



Newsletter Extension

Fruit ICM News

Volume 7, No. 32
August 21, 2003

In This Issue:

[Calendar](#)

[Getting the Most from the "Old" Stop-Drop: NAA](#)

[Degree Day Accumulations](#)

[Pest Phenology](#)

[Fruit Observations & Trap Reports](#)

Calendar

September 16-18: Farm Science Review, Molly Caren Agricultural Center, London, Ohio. See 2,100 acres showcasing a dynamic Ohio agricultural industry. For information contact Craig Fendrick, 614-292-4278 or email at fendrick.1@osu.edu. Web site: <http://fsr.osu.edu/>

Getting the Most from the "Old" Stop-Drop: NAA

Source: Jim Schupp, Horticultural Sciences, Highland, Cornell University, Scaffolds Fruit Journal, 08/21/03

The use of NAA (Fruitone N, K-Salt Fruit Fix) for control of preharvest drop has been overshadowed in recent years by that of ReTain; however, ReTain use must be planned weeks prior to harvest. With the effective application time so close to the onset of drop, NAA offers a "rescue" treatment, should the threat of preharvest drop be increased due to unforeseen circumstances. Examples of such situations include unavoidable delays in harvest due to bad weather or labor issues, slow red color development, and overlapping harvest schedules of varieties with similar maturity windows, such as McIntosh with Macoun, or Empire with Delicious. While it is not the purpose of this article either to promote or condemn the use of ethephon (Ethrel, Ethephon II) to promote fruit coloring, those growers using one of these products also need to use NAA to prevent excessive fruit drop resulting from accelerated fruit maturation. The following tips and reminders are offered to help growers brush up on using NAA to best effect.

Timing NAA stop-drop sprays is a little like a game of chicken, requiring both steely nerves and a good understanding of your opponent. The label says to apply NAA when the first sound fruit begin to drop. A single spray of 10-20 ppm NAA offers drop control for about seven days from the date of application, but it takes two or three days to "kick in." Apply NAA three days too early and the window of effective drop control is about halved. Apply three days too late and perhaps a quarter of the crop will be on the

ground before the NAA takes effect!

Stem loosening coincides with the climacteric rise in ethylene that signals fruit ripening. Unlike ReTain, which delays drop by delaying fruit maturation, NAA stops drop by delaying stem loosening. Predictive degree-day models and the pattern of starch disappearance measured by the starch index test do not provide a precise guide to timing NAA stop-drop sprays. These techniques can indicate whether the threat of drop is earlier or later than normal, but more direct monitoring is required for the actual timing of the sprays.

Varieties such as McIntosh that are highly susceptible to preharvest drop require careful monitoring to determine when fruit drop is beginning. Limb tapping should be used to determine the onset of drop as fruit near maturity.

Bump several scaffold limbs of three or four inches in diameter throughout the block on a daily basis. Use the palm of your hand with a short firm stroke, striking the limb at its mid-point (just like golf, this skill improves with practice and experience). If zero to one apples per limb drop on average, it's too soon to apply NAA. If the average is about two, check again later the same day or the next morning. When several apples drop in response to limb bumping, it's time to harvest within two days or apply NAA.

When NAA is used to control drop on ethephon-treated trees, the two may be tank-mixed if the fruit is to be harvested within seven days. If the fruit is to be left on the tree longer than seven days after the ethephon, then NAA should be applied three days after the ethephon.

Rates of 10-20 ppm NAA are usually needed to be an effective stop-drop. To obtain the maximum drop control, use a split application of 10 ppm in the first spray, followed by a second spray of 10 ppm five days after the first. Split applications can provide drop control for about 12 days from the date of the first application.

Research in Virginia showed that the deleterious effects of NAA sprays on fruit maturity and fruit softening were minimized in Red Delicious by making repeated applications of 5 ppm NAA at four weekly intervals prior to harvest. This "pre-loading" technique has recently been included as an application option in the Fruitone N label. I have not repeated this research on Delicious, but using this technique on McIntosh resulted in more advanced ripening and softening, not less! I do not recommend NAA pre-loading for McIntosh and other early season, high-ethylene varieties. I suggest that growers use caution when trying pre-loading on later varieties. Use it only on a trial basis until more is known about how varieties other than Delicious grown in different climates will respond.

As with thinning sprays, stop-drop sprays of NAA work best when applied with good coverage and plenty of water. Concentrating beyond 4X (less than 75 gallons of water per acre for 300 gallon TRV trees) may diminish the effectiveness. Use a non-ionic or organosilicone surfactant to enhance uptake.

When used as a stop-drop, NAA may advance ripening, especially at the maximum label rate of 20 ppm. The primary impact of this advance in maturity is reduced storage potential of the fruit, particularly in the loss of firmness. This effect is not consistent from year to year or block to block. The question then arises whether NAA-treated fruit has potential for CA storage or treatment with SmartFresh (1-MCP).

Perhaps the simplest way to answer the question with regard to CA is to remember the adage "garbage in, garbage out." If the fruit was left on the tree to the bitter end of the drop control, is measurably softer than previously harvested fruit, and has elevated starch index values, then it should be marketed in the

short term. On the other hand, if the fruit was harvested within a week after treatment and has good firmness and starch values for CA storage for the variety (e.g., McIntosh with 14 lb pressure and a Cornell chart starch index rating of 6 or lower), there is little reason to expect it to perform differently than similar fruit that received no NAA.

The question of whether NAA stop-drop sprays have advanced fruit maturity may be most critical when using SmartFresh on McIntosh, where the maturity of the fruit is an overwhelming influence on whether the fruit will respond to 1-MCP. Quoting Dr. Chris Watkins in the Proceedings of the 2003 Apple Storage Workshop: "We do not have any data yet, but we assume that induced ethylene production that results from use of NAA will deleteriously affect fruit responses to 1-MCP. If you use stickers (NAA stop-drop), your storage operator should be informed."

Finally, a comment about use of NAA on trees previously treated with ReTain. The use of both stop-drops at the respective correct times results in drop control that is superior to that obtained by using either one alone. Fruit treated in this manner, then left for an extended time on the tree, often have limited storage potential (see above); however, this combination can be an effective way of getting the ultimate in drop control. This drop control comes at a high price and should therefore only be used on high value fruit with little or no storage period, such as for a few rows of trees held for late picking in PYO blocks.

Degree Day Accumulations for Ohio Sites August 20, 2003

Ohio Location	Degree Day Accumulations			
	Base 45° F		Base 50° F	
	Actual	Normal	Actual	Normal
Akron/Canton	2680	2758	1976	2088
Cincinnati	3155	3478	2412	2721
Cleveland	2750	2704	2068	2049
Columbus	3075	3050	2340	2347
Dayton	2937	3126	2212	2422
Kingsville	2370	2529	1722	1905
Mansfield	2538	2733	1842	2068
Norwalk	2647	2694	1965	2045
Piketon	3212	3396	2436	2641
Toledo	2644	2689	1964	2044
Wooster	2795	2598	2080	1942
Youngstown	2435	2543	1750	1896

Pest Phenology

Coming Event	Degree Day Accum. Base 50° F

Apple maggot flight subsides	1904 - 2573
Obliquebanded leafroller 2 nd flight subsides	1930 - 2573
Redbanded leafroller 3 rd flight subsides	2013 - 2402
Oriental fruit moth 3 rd flight subsides	2018 - 2377
Spotted tentiform leafminer 3 rd flight subsides	2228 - 2472

Thanks to Art Agnello, Scaffolds Fruit Journal

Fruit Observations & Trap Reports

Insect Key	
AM:	apple maggot
CM:	codling moth
ESBM:	eye-spotted budmoth
LAW:	lesser apple worm
LPTB:	lesser peachtree borer
OBLR:	obliquebanded leafroller
OFM:	oriental fruit moth
PTB:	peachtree borer
RBLR:	redbanded leafroller
SJS:	San Jose scale
STLM:	spotted tentiform leafminer
TABM:	tufted apple budmoth
VLR:	variegated leafroller

Site: Waterman Lab, Columbus

Dr. Celeste Welty, OSU Extension Entomologist

Apple: 8/13 to 8/20/03

AM: 3.7 (up from 1.3)
 CM: 50.0 (up from 27.3)
 ESBM: 0 (same as last week)
 LAW: 3 (down from 5)
 OBLR: 0 (same as last week)
 RBLR: 46 (up from 29)
 SJS: 33 (down from 43)
 STLM: 388 (up from 318)
 TABM: 0 (same as last week)
 VLR: 3 (up from 0)

Peach: 8/13 to 8/20/03

OFM: 0 (same as last week)
 LPTB: 3 (same as last week)
 PTB: 25 (up from 13)

Site: Medina, Wayne, & Holmes Counties

Ron Becker, IPM Program Assistant

Trap reports were not available at press time, but will be included in next week's issue.

Site: East District: Erie & Lorain Counties

Jim Mutchler, IPM Scout

Apple: 8/12 to 8/19/03

AM: 1.1 (same as last week)
CM: 9.3 (up from 6.4)
LAW: 21.8 (down from 22.3)
OBLR: 0 (same as last report)
OFM: 3.5 (up from 3.3)
RBLR: 5.2 (up from 1.8)
SJS: 98 (down from 140)
STLM: 1193 (up from 708)

Other apple pests: wooly apple aphid and Japanese beetle

Beneficials: green lacewing, orange maggot, native lady beetle, *Stethorus* lady beetle, brown lacewing., and predator mites

Peach: 8/12 to 8/19/03

LPTB: 10.5 (up from 7.7)
OFM: 6.3 (up from 4.7)
PTB: 3.2 (down from 5.3)
RBLR: 8.0 (up from 2.0)

Other pests: OFM strikes and bacterial spot

Beneficials: green lacewing

Site: West District: Huron, Ottawa, Richland, & Sandusky Counties - Gene Horner, IPM Scout

Apple: 8/12 to 8/19/03

AM: 4.3 (down from 7.9)
CM: 6.9 (up from 4.9)
LAW: 1.8 (down from 1.9)
OFM: 2.1 (up from 0.4)
RBLR: 23.9 (up from 6.9)
SJS: 0.7 (down from 145)
STLM: 658 (up from 407)

Other apple pests: green apple aphid, Wooly apple aphid, and eyespotted bud moth

Beneficials: green lacewing, orange maggot, and banded thrips

Peach: 8/12 to 8/19/03

LPTB: 8.6 (up from 3.3)
OFM: 1.0 (down from 1.5)
PTB: 3.3 (down from 3.6)
RBLR: 10.2 (up from 4.4)

Other peach pests: potato leafhopper, European red mite, dogwood borer, and lilac borer
Beneficials: green lacewing, brown lacewing, orange maggot, banded thrips

The Ohio Fruit ICM News is edited by:

Ted W. Gastier
Extension Agent, Agriculture
Tree Fruit Team Coordinator
Ohio State University Extension Huron County
180 Milan Avenue
Norwalk, OH 44857
Phone: (419)668-8210
FAX: (419)663-4233
E-mail: gastier.1@osu.edu

Information presented above and where trade names are used, they are supplied with the understanding that no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely, and accurate, the pesticide user bears responsibility of consulting the pesticide label and adhering to those directions.

Copyright © The Ohio State University 2003

All educational programs conducted by Ohio State University Extension are available to clientele on a nondiscriminatory basis without regard to race, color, creed, religion, sexual orientation, national origin, gender, age, disability or Vietnam-era veteran status.

Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension.

TDD No. 800-589-8292 (Ohio only) or 614-292-1868

| [Back](#) |