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# Ohio Fruit ICM News

## Direct Marketing Tours Focus on Local Food Systems

Julie Fox
Ohio State University South Centers at Piketon

Producers, businesses, community leaders and others interested in developing local food systems have the opportunity to participate in two Ohio Direct Marketing Summer Tours in July.

Ohio State University Extension, along with the Ohio Cooperative Development Center and other local organizations, will sponsor tours that demonstrate local food systems – one that is well established in the community and one that demonstrates a new business model.

"Innovative Approaches for Cooperative Local Foods Marketing" will be held July 13 from 10 a.m. until noon at the Delaware County Community Market, 222 E. Williams Street, Delaware.

"The tour demonstrates a new statewide non-profit and faith-based local food cooperative network, and participants can see how the cooperative works," said Julie Fox, an OSU Extension direct marketing and tourism specialist at OSU South Centers at Piketon.

Participants have the opportunity to meet with the president of the Delaware County Community Market and hear from producers and members involved with the market. Tom Snyder, program manager for the Ohio Cooperative Development Center, will share additional information about the local food cooperatives. OSU Extension educators Rob Leeds and Susan Liechty will conclude the tour with an overview of developing the Delaware County local food guide and discuss local food lunch options.

Registration is $5 per person, limited to the first 20 people. For more information, or to register, contact Julie Strawser-Moose at 740-289-2071, ext. 223, or e-mail sstrawser.35@cfaes.osu.edu.

"Local Foods Tour – A Glimpse at the Entire Food System" will be held July 14 from 10 a.m. until 3 p.m. The tour will include the Athens Farmers' Market, ACEnet, and Green Edge Gardens, among other businesses. OSU Extension educators Rory Lewandowski and Hal Kneen will guide participants through each one of the stops. The tour begins at the Athens Farmers' Market parking lot, 1000 East State Street, Athens.

"The tour is designed to showcase local food production, processing, support and connections at farmers' markets, CSAs (Community Supported Agriculture), restaurants, grocery stores, cooperatives, produce auctions, institutions and community organizations," said Fox. "Everybody wants to be involved with local foods and this tour demonstrates what one community has done to benefit consumers, producers and businesses interested in the local food effort."

Registration is $20 per person or $30 per couple, and includes lunch and tour materials. To register or for more information, contact Julie Strawser-Moose at 740-289-2071, ext. 223 or e-mail strawser.35@cfaes.osu.edu.

### Inside This Issue



If you have articles for the newsletter that you would like to have considered to be included in upcoming issues, please submit to either Howard Siegrist at siegrist.1@cfaes.osu.edu or Melissa Swearingen at swearingen.34@cfaes.osu.edu

## North Central Ohio Tree Fruit IPM Program
## Report Prepared by
## Cindy Crawford (Erie County Adm. Assoc.)

**Mike Abfall** – East District IPM Scout
(Erie and Lorain Counties)

**Date – 6/14/10**
**Apples**
Spotted Tentiform Leafminer – 695 (up from 214.8)
Codling Moth – 6.6 (down from 6.7)
San Jose Scale – 0 (same)
Oriental Fruit Moth – 2.6 (same)
Lesser Appleworm – 0.3 (down from 0.5)
Dogwood Borer – 13.5 (down from 16.1)

**Peaches**
Oriental Fruit Moth – 0 (same)
Lesser Peach Tree Borer – 1.3 (down from 3.7)
Peach Tree Borer – 0 (down from 3.3)

**Date – 6/21/10**
**Apples**
Spotted Tentiform Leafminer – 313.7 (down from 695)
Codling Moth – 3.9 (down from 6.6)
Apple Maggot - .13 (first report)
San Jose Scale – 0 (same)
Oriental Fruit Moth – 2.3 (down from 2.6)
Lesser Appleworm – 0 (down from 0.3)
Dogwood Borer – 37 (up from 13.5)

**Peaches**
Oriental Fruit Moth – 0.8 (up from 0)
Lesser Peach Tree Borer – 0.8 (down from 1.3)
Peach Tree Borer – 0.3 (up from 0)
Peach Tree Borer – 3.3 (up from 0.6)

**Ted Gastier** – West District IPM Scout
(Sandusky, Ottawa, Huron and Richland Counties)

**Date – 6/14/10**
**Apples**
Spotted Tentiform Leafminer – 147 (up from 145)
Codling Moth – 3.5 (down from 7.4)
San Jose Scale – 0 (same)
Oriental Fruit Moth – 4.9 (down from 5.9)
Lesser Appleworm – 0 (same)
Dogwood Borer – 0.8 (up from 0.1)

**Peaches**
Oriental Fruit Moth – 0.3 (down from 1.0)
Lesser Peach Tree Borer – 1.3 (down from 2.0)
Peach Tree Borer – 3 (up from 0)

**Date – 6/21/10**
**Apples**
Spotted Tentiform Leafminer – 94 (down from 147)
Codling Moth – 2.3 (down from 3.5)
San Jose Scale – 0 (same)
Oriental Fruit Moth – 6.5 (up from 4.9)
Lesser Appleworm – 0 (same)
Dogwood Borer – 0.8 (same)

**Peaches**
Oriental Fruit Moth – 1.5 (up from 0.3)
Lesser Peach Tree Borer – 1.7 (up from 1.3)
Peach Tree Borer – 0.7 (down from 3)

## Wayne County
## Insect Trap Reports

**Ron Becker** - Program Coordinator

**Week of 6/21**
Codling Moth-Avg /trap , 3 traps per block
Wayne-2.56
Medina- .83
Holmes-..67

**Week of 6/21**
Oriental Fruit Moth
Medina - .5
Wayne-0

Aphids and very light leafminer are the main finds this week. Mite populations are low, probably thanks to all the rains.

**Week of 6/28**
Codling Moth-Avg /trap , 3 traps per block
Wayne-.67 down from 2.56
Medina-.33 down from .83
Holmes-0 down from .67

**Week of 6/28**
Oriental Fruit Moth
Medina - .5 (same)
Wayne-0 (same)

Very little activity in tree fruit, found some brown rot on a ripening peach. Very little scab in the apples. Light leaf miner and aphids. Very light red mite.

## Fumigant Regulations

Bob Bruss, NCDA&CS
Article from: The Strawberry Grower Newsletter

***Which fumigants are included in the new EPA regulations?*** The 2009 REDs apply to products than contain the following fumigant active ingredients: Chloropicrin, Dazomet, Metam sodium/potassium (including methyl isothiocyanate or MITC), Methyl bromide.

Although iodomethane (MIDAS) was not included in the recent REDs, the EPA provided the registrant with guidance on the expected new risk mitigation measures (RMM). Thus, iodomethane products already have labels with mitigation measures similar to the new requirements for the older compounds. Products that contain only 1,3-Dichloropropene are not subject to implementation of the new RED requirements at this time. In 1998, 1,3- Dichloropropene (Telone) went through the reregistration process and it will be up for registration review in 2013.

***Are these regulations much changed from the original proposal?*** EPA issued proposed Reregistration Eligibility Decisions (REDs) in July 2008. The agency received numerous responses from organizations supporting the interest of NC farmers including NCDA&CS Commissioner Steve Troxler, the NC Strawberry Association, the NC Farm Bureau and the NC Cooperative Extension Service. In issuing amended REDs (May 2009), the EPA acknowledged the impact of extensive stakeholder input and substantial modifications were adopted to enable the continuation of most use patterns while reducing the risk for bystander exposure. Rules for buffer zones were notably changed [ these will be covered in detail in a future newsletter]. The new regulations will still require substantial time and effort, but the adopted amendments restore the viability of most fumigant programs.

***Will I need to make changes when I fumigate in 2010?*** Growers are only expected to follow the use directions that are on the products in their possession and containers with the first new labels are not expected to be at supplier locations until after December 1, 2010. The new RMM are based on potential exposure issues for handlers and bystanders. The phase-out of MeBr is an older but continuing program based on concerns about the degradation of the ozone layer.

***What changes will I need to make in 2011? How about in 2012?*** Products hitting supplier locations in December 2010 will have labels that require the use of certain good agricultural practices (much of which is already recommended on existing labels), new respiratory protective measures for handlers, requirements for the perforation and removal of tarps, new restrictions for entering treated areas and Fumigant Management Plans (FMP). In addition, product manufacturers will provide fumigant applicators with training information for handlers that must be communicated to all workers within 12 months prior to their participation in the fumigation process. The second wave of RMM should appear on product labels at the end of 2011. This will include the establishment/posting of buffer zones, the option of neighbor notification or buffer zone monitoring and mandatory distances between fumigated areas and difficult to evacuate sites. Registrants will be required to provide detailed training to fumigant applicators every three years that will cover the provisions of the rules and how to calculate the distances of regulated areas.

***If I hire custom fumigators, will they take care of everything?*** Custom application may relieve much of the burden of the field operations and even provide substantial portions of the FMP. However, EPA views the grower and any contractor operating on their behalf as being liable for label violations. Growers should obtain a label for the fumigant being provided and have a contract that clearly details the obligations of the custom applicator. Some requirements of the RMM involve follow-up activities, post-application monitoring and documentation of certain items that may not be appropriate for delegation to a third party.

***How will I learn how to manage all this?*** In addition to product-specific training programs registrants are developing for handlers and applicators, the Tobacco Trust Fund Commission has provided the NC Agromedicine Institute with a grant to develop a holistic training approach to help growers/applicators with the transition to the new RMM. This initiative has led to a close collaboration between medical/health professionals, regulatory personnel, crop production experts and pesticide educators that are dedicated to providing useful training and support materials that is relevant to the particular phase of implementing the RMM. The training will include how to develop a fumigation plan that is best for your pest control needs, the details of the new RMM, how to calculate important parameters and a respiratory protection program (use instruction / fit testing / medical clearance). The NCSA has been fundamentally involved with the TTFC project from the beginning and many training materials (brochures, FMP templates, field checklists and practical examples) will be targeted at the specific needs of strawberry growers. In addition to special fumigant training programs, it is anticipated that many general field tours, county/state Cooperative Extension Service meetings and NCDA&CS Agronomic Division workshops will include some aspects of the new RMM.

***Where can I find out more?*** Watch for more information in this newsletter and on the NCSA website. Additional background on the REDs for soil fumigants can be found at the website listed below. The site contains additional links to more detailed information o many of the sections in this Q&A. Generic FMP templates are also available.
http://www.epa.gov/pesticides/reregistration/soil_fumigants/ For a preview of some of the labels, see
http://oaspub.epa.gov/pestlabl/ppls.home .

**Endosulfan Cancellation**

Rick Foster, Department of Entomology
Purdue University Extension

On June 9, the Environmental Protection Agency announced its plan to phase out and cancel all uses of the insecticide endosulfan, sold under the trade names Thionex and Thiodan. Endosulfan is currently registered for control of various insects, especially those with sucking mouthparts such as aphids, on a number of fruit crops, including apples, pears, peaches, cherries, plums, and strawberries. Endosulfan has been identified as a Persistent Bioaccumulative Toxicant, which is the reason for its impending cancellation. EPA and the manufacturer, MANA, will negotiate the details of the phase-out. Existing stocks of Endosulfan can still be used according to label directions.

## 2010 Upcoming Events:

**Wednesday, July 7** - Twilight In-Orchard Fruit Tour and Meeting - Heartland Orchard, Thornville.
For a detailed flyer click on the following link: **Twilight Fruit In-Orchard Tour and Meeting Flyer**

**August 18-21 - North American Fruit Explorers (NAFEX) Annual Meeting and Midwest Fruit Showcase.** Lafayette, IN. See **http://www.nafex.org** for details.

**August 19-20 - Apple Crop Outlook Conference, US Apple Association, Ritz-Carlton Hotel, Chicago.** See **www.usapple.com** for details.

**December 7-9, 2010.** Great Lakes Fruit Vegetable and Farm Market EXPO, DeVos Place Convention Center, Grand Rapids, Michigan. For more information: **http://www.glexpo.com** .

# Central Ohio Poison Control Number

# (800) 222-1222
# TTY # is (614) 228-2272

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We gratefully acknowledge the continued help and financial support of our local county commissioners. We appreciate their input and participation in our programming efforts.

## Retention and Redistribution Properties of Fungicides

Jana Beckerman, Department of Botany & Plant Pathology
Purdue University Extension

Fungicide retention is the ability of the applied fungicide to persist on plant surfaces despite the weathering action of moisture and sunlight that work to break fungicides down. It is well known that the time between fungicide application and the occurrence of rainfall profoundly affects the degree of fungicide persistence. Formulation also has a great deal to do with wash-off, with flowables (F) and emulsifiable concentrates (EC) providing better rainfastness than wettable powders (WP) or dry flowables (DF). In fact, in a study by Rosenberger et al. 2004, Penncozeb 4F outperformed Penncozeb 75DF for scab control.

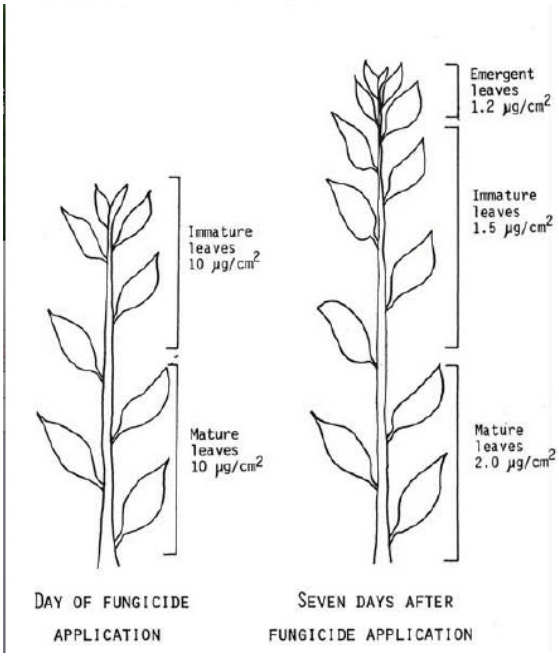
Most packaged fungicides possess good retention (or adjuvents that provide good retention) for sustained protection over one or more infection periods. A recent study (Hunshe et al. 2007) on one formulation of mancozeb (Dithane) using apple seedlings grown in a growth chamber and exposed to measured "rainfall" found that regardless of drying time, a typical washoff pattern was observed: A majority of the fungicide was removed after only a few millimeters of rain. Not surprisingly, increasing rain quantity increased fungicide removal at lower rates, as a logarithmic function. Or in other, simpler words: A little bit of water is capable of washing off a whole lot of fungicide.

This isn't too surprising: Entomologists have found that insecticide wash-off due to simulated rain was initially rapid, in contrast to a second phase, when the removal was much less (Cohen and Steinmetz, 1986). And other researchers have noted that a majority of the active ingredient is removed by small quantity of rain, with the remaining deposit persisting in a stable form, which is difficult to remove with more rain (Smith and MacHardy, 1984 and others). A few fungicides, like dodine or mancozeb, possess an inherent rainfastness that allows them to persist and adhere to plant surfaces due to the inherent chemical properties. Even though most of the
fungicide has been removed, enough persists to still provide control, as found in many fungicide trials that were performed during periods of excess rainfall (Rosenberger et al. 2005, 2009). Ultimately, the important factor to note is the ability of the fungicide to control disease, not how much fungicide is remaining.

The ability of a fungicide to persist is due in part to its inherent chemical structure, but also particle size. Particles that are more finely ground stick to plant surfaces better than do coarse ones (e.g., powders and dusts adhere better to plants than granules). However, because they are more adherent, and also often more soluble, meaning they can cause increased phytotoxicity, and are more prone to dissolving and wash-off in excessive rain. Fungicide retention can be modified by formulation, and addition of inert filler (referred to as 'other ingredients' on fungicide labels, and often consisting of talc, clays, etc) used. Fungicides can also be impacted by the surfactants and antiflocculants used to coat both the fungicides and the inert filler so that they can be suitably suspended in water for spraying. Antiflocculants prevent particles from "sticking together" (aggregating), thereby increasing the stability of the suspension, minimizing the need to agitate prior to spraying. Surfactants are wetting agents that reduce surface tension, thereby improving spreadability and coverage of a fungicide. Surfactants and antiflocculants can impact fungicide retention (and therefore efficacy) based upon the type, ionic charge, and amount of each used. The propriety nature of many companies' inert ingredients reflect why certain formulations of fungicides are more effective than others in controlling certain diseases, despite equal amounts of active ingredient. That said, one study on the use of spreader-stickers in vegetable crops suggest some benefit in coverage and fungicide persistence (Gent et al. 2003), although it is not clear if this benefit is economically justified.

As the leaves, shoots, and fruit grow and develop, fungicide dilution results due to expanding plant surfaces, creating unprotected areas in the protective coating of the contact fungicide. This dilution has been found to occur with systemic fungicides as well (Angioni et al. 2003). Although many fungicides showed a high rain fastness in many experiments, the development of new tissue that may or may not be protected may be a more important factor in the control of foliar infection than fungicide persistence.

***Rain intensity vs. rain quantity:*** In the 2007 study by Hunshe et al (2007), they found that rainfastness of mancozeb (Dithane) is a function both of rain intensity and rain volume. Rain events are characterized by quantity of rain and intensity of rainfall, as well as by droplet size, force of droplet impact and length of droplet duration (Simmons, 1980). The two foremost characteristic of rainfall affecting wash-off are intensity at which the rain falls and the volume of rainfall received. Not surprisingly, intense rain events usually consist of bigger droplets that fall at higher speed, thereby exerting more force on the leaf surfaces (Simmons, 1980). The impact of rain droplets can dislodge active ingredients from the surface as well as damaging the plant cuticle (Simmons, 1980).

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## Continued from Page 5: Retention and Redistribution Properties of Fungicides

Size does matter! During heavy rains with big rain drops, the leaf surface can become completely covered with a film of water, increasing wash-off. This is contrasted to heavy rain droplets more readily run off leaf surfaces but do not coalesce prior to run off (this can occur early in a heavy storm, or in a cloudburst with a quick, hard rain), and the occasional droplet run-off that occurs during misting after smaller droplets coalesce (Simmons et al. 1980). Studies with mancozeb and captan show intense active ingredient removal during the initial rain period when rain is heavy—upwards of 80% in the case of captan (Smith and MacHardy), and even higher with mancozeb (Hunshe et al. 2007). Although the rate of rainfall was not calculated, only 1" of rain was needed in the captan study to reduce captan levels by 80%. It is important to note that in this study, even in the absence of rain, the level of captan was reduced by almost 80% in developing leaves after one week.

***Redistribution:*** Most fungicides that possess a good ability to persist (retention) are not able to redistribute after minor (less than 1" rainfall). Redistribution is the relocation of fungicide on the plant surface. This occurs by the splashing of rain, or by "creepage," which results when fungicide extends beyond the actual sprayed area, usually by movement in the vapor phase. A major benefit from fungicide redistribution is that fungicide coverage and protection of new growth that occurs after the previous application of fungicide. As the leaf and shoot grows, fungicide dilution results due to expanding plant surfaces creating unprotected areas in the protective coating of the contact fungicide. Although many fungicides showed a high rain fastness in many experiments, the development of new tissue that may or may not be protected may be a more important factor in the control of foliar infection than fungicide persistence. In a trial performed by Rosenberger et al. 2009, to compare the residual/redistributive capabilities of various fungicides, they found that Flint had both retention and redistribution properties that were as good as or better than those of mancozeb (Manzate) (poor redistribution, good retention) whereas Scala, Vangard, Indar, and Inspire-Super did not redistribute very well through the 2.5 inches of accumulated rainfall that occurred during this spray interval. It is important to note that cultivar differences in response to fungicide treatment were observed, but that Flint performed well on both cultivars and that DMI-resistance may be playing a role. With translaminar fungicides like the strobilurins (Flint, Sovran, Pristine), most of the active ingredient is initially held on or within the waxy cuticle of plant surfaces, with a small fraction of the fungicide absorbed by the underlying plant cells and translocated to the opposite side of the leaf surface, where it is strongly bound to the cuticle on the other side of the leaf blade should time permit. This translaminar movement can take one to several days to be fully effective, but if applied and allowed to absorb, should both redistribute and be retained and explain the excellent control observed by Flint in this experiment.

Why did Indar and Inspire not perform as well in Jersey Mac than Ginger Gold? Resistance may be playing a role, as McIntosh (and its offspring?) may be more susceptible to scab, making any DMI fungicide less effective. This phenomenon has been repeatedly observed. However, we would have expected systemic fungicides to achieve better control than protectants like mancozeb under heavy rain conditions. Three factors will affect systemic fungicide efficacy: Time to absorb prior to rainfall, infection period, and growth stage of tissue. Systemic fungicides should be allowed at least 4hr prior to rain event, with greater absorption occurring with increasing time interval. Application is best timed immediately after infection period as these fungicides eradicate existing infections and do not protect against new infections. Finally, during periods of extensive growth, the fungicide would be translocated to new tissue, possibly diluting fungicide efficacy (Angioni et al. 2003) and possibly explaining the poorer control. However, these same systemic fungicides would be expected to provide better control after the terminal bud has set as fungicides would not be expected to wash away like co tact fungicides during periods of heavy rains, nor would there be any growth dilution effect.

## Leaf Analysis Time

Dr. Rob Crassweller, Horticulture
Penn State University

Mid-July begins the most stable nutrient period in fruit trees. The flush of spring growth has slowed and the fruit crop load has stabilized. The time for collecting leaves for nutrient analysis runs from this period until the middle of August. Long term research at many of the Land Grant Institutions in the 1940s and 1950s determined that analysis of the leaf tissue at this time can give a snapshot of the nutritional status of an orchard. This snap shot can then be used to determine what, if any, fertilizer will be needed for the coming year. Unlike agronomic crops, the perennial nature of fruit trees means that trees can absorb nutrients from the soil whenever the conditions are favorable. There is considerable recycling of nutrients as leaves fall to the ground in the fall. Nutrients in the wood from pruning can also be recycled if they are flail chopped in the spring.

In recent years the cost of nitrogen fertilizer has literally gone through the roof. The over application of nitrogen is not only harmful to the environment but can be quite expensive. If you do not know the nitrogen status of your trees then you can run the risk of misapplying nitrogen. Potassium is the one nutrient that is not recycled as much since much of that nutrient is removed with the harvest of the fruit. Calcium is also required in relatively large quantities. Calcium levels will influence overall fruit quality and storage life. Low calcium leads to bitter pit and/or corking and can lead to storage disorders. Therefore it pays to monitor the nutritional status of your orchards.

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## Leaf Analysis Time - Continued from Page 6

Of course, if a sample is incorrectly gathered or gathered at the wrong time it will not provide an adequate picture of the nutrient status. Samples should consist of a single cultivar from a single rootstock. Mixing cultivars and rootstocks does not provide an accurate picture of an orchard. Different cultivars respond differently to different nitrogen levels.

Plant analysis kits can be obtained by contacting the Penn State Agricultural Analytical Services Laboratory at 814-863-0841 or on the web at http://www.aasl.psu.edu/. The cost per sample is $24.00. A new feature added last year was the ability to email the results as Adobe Reader files provided a grower includes an email address. I look at all the test results and make my comments directly on the document.

Tables from the *2010-11 Tree Fruit Production Guide*.

Sample leaves from the mid-section of current season growth, S. Miller

***Table 1-5. General indices for judging nitrogen status of fruit trees.***

| Index | Low N | Normal N | Excessive N |
|---|---|---|---|
| Shoot growth | Bearing: small diam. <8 inches long<br>Nonbearing: <10 inches | Avg. 12–18 inches<br>Avg. 18–24 inches | Avg. 18–24 inches<br>Avg. 24–40 inches |
| Leaf size | Small, thin | Medium to average | Large, thick, often puckering at tip |
| Leaf color | Pale yellow green | Normal green | Very dark green |
| Fall leaf drop | Early, leaves show red in veins | Normal, leaves green to light green | Late, leaves dark green until frost |
| Bark color | Light brown to red brown | Gray to dark gray brown | Green gray to gray |
| Fruit set | Poor, heavy June drop | Normal, 1–3 fruits per cluster | Little or no effect or reduction |
| Fruit overcolor | Highly colored often earlier than normal | Average color | Poor color |
| Fruit undercolor | Yellow earlier than normal | Yellow green at maturity | Green to green yellow at harvest |
| Fruit maturity | Earlier than normal | Normal | 5–10 days later than normal |

*Adapted from G. Cahoon, Fertilizing Fruit Crops (Ohio Cooperative Extension Service).*

***Table 1-3. Recommended leaf nitrogen levels for apple cultivars by bearing habit.***

| Cultivar[a] | Nonbearing | Early bearing | Mature |
|---|---|---|---|
| Paulared, McIntosh, Empire, Golden Delicious, Gala, Jonagold, Mutsu | 2.4–2.6 | 2.0–2.4 | 1.8–2.1 |
| Delicious, Fuji, Braeburn | 2.4–2.6 | 2.2–2.4 | 2.2–2.25 |
| York Imperial, Rome Beauty, Stayman | 2.4–2.6 | 2.2–2.6 | 2.2–2.4 |

*a. Fruit destined for fresh market will have better color and firmness if N levels are reduced by 0.2 percent, but high N levels are associated with maximum tonnage. Note: N levels may be lower on light-cropping trees.*