

# 2002 Update to the 2000-2001 New England Apple Pest Management Guide

## Information Resources

Each of the New England Extension Apple Programs has a web site. We invite you to visit these sites periodically for additional updates, meeting announcements, fact sheets, and other publications.

CT <http://www.hort.uconn.edu/ipm/ipmtrfr.htm>

MA <http://www.umass.edu/fruitadvisor>

ME <http://pmo.umext.maine.edu/apple>

NH <http://ceinfo.unh.edu/agipm.htm>

RI <http://www.uri.edu/research/ipm/ipm.htm>

VT <http://orchard.uvm.edu/uvmapple>

## Disease Management

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**If (AND ONLY IF) USING THE DELAYED FIRST-SPRAY STRATEGY FOR APPLE SCAB:** The following “action threshold” for the first fungicide application when using this strategy was inadvertently omitted from page 13 of the guide: “Delay the first fungicide spray until pink or until after three infection periods (but before the 4<sup>th</sup> infection period), whichever comes first.” Begin determining infection periods at green tip.

## Notes on the Strobilurin Fungicides

There have been some minor label changes for **Flint** and **Sovran**. The companies are not claiming to get full 96 hour kickback efficacy. There is some evidence that kickback activity of these strobilurin fungicides may be reduced in scab strains that are resistant to sterol inhibitor (SI) fungicides. Protectant activity of the strobilurins appears unchanged.

As indicated on page 85 of the Guide, both Flint and Sovran are only rated as “fair” in terms of efficacy against cedar apple rust. If you have susceptible cultivars, moderate to high inoculum pressure, and conditions favorable for cedar apple rust and quince rust infection, you should not rely on the strobilurin fungicides for rust control. If you do use Flint for cedar apple rust (or powdery mildew), the label states that you should alternate it (every other application) with a sterol inhibitor (SI) fungicide.

**Warning:** There is a new strobilurin fungicide, azoxystrobin (**Abound**, labeled on stone fruits and **Quadris**, labeled on many vegetables), that causes extreme phytotoxicity on many apple cultivars. Apple growers who also grow stone fruits or vegetables are advised to avoid

azoxystrobin. The greatest care must be taken to avoid drift or spray tank contamination.

**Rubigan** has been purchased by Gowan Company.

**Benlate** is no longer being manufactured. Existing supplies may be used-up according to the most recent label instructions. The closest alternative to **Benlate** is **Topsin M**.

## **New Products**

**Bac-Master** (streptomycin sulfate): Equivalent to 17% Streptomycin (4-8 ozs./100 gal., see label for other rates). This is a bactericide used to prevent fire blight. Streptomycin is effective if used the day before, or the day of, a fire blight infection period. Where fire blight is expected to be a problem, the first spray is made after blossoms open, when weather conditions favorable for the disease are present or predicted within 24 hours. Must be absorbed by the blossoms to be effective, should not be applied just before or during rain. The frequency of repeat applications depends on weather, blossom opening and disease pressure. Routine use of streptomycin to control shoot blight is not recommended. However, application within 24 hours after the beginning of a hail storm is recommended for fire blight-threatened orchards. Thorough coverage is essential for control. Application of streptomycin at concentration greater than 6X is not recommended. **Restricted entry interval 12 hours. Preharvest interval 50 days.**

**Streptrol** (streptomycin sulfate): Equivalent to 17% Streptomycin (4-8 ozs./100 gal., see label for other rates). Bactericide used to prevent fire blight. Streptomycin is effective if used the day before, or the day of, a fire blight infection period. Where fire blight is expected to be a problem, the first spray is made after blossoms open when weather conditions favorable for the disease are present or predicted within 24 hours. Must be absorbed by the blossoms to be effective, should not be applied just before or during rain. The frequency of repeat applications depends on weather, blossom opening and disease pressure. Routine use of streptomycin to control shoot blight is not recommended. However, application within 24 hours after the beginning of a hail storm is recommended for fire blight-threatened orchards. Thorough coverage is essential for control. Application of streptomycin at concentration greater than 6X is not recommended. **Restricted entry interval 4 hours. Preharvest interval 50 days.**

**Phostrol** (phosphorus acid): Liquid formulation with the equivalent of 4.32 pounds phosphorus acid per gallon. Foliar application for the control of *Phytophthora spp.* (Collar and root rot). Systemic material. See label for rates. **Restricted entry interval 4 hours. Preharvest interval 0 days.**

## **Insect and Mite Management**

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### **New Products**

**Acramite** (bifenazate) 50% Water soluble packets. 0.75 - 1.0 lb./A. For European red mite and two spotted spider mite. An organosilicate spray adjuvant is recommended, like Silwet L-77, Silgard 309 or Kinetic. Apply in a minimum of 50 gals. water per acre. Maximum of 1 spray per year. **Restricted entry interval 12 hours. Preharvest interval 7 days.**

**Actara** (thiamethoxam) 25% water dispersible granules. Rates vary. For (prebloom) aphids, leafminers, mullein bug : 4.5 oz./A. For leafhoppers postbloom : 2.0 - 2.75 oz./A. For Eur. apple sawfly, plum curculio, leafminers and aphids postbloom : 4.5 - 5.5 oz./A. Make no more than one prebloom application. Do not exceed 8 oz./A. for the season. Allow a minimum of 10 days between applications. Actara has rapid local systemic activity, and is relatively safe to beneficial arthropods. It is quite toxic to bees. Use a minimum of 50 gals. of water per acre. Thiamethoxam is closely related to imidacloprid (Provado). **Restricted entry interval 12 hours. Preharvest interval 35 days if rate is over 2.75 oz./A. and 14 days if rate is 2.75 oz./A. or less.**

**Avaunt** (indoxacarb): 30% WG, 5-6 ozs./acre. Registered for control of tarnished plant bug, plum curculio, codling moth, oriental fruit moth, lesser appleworm, leafrollers, apple maggot, and leafhoppers. Maximum of 4 applications per year at no more than 24 ozs. total annual per acre. Make no more than 3 applications prior to hand thinning. No hand thinning after 4<sup>th</sup> application. For best results, apply in 50-150 gal. water per acre and never more than 200 gal. water per acre. Performs well against tarnished plant bug, plum curculio, some leafrollers, and leafhoppers. Performance against apple maggot has been variable. Avaunt represents a new class of compounds (oxadiazines) and is more toxic when ingested by insects than by contact alone. Toxic effects are not immediate but gradual, sometimes requiring 3 or more days. It is not systemic and does not protect new growth. Does not redistribute readily on foliar surfaces once sprayed. Residual activity lasts 7-14 days depending on conditions. Safe on most beneficials. **Restricted entry interval 12 hours. Preharvest interval 28 days.**

**Aza-Direct** (azadirachtin) 1.2% EC For beetles and weevils: 12.5 - 42 oz./A. True bugs (like TPB), leafhoppers, aphids, leafrollers, flies, mites : 11.5 - 42oz./A. Azadirachtin may be acceptable for organic growers. Repellant and antifeedant action on moths and caterpillars, toxic and growth suppressant on moths, caterpillars, aphids, leafhoppers. Maximum effectiveness requires 2 - 3 applications, at intervals of 7 - 10 days. **Restricted entry interval 4 hours. Preharvest interval 0 days.**

**Distance** (pyriproxyfen) 0.86 lbs/gal L, 6 to 8 fl. ozs./100 gals. for aphid suppression on non-bearing trees; 8 to 12 fl.ozs./100 gals. for San Jose scale and spotted tentiform leafminer on non-bearing trees. The active ingredient (same as Esteem) is an insect growth regulator, so it does not affect adult insects. **Restricted entry interval 12 hours. Preharvest interval: can only be used on non-bearing trees.**

**Intrepid** (methoxyfenozide): 80 WSP, 3-6 ozs./acre. Registered for control of codling moth, lesser appleworm, leafrollers and leafminers. Effective also against oriental fruit moth. Maximum of 20 ozs. total material per acre per year. Performs best in conjunction with an adjuvant to maximize deposition, redistribution, and weatherability. Belongs to diacylhydrazine class of insecticides and has novel mode of action that mimics action of molting hormones of moth larvae. Must be ingested by larvae to be effective. Works best against internal feeders when application is just prior to egg hatch. To avoid resistance, do not use against more than 3 consecutive generations of a pest. Very safe on beneficials. **Restricted entry interval 4 hours. Preharvest interval 14 days.**

**Valero** (cinnamaldehyde) 30%L, 1-9 gals/acre. Registered for control of aphids and spider mites. Label recommends a phytotoxicity check before treating, to ensure that treatment is safe for your varieties. Experience with products that have this ingredient (but used in greenhouses) suggests that it loses effectiveness several weeks after being opened. Cinnamaldehyde is a component of cinnamon, the ground inner bark of certain tropical trees in the laurel family. Spray water should have a pH of 3.5 to 7.5, or product degradation may result. Pests must be directly contacted by spray; residual activity 1 day or less. **Restricted entry interval 4 hours. Preharvest interval 0 days.**

## **Changes in Labels of Other Registered Compounds**

**Lorsban:** Effective as of December 31, 2000, the use of Lorsban 4E and Lorsban 50W on apples is restricted to pre-bloom applications only. EPA recently amended that by approving supplementary labels for both products (3/15/01) that allow application of these materials to the lower trunk only (for borers) after bloom. Check with your in-state specialists to see if your state has approved that use for the product. There are several restrictions on these supplemental labels, which are aimed at avoiding post-bloom spray contact with foliage or fruit.

**Guthion:** EPA's "proposed final" changes may be revised (public comments being reviewed now) but currently are as follows. The product may be used for 4 more years. Maximum amount per year is now 3.5 lbs active ingredient per acre. **Restricted entry interval is 14 days. Preharvest interval is 30 days for PYO orchards, 14 days for others if no more than 1 lb. active ingredient was used per acre.** Closed transfer systems are required for mixing and loading. Applicators must use maximum personal protective equipment, or be in enclosed cabs.

**Imidan:** EPA's "proposed final" changes may be revised (EPA is reviewing comments now) but now are as follows. For product manufactured after June 30, 2002: The product may be used for 5 more years. "Backyard" uses are being discontinued. **Restricted entry interval is now extended to 3 days. Preharvest interval remains unchanged at 7 days.** Existing products may be used with the existing labels.

## Herbicides and Groundcover Management

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Changes in herbicides from the 2000-2001 New England Apple Pest Management Guide include the proliferation of 'Roundup-like' products containing glyphosate, and the introduction of several new pre-emergent herbicides for non-bearing orchards. You are reminded that weed-free strips under young orchards will do much to improve young tree growth and early yields.

Here are a few of the specific herbicide changes and/or additions for 2002.

### Pre-emergence herbicides

**Isoxaben** (Gallery\* 75DF, \*Trademark of Dow AgroSciences) – Selective, pre-emergent control of broadleaf weeds in NON-BEARING (non-crop) fruit trees only. Apply in late fall or early spring. In newly planted trees, allow soil to settle before application. Tank mix with post-emergence herbicide and/or Prowl to control emerged weeds and grasses. **Restricted-entry interval (REI) 12 hours.**

**Snapshot\* 2.5TG** (\*Trademark of Dow AgroSciences, a premix of 2% trifluralin and 0.5% isoxaben) – For NON-BEARING apples, stone fruit. Provides broader spectrum of control than either chemical alone. (i.e. both broadleaf weeds and annual grasses.) Not effective on emerged weeds. Apply late fall or spring immediately after cultivation. **Restricted-entry interval (REI) 12 hours.**

### Post-emergence herbicides

**2-4-D** – Several brand names, but use only those with a label for orchards. A *selective* herbicide effective on broadleaf weeds. BEWARE of drift, as grapes, flowers, and vegetables are extremely sensitive to 2, 4-D.

**Clethodim** (Select<sup>®</sup> 2EC, Valent Biosciences) – A post-emergence selective (grass-only) herbicide, similar to Poast, Fusilade, etc. Somewhat effective on quackgrass, however, addition of ammonium sulfate or a crop-oil concentrate at 1% or minimum 1 pint/acre suggested. Follow all label precautions to avoid crop injury. For NON-BEARING apples, pears, stone fruit. (i.e., first leaf trees) only. **Restricted-entry interval (REI) 24 hours.**

**Glyphosate** (Roundup Ultra Max, Touchdown, Glyphomax 4SC) – As the Monsanto/Roundup patent has expired, several manufacturers are producing these glyphosate-based non-selective, systemic herbicides. Two (or three) applications of glyphosate during the growing season may give effective, season-long control of most weeds (including grasses) in the tree row, although a spring tank mix with a pre-emergent herbicide may be useful. Avoid use of glyphosate later in the summer. Shield trunks of young trees (1<sup>st</sup> leaf) from spray. Do not use on peaches. Hard water can reduce the effectiveness of glyphosate sprays – use of a water conditioner or

ammonium sulfate is recommended.

**Glufosinate-ammonium (Rely)** – A non-selective, contact herbicide that gives faster results than glyphosate but somewhat slower than gramoxone. It is, however, more suppressive (particularly on broadleaf weeds) than gramoxone. Excellent control of suckers on established trees.