoff device, evapotranspiration or soil moisture monitoring are used to schedule irrigation timing/amounts. *If no irrigation is used, award 1 point.*	***1***					
c. On slopes with potential for erosion, tree rows are planted with contours.	***1***					
d. On roads with slopes with potential for erosion, water bars are installed.	***1***					
e. Tile drainage is installed and maintained in poorly drained soils, or trees are not planted in poorly drained soils.	***2***					
f. On sites at risk of wind-eroded soil, windbreaks are installed and maintained.	***1***					
g. A Conservation Plan for the farm has been developed according to NRCS standards; sensitive resource areas of the farm have been identified, and environmental risks (e.g., runoff containing nutrients or pesticide residues) have mitigations in planned or already in place (e.g., spray setbacks, field borders, buffer strips, etc).	***2***					
h. USDA NRCS WIN-PST software is used to evaluate the pesticides used in the orchard for impacts on water quality. See http://www.ipm.ucdavis.edu/TOX/watertox1.php or contact NRCS.	***2***					
Total Points Part 1:	***11***					

Notes, additional practices used:

	Points available	*Points earned/block*				
2. Pesticide Use and Hazard Reduction.		**1**	**2**	**3**	**4**	**5**
a. Tractor cabs plus required PPE are used to protect applicators during applications.	***2***					
b. 'DANGER' or 'WARNING' labeled pesticides are not used.	***2***					
c. Where site conditions allow, disease resistant varieties are planted and are not treated with fungicides for those diseases to which the varieties are resistant.	***2***					
d. Herbicides are not used in alleyways/drive rows.	***1***					
e. Herbicides are not used in tree rows; weeds are managed by non-chemical means.	***1***					
g. Alternate row pesticide applications replace at least two full block applications.	***1***					
i. No organophosphates are used as insecticides.	***2***					
j. No miticides are used other than an early season oil spray. Mites are managed principally by preserving natural enemies.	***2***					
k. All abandoned peach and apple trees within 100 yards are removed to reduce immigration of plum curculio and other pests.	***1***					
l. Wild hosts of tarnished plant bug, plum curculio and oriental fruit moth are removed from the orchard and immediately adjacent areas to reduce pest populations.	***1***					
m. Rodents are managed without rodenticides, e.g., by mowing, mouse guards, removing drops, encouraging predators.	***1***					
n. Mating disruption is used for peachtree borers. Note: Mating disruption should be placed in orchard at shuck-split. This was mid-May in Connecticut in 2009) prior to flight at a rate of 150 ties per/acre. This can be increased up to 250/acre where high populations warrant additional control. Note: If mating disruption is used, all stone fruits in the orchard must be treated with pheromone ties.	***1***					
o. Mating disruption is used for OFM. Note: Insecticides applied after bloom for control of plum curculio will also have efficacy on first generation OFM. Mating disruption for OFM may be applied before second generation in mid-June. Mating disruption dispensers lasting 90 days will also provide control in areas with a third generation of OFM. Note: If mating disruption is used, all stone fruits in the orchard must be treated with pheromone ties.	***1***					

p. Remove chokecherries and wild sweet cherries within a 500 ft radius of the orchard as they are a host for X-Disease.	***1***					
b. Brown rot infections and mummies are scouted and monitored throughout the growing season. *Pre-pink* Sample 20 trees per block for the presence of fruit mummies and/or cankers. One to ten mummies and/or cankers indicates moderate-risk for infection, greater than ten mummies and/or cankers indicates high-risk for infection *Pre-bloom* Monitor the orchard floor and under trees for fruiting bodies of brown rot fungus. Commonly found in the wettest areas of the orchard, the presence of fruiting bodies indicates a high-risk for blossom infection. *Shuck fall* Sample ten shoots on 20 trees per block for blossom infections. One to ten blossom infections indicates moderate-risk for infections during pre-harvest and harvest. Greater than ten blossom infections indicate high-risk for infection during pre-harvest and harvest. *Pre-harvest and harvest* Sample ten fruit on 20 trees per block for brown rot. Two infected fruit per eight trees or ten acres represents immediate high-risk for brown rot infection. Continue monitoring every three to five days during pre-harvest.	***2***					
Total Points Part 2:	***21***					

3. Grower education and self-improvement.	***Points available***	***Points earned***
a. Grower has hosted a field day or other production-related educational meeting within last three years. List date, name/description of event:	***1***	
b. Grower has conducted on-farm research using control (e.g., untreated) trees for comparison within the last three years. List subject of research, dates:	***2***	
c. Grower belongs to state and/or regional grower organization. List organizations:	***2***	
4. Energy conservation.		
a. Energy-efficient lighting is used in office, packing and storage facilities.	***1***	
b. Alternatives (e.g., solar, wind) are used to meet at least 10% of electricity needs. List:	***1***	
c. Alternatives (e.g., biodiesel) are used to meet at least 10% of fuel needs. List:	***1***	
d. Storage energy use has been conserved by measures implemented in the last three years. List:	***1***	
5. The following materials from office, field, packing house and storage are recycled.		
a. Paper and cardboard	***0.25***	
b. Plastic	***0.25***	
c. Aluminum	***0.25***	
d. Glass	***0.25***	
e. Used pesticide containers where consistent with regulations	***0.25***	
f. Batteries	***0.25***	
g. Computers and other recyclable office equipment	***0.25***	
h. Engine oil	***0.25***	
Total Points Part 3-5:	***11***	

6. Food Safety and Product Quality	***Points available***	***Points earned***
a. Clean plastic bins are used to store fruit.	***1***	
b. Field bins, storage rooms and packinghouses are sanitized annually after storage and packing are completed.	***1***	
c. Packing facility has a written Standard Sanitary Operating Procedures plan.	***1***	
d. Packing line water flumes are chlorinated or otherwise treated to reduce potential for post-harvest diseases.	***1***	
e. Reduced-risk fungicides are used in post-harvest treatments to control brown rot.	***1***	
f. Cider production facility (if any) has a written HACCP plan.	***1***	
g. Farm is third-party certified for Good Agricultural Practices (e.g., by auditing firm, government agency and/or EuroGAP).	***1***	
h. Farm has a written Good Agricultural Practices plan.	***1***	
Total Points Part 6:	***8***	

Notes, additional practices used:

	Points available	***Points earned/block***				
SCORE CARD: Growers in the program more than one season must earn a total of at least 24 points for each block. First year growers must earn at least 20 points for each block.		**1**	**2**	**3**	**4**	**5**
Total Points Part 1. Soil and water conservation.	***11***					
Total Points Part 2. Pesticide use and hazard reduction.	***21***					
Total Points Part 3-5. Grower education, resource conservation.	***11***					
Total Points Part 6. Food safety and product quality.	***8***					
Total Score (add columns, include total for Parts 3-6 in each column total)	***52***					

III. Beneficial Practices and Pesticide Hazard Ranking

The following practices and products are listed for Northeast stone fruit production. Pesticide active ingredients have been evaluated for necessity to produce quality stone fruits in the Northeast in commercial quantities, and for hazards to humans, natural enemies and other non-targets, potential to contaminate groundwater and resistance management. This is not an exhaustive list of practices or products. There are hundreds of active pesticide registrations for peaches!

Note: Brand names are for reference only. Additional brand names may also be available.

Pesticide hazards were analyzed using the database at www.pesticideinfo.org, which collates which collates information from recognized authorities such as US EPA and individual State Lead Agencies (SLAs) for pesticide regulation. SLAs are housed in state departments of agriculture or state environmental management agency, depending on the state.

The following criteria were used to evaluate pesticides:

Acute toxicity to wildlife, fish, aquatic invertebrates: Product label
Acute toxicity: Caution, Warning or Danger Label/US EPA
Neurotoxin: Cholinesterase inhibitor or listed on Toxics Reduction Inventory maintained by US EPA
Possible, likely, probable carcinogen: US EPA, State of California, International Agency for Research on Cancer
Reproductive/developmental toxin: US EPA, State of California
Toxic to pollinators, key natural enemies/secondary pests: Product label, Extension recommendations, variety of published sources
Toxic to wildlife: Product label
Suspected endocrine disruptor: Illinois EPA, Keith, Colburn or Benbrook lists
Broad spectrum pesticide: Extension recommendations
Resistance risk: Extension recommendations
Potential or known groundwater contaminant: State of California, variety of published sources

The following process was used to determine use and use restrictions:

a. Pesticide options currently in use by growers, or suggested by growers or others, are reviewed for status re the criteria listed above**.**

b. There are hundreds of pesticides labeled for use on peaches. We only review those products currently in use or with strong potential for use, as suggested by participating growers and others.

c. Pesticides that are useful for our pest issues that do not have hazards as per our criteria, or pesticides with relatively readily mitigated hazards, are placed in "Use with Justification" category. For example, for most products, aquatic toxicity is readily addressed by following label restrictions to avoid contamination of water bodies. **No pesticides may be used without justification, e.g., sampling and thresholds, or weather monitoring, or block history of a problem where sampling or monitoring methods and thresholds are not available.**

d. Pesticides with hazards that are less readily mitigated are placed in the "Do Not Use" category. These are then reviewed for necessity in order to produce commercial

quality fruit economically. Our goal is to limit the use of products with hazards to those we cannot do without.

e. Products that needed to address a key pest are then moved to the "Use with Restrictions" category. Measures that we can take to mitigate hazards are included, e.g., limiting the number of applications, or limiting use to one pest issue where the product is critical for adequate control.

f. Other products with similar hazards are not moved to the "Use with Restrictions" category just because the hazard profile is similar to those already in that category, but only if their use is a critical need that we identify as a group.

g. This is a subjective process. Definitive data are not available on many of the considerations here, e.g., thresholds are lacking for many pests, efficacy is variable, development of resistance is a concern if available modes of action are limited. We don't know fore sure exactly where to draw the line. We try to reach consensus on issues but realize this will not be possible in all cases. The protocol belongs to Red Tomato, which delegates the final decision on contentious issues to the IPM Institute.

IMPORTANT: All of the following products may not be registered in every state. Please confirm that product is labeled for use in your state before using! Follow recommendations in your state's stone fruit production guide for all products and techniques used.

NON-CHEMICAL PRACTICES – Partial list of practices with potential to reduce reliance on pesticides in Northeast stone fruit production.	
Practice	**Description/Comments**
Disease Management	
Weed Management	
cultivation, cover cropping	Special precautions must be taken to avoid root damage; fall-planted cover crops reduce erosion risk.
flaming	
mowing	Planting slower growing varieties of ground cover can reduce mowing requirement.
mulching	Of bio-mulch options, woodchips may be best to minimize vole problems. Fabric/geotextile and living mulches (e.g., clover) are also options. Careful investigation and testing of these options is recommended.

USE WITH JUSTIFICATION – Use only after systematic scouting or weather monitoring and science-based thresholds, or according to previous history where thresholds are not available, and only if registered for your intended use in your state and in accordance with all label directions. Resistance management strategies should be used, with particular emphasis on uses at greatest risk, some of which are noted below.		
Active ingredient	**Trade name**	**Comments**
Disease Management		
bacillus subtilis	Serenade	Not a ready substitute for other fungicides.
copper hydroxide	Kocide formulations with CAUTION label	toxic to fish and aquatic invertebrates, maximum of two applications per year to limit impact on soil, earthworms)
copper oxychloride	COCS	toxic to fish and aquatic invertebrates, maximum of two applications per year to limit impact on soil, earthworms
cyprodinil	Vangard	toxic to fish and aquatic invertebrates, potential ground water contaminant
lime sulfur, bordeaux mixture		Limit applications to reduce negative impacts on fruit size and number.
phosphorous acid	Phostrol, Fospite	Can be used for Phytophthora root rot
sulfur		Limit reliance on sulfur to reduce potential for negative impacts on soil quality.
Weed Management		
clove oil, acetic acid, lemon juice	Caution label formulations only, e.g., Matran EC	These products are <u>not</u> ready substitutes for other herbicides. Efficacy is typically at least 10% less than other herbicides with much shorter duration weed suppression.
fluazifop-p	Fusilade	toxic to fish, , apply during active grass growth
flumioxazin	Chateau	toxic to aquatic invertebrates; apply only between final harvest and bud break
glyphosate,	Roundup, Touchdown	limit applications and rotate with different mode of action to slow development of resistant weeds;

sulfosate		avoid contact with foliage, branches or trunks because of extreme sensitivity to these materials
Insect/Mite Management		
acetamiprid	Assail	toxic to wildlife, toxic to bees, may result in spider mite flare up
Bacillus thuringiensis	Agree, Dipel, Deliver, MVP,Biobit	
flonicamid	Beleaf	
indoxacarb	Avaunt	toxic to mammals, birds, fish, aquatic invertebrates
kaolin clay	Surround	
mating disruption	CheckMate, Disrupt, IsoMate; hand-applied and sprayable pheromone formulations	
oil	Damoil, Sunspray, Omni, PureSpray	toxic to fish
pyriproxyfen	Esteem	
spinosad	Spintor, Success/Entrust	toxic to bees
Other		

USE WITH RESTRICTIONS – Use with justification and only when less hazardous alternatives (e.g., those in the list above) are not adequate. Follow all restrictions listed below and in accordance with all label directions and only if permitted in your state.			
Active ingredient	**Trade name**	**Concerns**	**Use restrictions**
Disease Management			
azoxystrobin-methyl	Abound	potential ground water contaminant, toxic to fish and aquatic invertebrates	
captan	Captan, Captec	acute toxicity (DANGER and WARNING label formulations), toxic to fish, carcinogen under prolonged exposure to high doses	
chlorothalonil	Bravo Weatherstick (CAUTION label)	acute toxicity, known carcinogen, potential ground water contaminant	1. Use CAUTION label formulation.
copper hydroxide	Kocide, WARNING or DANGER label formulations	acute toxicity, toxic to fish and aquatic organisms	2. Use CAUTION label formulations where possible. 3. Maximum of two applications per season to limit impacts on soil and earthworms.
copper sulfate	Cuprofix Disperss		
dodine	Cyprex, Syllit	acute toxicity (DANGER label), resistance	1. Do not use where resistance is suspected.
fenhexamid	Elevate	toxic to fish and aquatic invertebrates, potential ground water contaminant.	
fludioxinil	Scholar	toxic to fish and aquatic invertebrates	Can be used for post-harvest dips
oxytetracycline	Flameout, Mycoshield	known developmental and reproductive toxin	
pyraclostrobin, boscalid (nicobifen)	Pristine	possible carcinogen, toxic to fish and aquatic invertebrates	
trifloxystrobin, tebuconazole	Adament	toxic to mammals, fish and aquatic invertebrates, potential ground water contaminant, suspected	

sterol inhibitors:			
tebuconazole	Elite, Tebuzol	toxic to estuarine and marine invertebrates. Suspected endocrine disruptor	1. Do not use where resistance is known. 2. Maximum of four applications per season. 3. Use only in combination or rotation with a protectant fungicide. 4. Do not use two seasons in a row.
fenbuconazole	Indar	toxic to fish, aquatic invertebrates, algae; EPA possible carcinogen related to crystalline silica content; reproductive effects on female animals	
myclobutanil	Rally	acute toxicity, developmental/reproductive toxicity, acute aquatic toxicity, resistance	
metconazole	Quash	slight acute toxicity	
thiophanate-methyl	Topsin-M, T-Methyl	likely carcinogen, reproductive/developmental toxin, potential groundwater contaminant, resistance	1. Do not use where resistance is suspected.
trifloxystrobin	Gem	resistance	1. Do not use more than four times per season. 2. Use only in rotation with a different mode of action. Do not use back-to-back applications.
quinoxyfen	Quintec	high runoff potential, toxic to fish and other aquatic invertebrates	
Weed Management			
clethodim	Select Plus (CAUTION label formulations)	potential groundwater contaminant	1. Non-bearing trees only.
paraquat dichloride	Gramoxone Super, Gramoxone Extra	acute toxicity, potential groundwater contaminant, moderate aquatic toxicity	1. Apply no more than 64oz per acre (One full rate application) in a season.
pelargonic acid	Scythe	acute toxicity	
rimsulfuron	Matrix	potential ground water contaminant	
sethoxydim	Poast (CAUTION label formulations)	potential groundwater contaminant, moderate aquatic toxicity	

simazine	Princep, Simazine	possible carcinogen, reproductive toxin, known groundwater contaminant, acute aquatic toxicity	1. Maximum of one application per season of either simazine or terbacil (not both). 2. simazine- trees need to be established for 1 year or more 3. terbacil – non-bearing or trees established for 3 years.
terbacil	Sinbar	developmental toxin, potential groundwater contaminant	
napropamine	Devrinol		1. No longer registered for use 2. Existing stocks may be used until exhausted
Insect/Mite Management			
azadirachtin	Azadirect, Neem	suspected endocrine disruptor, toxic to fish and aquatic invertebrates	1. OMRI approved
bifenazate	Acramite		1. Make no more than two post-bloom miticide applications per season; Acramite can only be used once/season.
chlorantraniliprole	Altacor	toxic to aquatic organisms and certain beneficial, potential groundwater contaminant	1. Make no more than three applications per season. Use against one generation of the target pest only.
chlorpyrifos	Lorsban	acute toxicity, cholinesterase inhibitor, suspected endocrine disruptor, broad spectrum	1. Use for peachtree borers only. 2. One trunk application/year
Pyrethroids:			
esfenvalerate	Asana	acute toxicity, extremely toxic to fish and aquatic invertebrates, highly toxic to bees, toxicity to beneficials, suspected endocrine disruptor	1. Use of pyrethroids can cause mite outbreaks.
cyhalothrin	Proaxis	toxic to wildlife, fish and aquatic organisms, suspected endocrine disruptor, broad-spectrum	
cyfluthrin, imidacloprid	Leverage	acute aquatic toxicity, restricted use pesticide, broad-spectrum	
cyfluthrin	Baythroid	moderate acute toxicity, broad spectrum, highly toxic to bees, extremely toxic to fish and aquatic invertebrates	

pyrethrin	PyGanic	highly toxic to fish, broad-spectrum	
pyrethrin, piperonyl butoxide	Pyrenone crop spray	highly toxic to fish, broad-spectrum, suspected endocrine disruptor, possible carcinogen	
fenpyroximate	Portal, fujimite	toxic to fish and aquatic invertebrates	
flubendiamide	Belt	toxic to aquatic invertebrates, potential groundwater contaminant	1. Make no more than three applications per season. Use against one generation of the target pest only.
imidacloprid	Provado	highly toxic to bees and aquatic invertebrates; toxic to wildlife	
methoxyfenoxide	Intrepid	hazardous to aquatic invertebrates, potential groundwater contaminant	
spinetoram	Delegate	highly toxic to bees, toxic to aquatic invertebrates	1. Make no more than four applications per season. Use against one generation of the target pest only.
spirodiclofen	Envidor	toxic to fish and aquatic invertebrates, highly toxic to bees	1. 2. Make no more than two post-bloom miticide applications per season; Envidor can only be used once/season.
spirotetramat	Movento	toxic to aquatic invertebrates and oysters, potential groundwater contaminant, potentially toxic to honey bee larvae	1. Maximum of 15.3 oz. per acre per season. Do not apply until after petal fall. 2. EPA registration cancelled 2010, existing stocks may be used until exhausted.
thiamethoxam	Actara	Toxic to wildlife; highly toxic to aquatic invertebrates; highly toxic to bees; potential groundwater contaminant	Do not apply between the pre-bloom (swollen bud) and post-bloom (petal fall) growth stages.
Other			

DO NOT USE		
Active ingredient	**Trade name**	**Concerns**
Disease Management		
chlorothalonil	Bravo, Echo	acute toxicity, known carcinogen, potential ground water contaminant (Danger label formulation, Bravo Ultrex, Warning label formulation Echo 720)
ferbam	Ferbam	acute aquatic toxicity
iprodione	Rovral	known carcinogen, potential ground water contaminant, suspected endocrine disruptor
mefanoxam	Ridomil Gold	acute aquatic toxicity
propiconazole	Orbit	known developmental or reproductive toxin, suspected endocrine disruptor, possible carcinogen

pyrimethanil	Scala	possible carcinogen, suspected endocrine disruptor
thiram	Thiram	reproductive/developmental toxin, suspected endocrine disruptor
ziram	Ziram	acute toxicity, likely carcinogen, developmental/reproductive toxin, suspected endocrine disruptor
Insect/Mite Management		
clofentezine	Apollo	possible carcinogen, suspected endocrine disruptor
DO NOT USE Continued		
Active ingredient	**Trade name**	**Concerns**
Insect/Mite Management Continued		
endosulfan	Thionex	acute toxicity, suspected endocrine disruptor, broad spectrum
fenpropathrin	Danitol	acute toxicity, toxicity to beneficials, acute aquatic toxicity
formetanate hydrochloride	Carzol	acute toxicity, toxicity to beneficials, potential groundwater contaminant, acute aquatic toxicity. No longer registered in CT.
hexythiazox	Savey, Onger	possible carcinogen, moderate aquatic toxicity
lamda cyhalothrin	Warrior	acute toxicity, toxicity to beneficials, suspected endocrine disruptor, acute aquatic toxicity
malathion		cholinesterase inhibitor, broad spectrum
novaluron	Rimon	acute toxicity (WARNING label)
oxamyl	Vydate	acute toxicity, broad spectrum; non-bearing only
permethrin	Pounce, Ambush	acute toxicity, toxicity to beneficials, possible carcinogen, suspected endocrine disruptor, acute aquatic toxicity, broad spectrum
pyridaben	Nexter	acute toxicity, acute aquatic toxicity
phosmet	Imidan	acute toxicity, cholinesterase inhibitor, broad spectrum
Weed Management		
2,4, D amine	2,4-D	acute toxicity – Needed for broad-leaf weed control?
clethodim	Select, Prism	acute toxicity (DANGER, WARNING label formulations), potential groundwater contaminant
clopyralid	Stinger	acute toxicity, potential ground water contaminant
diquat dibromide	Diquat	acute toxicity, potential groundwater contaminant, moderate aquatic toxicity
diuron	Direx, Karmex	known carcinogen, developmental toxin, acute aquatic toxicity
norflurazon	Solicam	possible carcinogen, known groundwater contaminant, moderate aquatic toxicity
oryzalin	Surflan	likely carcinogen, potential groundwater contaminant, acute aquatic toxicity
osoxaben	Gallery	possible carcinogen, potential groundwater contaminant, moderate aquatic toxicity
oxyfluorfen	Goal	possible carcinogen, acute aquatic toxicity
pendimethalin	Prowl	possible carcinogen, suspected endocrine disruptor, moderate aquatic toxicity
pronamide	Kerb	probable carcinogen, potential groundwater contaminant, moderate aquatic toxicity
sethoxydim	Poast	acute toxicity (DANGER, WARNING label formulations), potential groundwater contaminant, moderate aquatic toxicity
Other		

IV. Acknowledgements & References

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V. Revisions

1. Asana (esfenvalerate) has been moved from 'Do Not Use' to 'Use With Restrictions" Pg. 24.

VI. Participating Grower Affidavit and Agreement

1. Participating grower certifies that the attached self-evaluation and records represents a complete and accurate account of grower practices on acres to be certified at the time the self-assessment is completed and reviewed by the inspector and the IPM Institute for the purposes of certifying participating production.

2. Participating grower agrees to allow access to farm and records for scheduled and unannounced inspections to verify compliance with program requirements including information provided on the self-evaluation and use of Eco Stone Fruit brand packaging and promotional materials.

3. Participating grower agrees that Eco Stone Fruit certification is approved solely by the IPM Institute of North America, Inc. and if granted, is for one season only and only for product from participating production units reported in this self-assessment and certified by the IPM Institute.

4. Participating grower agrees not to market any product as Eco Stone Fruit, for example Eco Peach brand peaches or Eco Plum brand plums and etc., including use of Eco Stone Fruit packaging or other Eco Stone Fruit promotional materials or identification, until certification for the product is approved in writing by the IPM Institute. Participant further agrees that if certification is not approved, no product will be marketed as Eco Stone Fruit brand stone fruits and no packaging or promotional materials bearing Eco Stone Fruit identification will be used. Participant agrees to bear any costs associated with denial of certification including the cost of Eco Stone Fruit packaging and promotional materials purchased by the grower.

5. Participating grower acknowledges that participation does not constitute or imply an endorsement by the IPM Institute of North America or Red Tomato of the participating grower or operation.

Participating Grower Name Signature Date

VII. Submission Checklist

____ a. Completed self-evaluation

____ b. Pesticide, fertilizer, thinner and growth regulator application records for blocks to be certified including product cost per unit. See page 2 for required information.

____ c. Scouting records for blocks to be certified. See page 2 for required information.

____ d. Certification fee.

Fees

Annual certification/inspection fee: $_____ Due annually by August 1 with the updated self-evaluation and pesticide application records. The fee* is based on the number of acres of apples to be certified:

0-99 acres	$350
100-199	$450
200-299	$550
300-399	$650
≥ 450 acres	$750

Credit cards or checks accepted.

Credit card number: _____ exp. date: ___/____

Name on card: _____

Billing address: _____

City/state/zip: _____

*An additional fee may be charged if pesticide application records are not in electronic format. Additional fee to be based on time required to enter application records into TracApple or other acceptable electronic format. Send completed self-evaluation, pesticide application records and required fee to: *IPM Institute of North America, 4510 Regent St., Madison WI 53705. 608 232-1410, Fax 608 232-1440, ipmworks@ipminstitute.org*

VIII. Inspector Affidavit

An on-site inspection is required in August of the first year and every three years thereafter. The IPM Institute will schedule the inspection after review of your completed Self-Assessment and input application records. The inspector will verify Self-Assessment information and complete the following:

I certify that I visited _____ (orchard name) on _____ (date) and verified the self-evaluation.

I recommend: ____ Acceptance

____ Acceptance with recommended improvements listed below

____ Rejection for reasons listed below

Recommendations/Reasons for Rejection (attach additional pages if necessary).

Inspector Name Inspector Signature Date

For IPM Institute Use

Self-evaluation received: _____ (date)

Reviewed: _____ (date)

Inspector assigned: _____(date) _____ (name)

Inspection report received:_____ (date)

Approved Rejected (circle one) Producer Notified: _____ (date)