

PLANT & PEST ADVISORY

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NJ H4-44 is a low acid, very firm white fleshed peach that has very little fruit drop which may be due to low ethylene production

Why Do Peaches Drop?

Jerome L. Frecon, Agricultural Agent

Many growers always ask as part of my variety evaluations which peach varieties drop the most. My conclusion is one variety drops no more than another unless that variety is commonly exposed to one of the factors described.

The process of why peaches drop is not completely understood by peach scientists.

Early during the growth stages excessive fruit drop is caused by cultural and environmental factors that effect flower bud initiation, bud differentiation, pollination, flower fertilization, and fruit set. For example low temperature during bloom and the first stage of growth may cause many flowers to drop and result in poorly developed pits that cause misshapen fruit and premature dropping. Of course the June drop can be substantial when the crop load is heavy and fruit are competing for nutrients, carbohydrates and growth hormones. Fruit drop may be affected by an environmental factor like drought or chilling during the initiation and differentiation period.

Unhealthy foliage and fruit damaged by diseases, insects and biotic factors can result in early fruit drop. Hail injured leaves and fruit will certainly enhance drop. Occasionally a lot of fruit can be seen on the orchard floor where large speed sprayers are blasting through the orchard before harvest to control pests.

What is happening if you see premature fruit drop on generally healthy trees with clean fruit? Encore always seems to be a variety that drops prematurely but other varieties like Jerseyqueen, Fayette, Flamin Fury® PF 25, PF 27A, and Harcrest have also dropped heavily in the past. Many late varieties in my variety blocks seem to drop heavily particularly the largest fruit selections. Large fruit, if the trees have an equal crop load, will generally drop more. Victoria™ (NJ 353 cultivar), one of the best late yellow fleshed peaches in my test block, always seems to drop frequently. These late maturing peaches also seems to be exposed to more extremes in temperature and wind than earlier maturing varieties in New Jersey that cause more dropping.

Fruit drop is normally heavier on young trees especially if they are extremely vigorous.

Fruit drop seems to be heavier on peaches with short pedicels. When the fruit swells during cell enlargement in the final growth stage the shoulders push the fruit off the stem and cause it to drop. It seems

SEE PEACH DROP ON PAGE 2

INSIDE

Why Do Peaches Drop?.....1

Botrytis Gray Mild Control in Fall Raspberries.....2

Fruit IPM.....3

Getting the Most from the "Old" Stop-Drop: NAA.....4

Apple Maturity - First Report for North-Central NJ.....5

Post Verasion Petiole Sampling.....5

Botrytis Gray Mold Control in Fall Raspberries

Annemiek Schilder, Plant pathologist, Michigan State University

Reprinted from Michigan Fruit Crop Advisory Team Alert, Vol. 23, No. 15, August 5, 2008

Gray mold, caused by the fungus *Botrytis cinerea*, is one of the most important diseases affecting fall raspberries. Fall raspberries are usually at greater risk of infection than summer raspberries because of the prevailing weather conditions, such as lower temperatures, heavy dews and frequent precipitation. Cool, wet weather and heavy rains in the late summer and fall that keep the plants wet for extended periods are conducive to development of the fungus and infection of the fruit. The rainy weather this summer has already resulted in increased Botrytis gray mold pressure in raspberries.

Typical symptoms include a brown discoloration of the fruit and the presence of a gray fuzzy mold, which can rapidly develop and spread to neighboring healthy berries. Symptoms tend to be more severe inside the canopy and on clusters that are closer to the ground. Even if berries look perfectly healthy at harvest, they can change to a moldy mass within 24 to 48 hours.

Botrytis cinerea is a ubiquitous fungus, which is able to grow and sporulate profusely on dead organic matter. It overwinters in old infected canes and plant debris. The spores are airborne and can travel long distances on the wind. When the spores land on plant surfaces, they germinate and can invade the plant tissues directly or through wounds. Overripe berries and bruised berries are particularly susceptible to infection. Latent flower infections, even though they do occur, are not as important in raspberries as they are in strawberries.

Cultural methods are very important for control of Botrytis gray mold. Choosing a site with good air flow can reduce humidity in the canopy considerably. Low density plantings, narrow rows and trellising can also reduce a buildup of humidity. Good weed control and moderate fertilizer use to avoid lush growth are also important. Selecting a resistant cultivar or, at the minimum, avoiding highly susceptible cultivars will help to reduce the need for control measures. During picking, avoid handling infected berries, since spores can be transferred on hands to healthy berries. Timely harvesting and rapid post-harvest cooling can also help to reduce losses to Botrytis gray mold.

Several fungicides are labeled for control of Botrytis in raspberries. Fungicide sprays during bloom are important to prevent pre-harvest infections, while post-harvest infections can be reduced by sprays close to harvest (e.g., the day before harvest). Switch (cyprodinil + fludioxonil) is a reduced-risk fungicide with excellent

systemic and protectant activity against gray mold. It has a zero-day preharvest interval (PHI). Another good option is Elevate (fenhexamid), which is a reduced-risk, locally systemic fungicide with a zero-day PHI. Since these fungicides are in different chemical classes, they can be alternated for fungicide resistance management. My recommendation is to save Switch and Elevate for critical sprays, e.g., during wet periods and for sprays closer to harvest. Other fungicides that may be used in the spray program are Captevate (captan + fenhexamid) (three-day PHI), Pristine (pyraclostrobin + boscalid) (zero-day PHI), Captan (captan) (three-day PHI), Rovral (iprodione) (zero-day PHI) and Nova (myclobutanil) (zero-day PHI). To improve the efficacy of Rovral, an adjuvant should be added. Pristine and Nova also provide excellent control of late leaf rust, which sometimes infects the leaves and fruit of fall raspberries.

Submitted by Jerome I. Frecon, Agricultural Agent. □

PEACH DROP FROM PAGE 1

like the final push to size which is most influenced by rainfall particularly after a dry period hastens the volume of drop.

In an article in the Australian Journal of Plant Biology by PH Jerie, the role of ethylene in the abscission of cling peaches was reported. Peach cultivars with low preharvest drop produced ethylene at much lower rates than fruit from high drop cultivars. This same phenomenon may exist with freestone peach cultivars with some being genetically higher ethylene producers at harvest.

Just as ethylene hastens fruit maturity it may hasten the development of the abscission layer in the peach stem.

The chemical Retain (AVG) is being used by some growers to try and reduce peach drop. It is a costly treatment with little data to support the label comment that it reduces drop in peaches. Win Cowgirl and Bob Belding have reported other benefits in delaying maturity in New Jersey. Researchers in Korea have published positive results on reducing drop. Dan Ward and I were unsuccessful in trials that we conducted in 2007 in reducing drop in Encore.

Other than trying to keep the tree in a good state of fruit balance, vigor, health, and canopy management and avoiding moving through the orchard with equipment and sprayers that can knock off loose fruit, there is little that can be done to reduce peach drop. □

Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach

✓ **Oriental Fruit Moth (OFM):** Growers in some northern counties had trap captures above the provisional threshold of 6 moths/trap. OFM trap captures are below thresholds in southern counties. Late treatments for OFM (third brood stragglers and 4th brood) should be based on trap counts and any presence of flagging. Baythroid and Lannate are effective for OFM and catfacing with Baythroid having the best efficacy.

✓ **Tufted Apple Budmoth (TABM):** Timings are updated in the following table:

TABM Treatment Timings – 2 nd Generation				
County Area	Spray Type			
	AM	EM	Intrepid – EM	Bt-EM
Southern	4 th past	2 nd past	2 nd past	2 nd past
Central	4 th 8/18-19	2 nd past	2 nd past	2 nd past
Northern	3 rd 8/19-21, 4 th 8/27-28	2 nd 8/22-25	2 nd 8/22-25	2 nd 8/22-25

✓ **Fruit Rots:** Most late varieties should be under a pre-harvest program which includes an SI or Strobilurin.

Apple

✓ **Tufted Apple Budmoth (TABM):** See Peach section above.

✓ **Stink Bugs:** Stinkbug activity usually continues into harvest, especially if a hot dry weather pattern reoccurs. Like peaches, stinkbug is of particular concern if the orchard is located near grain crops, hayfields, or woodlines. Pyrethroids such as Danitol and Baythroid are effective broad spectrum materials, but may cause late season mite flare ups. Both will control mites initially but flare-ups sometime result after the material loses effectiveness. Since mites will shift from feeding activity to laying eggs for overwintering sometime in early September there are less concerns about flare-ups than earlier in the season. However, mite flare-ups in September sometime result in heavy masses of eggs laid on the fruit, so monitoring mite populations will remain important if these materials are used.

✓ **Codling Moth (CM):** Codling moth trap captures have been above 5/trap in several orchards in both southern and northern regions. Most materials used for Tufted apple budmoth control should control CM as well. Renew coverage after 2 weeks or after 2" rain. Assail, Delegate, or Avaunt are good options within 2 weeks of harvest.

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should **not** be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2008 Observed Date
TABM - 2nd Gen DD target begins	August 07 +/- 09 days	July 28
TABM - 2nd Gen DD target ends	August 23 +/- 04 days	August 18

Note: There is no Blueberry information this week.

Trap Counts

Tree Fruit

Southern Counties

Weekend	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
8/2	819	4	8		3	50	1	5	12	6
8/9	574	3	4		2	50	1	5	18	3
8/16	693	5	5		1	37	1	5	17	4

Northern Counties

Weekend	STLM	TABM-A	CM	AM	DWB	OFM-P	TABM-P	LPTB	PTB	OBLR
8/2	607.9	1.0	2.2	0.0	0.4	3.1	0.7	6.1	1.5	2.0
8/9	517.6	1.2	1.4	0.0	0.3	6.8	0.7	5.9	2.8	2.0
8/16	590	2	2	0	0	7	2	5	2	1

APPLE MATURITY FROM PAGE 5

from a yellow to a cream color. SI index with the Gala Starch chart can be a guideline as well.

Hunterdon- Snyder	Retain	Date	Pressure	Brix	Starch
Stark Galaxy	yes	8/19	20	10%	3

Honeycrisp is beginning to develop red color at the Snyder farm with temperatures in the fifties and sixties last week. It maybe a good color year for NJ if we get some more cool nights. ☐

Getting the Most from the “Old” Stop-Drop: NAA

Jim Schupp, Ph.D., Former Specialist in Pomology, NYAES, Geneva, NY, now Specialist in Pomology, Penn State University

Reprinted from *Scaffolds Fruit Journal*, August 18, 2003 Volume 12 No. 23 <http://www.nysaes.cornell.edu/ent/scaffolds/>
Edited by Win Cowgaill, County Agricultural Agent, NJAES

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.

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, its 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).

(Technical Editor's Note: this loss of firmness is not an issue on PYO blocks or fruit held for short term storage.)

Retain and NAA—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 combination program ***should be used on high value fruit with little or no storage period, such as for a few rows of trees held for late***

SEE NAA ON PAGE 5

Apple Maturity- First Report for North-Central New Jersey

Win Cowgill, County Agricultural Agent

Many areas of Northern NJ continue to be very dry, at the Snyder Farm we have been running irrigation all summer. We essentially have had no rain in August. Thunder storms have been spotty. Growers without irrigation are being impacted on fruit size of peaches and early apples. Some of the blocks of Galas I have observed are running small to date. Some of this can be attributed to drought stress but not in all cases.

Drought stressed apple blocks of Macs and Gala are also getting loose, especially if they were not treated with Retain. See the companion article on NAA in this issue. Stop drop materials will not work as well on drought stressed trees.

Apple maturity continues running early by 3-5 days for North/Central NJ. Growers should be observant as we approach Gala and McIntosh harvest in North-Central Jersey. Starts Galaxy Gala is almost ready to pick at the Rutgers Snyder Farm. Fulford Gala will be harvested this weekend in Morris County. Macs are well sized and have colored some with a few nights in the 50's's last week.

It is too late to apply Retain for Macs and Galas at this point in North/Central NJ, think NAA as your alternative. NAA can also be applied in addition to Retain.

Summer Apples- at the Rutgers Snyder Farm in Hunterdon County we have picked in the following: Pristine 7/21 RedFree on 8/1, both are scab resistant cultivars from the Rutgers & PRI program. Sunrise was harvested on 7/22. It is one of the best red apples in this season. It has a sweeter taste while RedFree has more acid. Sansa was harvested on 8/11. It is a great apple for this season.

DandeeRed, picked on 8/11 at Snyder, is a new apple that has great eating quality and is being touted as a replacement for Paulared. It ripens about a week before Paulared

Paulared was not quite ready in Warren County on the 15th.

Ginger Gold the first commercial yellow apple of significance on the east coast, is being harvested in Hunterdon County and Morris Counties this week.

Mollie's Delicious is a Northern NJ favorite at roadside markets that came out of the NJAES breeding program. It was first introduced in 1966 as a cross between Golden Delicious and Gravenstein by Drs. Hough and Bailey. It has excellent eating quality. Mollies should be ready for this weekend in Morris/Hunterdon.

Warren-Hackettstown	Date	Retain	Pressure	Brix	Starch-Iodine
Mollies Delicious	8/15	yes	19.8	11%	1.3
Jersey Mac	8/11	yes	13	11	5.4
NJ Summer gold	8/15	yes	14.3	10.6	2

McIntosh growers in Central and North Jersey should watch their Mac's closely for early maturity development and drop.

Hunterdon-Snyder	Date	Retain	Pressure	Brix	Starch-Iodine
Rogers Red Mac	8/19	yes	15.4	10%	2.4

Gala Fruit size is small in general. Newer strains are already showing good red color with older strains fairly yellow. Avoid any additional moisture stress in Gala until harvest. Background color is one of the best indicators of maturity for Gala but is hard to observe on the all red strains. Fresh market Galas should be harvested when the background color is turning

SEE APPLE MATURITY ON PAGE 3

Post Verasion Petiole Sampling

Alice Wise, Extension Resource Educator, Cornell University

Reprinted from Long Island Fruit & Vegetable Update, No. 23, Aug. 15, 2008)

Cornell recommends sampling at this time as one component of a nutrition management program. Individually sample: varieties, problem areas, young vines vs. older vines, dry sandy area vs. area with heavier soil and so on. We use petiole sampling not as the final word but as a complement to soil sampling and vineyard observations when determining our fertilization program. The petiole (leaf stem) of the youngest mature leaf from a bearing primary shoot (e.g. not sterile shoots, not laterals) is sampled. Sometimes hedging makes it a little more difficult. Sampling of a petiole from the top 25% of the shoot should suffice. For varieties with large petioles, take 40 or so petioles. For varieties with smaller petioles, take 60 or more. Further information on Cornell's petiole analysis lab and sampling instructions can be obtained from CCE's Hort Diagnostic Lab, phone 727-4126 mornings, or stop by the Griffing Ave. office during business hours. Check with the lab for current pricing. There are several private labs that also do a good job with tissue analysis.

Submitted by Jerome L. Frecon, Agricultural Agent. □

NAA FROM PAGE 4

picking in PYO blocks or on McIntosh that Retain alone may not be as effective as we like.

Retain -If you missed your Retain application timing of 4 weeks before anticipated harvest you can still apply Retain up to 7 days PHI. This will hold the second and later pickings on the tree. You may need to use NAA as well to hold the first ripening fruits on the tree. Consult the label for more details. □

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