



Healthy Fruit, Vol. 31, No. 14, August 15, 2023

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

The way I see it

Jon Clements

Not a whole lot new on my end, contemplating how I am going to handle apple maturity reporting this year given both the lack of crop and quality of apples in much of the blocks I use for maturity testing and reporting. Most likely I will try to start a weekly Zoom apple maturity report on Tuesday (back by popular demand?) beginning August 22 (or maybe not until August 29).

I was out in western New York last week at a field day hosted by the Midwest Apple Improvement Association (MAIA), Nutrien Ag Solutions, and Reality Research. They generally have a nice crop out there with some exceptions (low spots) that were hurt by the frost/freeze back in May. And they have peaches. Reality Research/Nutrien Ag Solutions field trials of insecticides (wooly apple aphid), fungicides (scab, organic), and herbicides (elimination of row middle weeds to protect bees) were toured and MAIA showed us their new introductions MAIA-SM (marketed as Sweet MAIA, an early ripening deep red apple with sweet flavor) and Mitchell (earlier, red coloring MAIA-1 marketed as Evercrisp). MAIA has an ongoing and ambitious apple breeding and testing program ongoing which is now the largest such thing in North America. Lots of things going on out there, including some excellent food (fried perch and walleye in particular) at the field day!

A reminder that USDA has designated 10 Massachusetts Counties as primary natural disaster areas on account of the May 18 freeze that hurt fruit crops (primarily). This allows the Farm Service Agency (FSA) to extend much-needed emergency credit to producers recovering from natural disasters through emergency loans. Here's the [news release](#) on the USDA FSA website. Unfortunately I do not see any disaster declaration for the February 4 deep freeze which eliminated our stone fruit crop which puzzles me? (Update: I have been told the May 18 freeze declaration also covers peaches from the February deep freeze.)

Entomology

Jaime Piñero, Ajay Giri, Heriberto Godoy-Hernandez, Mateo Rull-Garza, Matthew Bley

Weekly report of insect pest captures in monitoring traps at the UMass Cold Spring Orchard (Belchertown, MA)

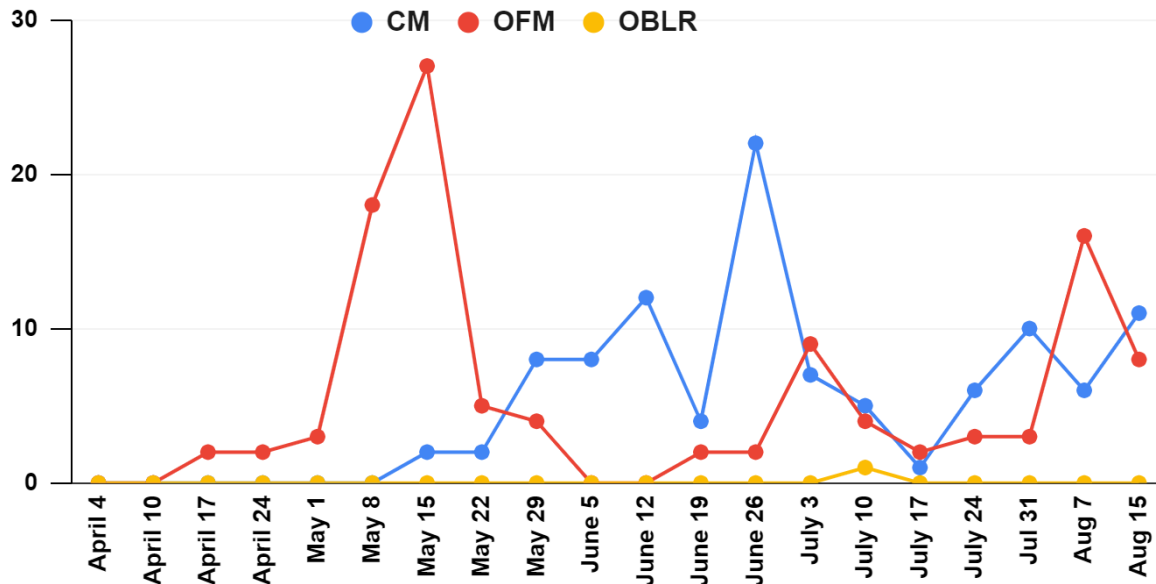
Trap-capture data at the UMass CSO.

Period: Aug. 9-15

Insect	Average captures/trap	Notes
Obliquebanded leafroller	0	1 Pheromone-baited delta trap
Codling moth	11	1 Pheromone-baited delta trap
Oriental fruit moth	8	1 Pheromone-baited delta trap

Codling moth (CM), Oriental fruit moth (OFM), obliquebanded leafrollers (OBLR). OBLR continues to be absent from most orchards. CM numbers are increasing again (see blue line in the chart below), reflecting the emergence of the second-generation moths. A third peak of OFM activity (red line) can be noted in the chart below.

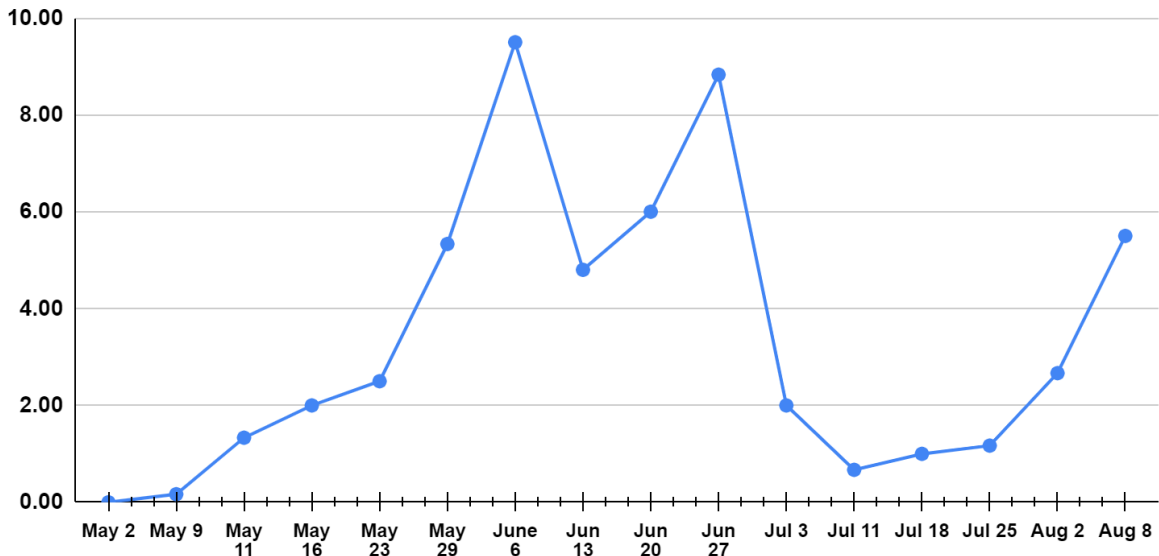
Weekly moth captures at CSO



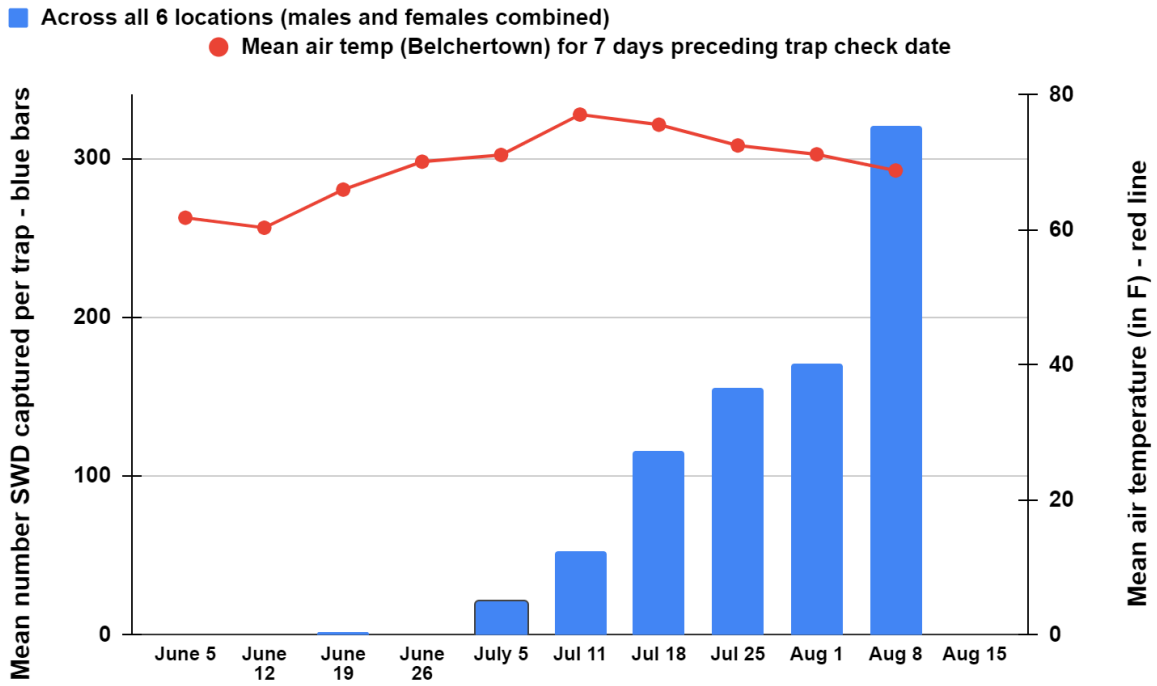
Codling moth captures at one commercial apple orchard. Moths of the second generation begin emerging at approximately 1175 degree-days base 50 and first egg hatch will begin at

1400 degree-days. At that orchard, 1711 DD have accumulated since BIOFIX (May 11th). This means that control actions targeting the newly hatched larvae need to be taken.

Assail 30SG provides excellent control of CM, AMF and moderate control of stink bugs. By the way, stink bug populations have been very low this year. Delegate provides good control of CM but it is labeled as 'suppression only' for AMF. The effectiveness of this material against AMF can be increased by add 3-4 lbs of sugar (a feeding stimulant) to the spray tank for every 100 gallons of water.

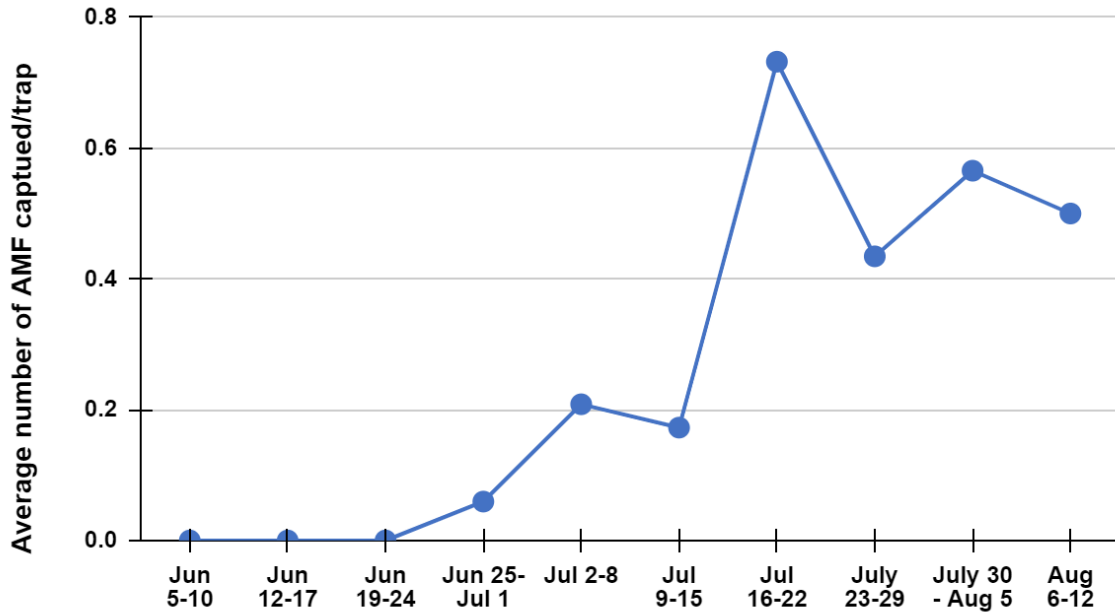


Spotted-wing drosophila (SWD). For the week ending 8 August, SWD numbers nearly doubled when compared with the preceding week. Have SWD populations reached their seasonal peak? My prediction would be NO, meaning that for the next trapping period SWD numbers may be similar or larger than the 320 SWD PER TRAP recorded on August 8th using diluted grape juice. One of berry crops that is most susceptible (attractive) to SWD is raspberry. Therefore, insecticide protection through the end of harvest is critical to minimize SWD injury.



Apple maggot fly. AMF activity has beginning to wind down. The chart below shows the average number of AMF captured per sticky sphere across 9 MA orchards.

Across 9 MA orchards



Horticulture

Ed. note - I will attempt to start weekly Zoom apple maturity reports beginning next Tuesday at noon although I find it hard to get excited (downright depressed?) about this year given the state of the apple crop here at the UMass Orchard, but it will still all be good. [Just call me Marvin](#). I'll get a Zoom meet link out next Monday.

Duane Greene

Label Change for ReTain

The label for ReTain has been changed for the 2023 season. It is now legal to make an application of the total allowable amount of ReTain for a year in one application (two 333 g pouches per acre). If ReTain is used in the spring to increase fruit set, this will reduce the amount of ReTain you are allowed to apply in the fall. I have long been a proponent of splitting Retain applications in the fall and I still favor this approach. Making more applications at lower rates will reduce the effect ReTain has on delaying red color development and it generally extends the effective preharvest drop period.

Less Conventional Uses of ReTain

The majority of growers will undoubtedly use ReTain to aid in harvest management by delaying ripening and to reduce preharvest drop until so that an orderly harvest of apples can be made. There are instances and situations, however, where another approach may be appropriate.

Honeycrisp

The use of ReTain on Honeycrisp presents a problem in that effective rates of ReTain may result in reduced red color development. The approach that is often taken is to apply a reduced rate of ReTain (1/2 to 1/3 of a pouch) to minimize reduction in red color development. There is also less reduction in red color development the closer the application is made to normal harvest. Frequently 10ppm NAA is included with this application to give short term drop control. Drops may remain a problem especially in warm years. An alternative approach to managing Honeycrisp is to make two applications of ReTain to Honeycrisp spaced two (?) weeks apart starting the last week of August. Research has shown that preharvest drop will be dramatically reduced through September. Then, apples will develop a good red color during the first two weeks in October. The advantage of this approach is that you will have high quality Honeycrisp available with good red color and minimal preharvest drop for pick-your-own in early October. Fruit harvested at this time will have good storage potential until Thanksgiving.

Cortland

Cortland is an old variety that remains a favorite apple for many consumers in New England. Unfortunately, that time of ripening coincides with or overlaps ripening of Honeycrisp and McIntosh as well as some lesser known varieties. Consequently, the harvest of Cortland is frequently delayed past its prime time to harvest because, in part, it is not plagued by preharvest drop problems. This often results in having soft Cortland with reduced storage life.

Over 10 years ago I was evaluating the effect of different ReTain treatments on quality and preharvest drop of McIntosh. Cortland trees were in this block serving as pollinators and some of these trees also served as experimental guard trees and received two one-pouch rates of ReTain at 3.5 weeks before McIntosh harvest and again 2 weeks later. While taking samples of our McIntosh apples in that experiment we noted that the Cortland apples trees next to McIntosh trees that received 2 pouches of ReTain had excellent red color, greater firmness and excellent flavor. These were the best Cortland in the orchard. Follow-up experiments confirmed the superior quality of Cortland receiving two full ReTain rates.

Our current recommendation is to make a one-pouch application of ReTain when you make your ReTain application on McIntosh in the 3rd or 4th week in August and one-pouch of ReTain again 2 weeks later. The Cortland treated in this way will have excellent taste and firmness. Firmness is improved because of the delay in ripening and the taste and color are improved because of the longer time on the tree in more favorable ripening weather. Because firmness of these fruit is greater, these apples are a good candidate to receive 1-MCP (SmartFresh, [Hazel](#)) immediately after harvest if they are going to be stored.

Guest article

2023 Harvest Maturity and When to Apply Retain for Harvest Management of Apple and Pear

Win Cowgill (with a little help from my friends,
<https://www.youtube.com/watch?v=0C58ttB2-Qg>)

Excerpted with permission from Win Tips, August 5, 2023, Volume 7, #17

Ed. notes (few and far between) in italics by Jon Clements

Harvest Maturity is hard to predict. When is 'normal' harvest anymore? Many of us have tracked maturity annually on our fruit blocks. Based on bloom date and seasonal temperatures, apple maturity can vary up to two weeks.

2023 Maturity — in northern NJ we are running a bit ahead on harvest days depending on location. Summer apples like Ginger Gold, Paulared and MAIA-SM (Sweet MAIA) are a few days ahead as well with sugars developing and color coming up with the cool nights. Usually by early September (*late September up here*) the maturity season starts to even out.

In 2023 there are three materials, which are registered for control of pre-harvest drop in apples: NAA, ReTain and Harvista.

1. NAA provides modest drop control because it inhibits abscission, however fruit softening and reduced storage life are likely if warm weather follows application or if harvest is

delayed until ripening has been substantially advanced. If growers use NAA on drop prone varieties like McIntosh they should apply when the first sound fruit drops and apply a high rate (20ppm) and then pick the fruit within 10-14 days (ASAP) of application. If harvest is delayed the fruit will begin to drop very rapidly about 2 weeks after application.

2. ReTain is a harvest management tool and plant growth regulator which inhibits ethylene production in the fruit and reduces pre-harvest drop. It also reduces fruit cracking and fruit greasiness but it delays the development of fruit red color about 1 week. Application rates and timings vary by variety. Applied at varying timings (2-4 weeks' pre-harvest) and rates (1/3 to 2 pouches/A) ReTain provides different levels of control of pre-harvest drop, fruit maturity and can be used to delay maturity up to 3 weeks if needed. ReTain is rate dependent, the more applied the more harvest (and color development) is delayed.
3. Harvista is a newer class of drop control chemical for foliar application, which inhibits the action of ethylene in the fruit and reduces fruit drop. It uses a different mode of action to reduce ethylene than ReTain. The AgroFresh Company provides very specific, on-site recommendations for the timing of Harvista recommendations to its customers.

Pears — both ReTain and NAA are labeled on European and Asian pears. Timing for ReTain on pears is one full pouch 7-14 days before anticipated first harvest.

*Apply PGR's at 100 gallons per acre as a complete spray, do not reduce the water rate less than 100 GPA. Adjuvants: For optimal response, use ReTain with a 100% organosilicone surfactant. Use a final surfactant concentration of 0.05 to 0.1% (v/v) in the spray tank. (*In other words, 6.4 to 12.8 oz. LI-700 surfactant per 100 gallons spray water, do not concentrate.*) To prevent possible spotting, use the 0.05% (v/v) concentration when high temperature (in excess of 86°F) weather conditions prevail or are anticipated. Do not use a surfactant concentration greater than 0.1% (v/v). To reduce foaming, add the adjuvant last and minimize agitation.

ReTain is one of the most reliable PGR's we have at our disposal. Over the years we have figured out many ways to use it as a harvest management tool, it is not just a stop drop material.

With ReTain, it is essential to track your anticipated apple harvest dates, as the first application is due 3-4 weeks before anticipated harvest.

ReTain has become THE harvest management tool — it can be used as the most effective stop-drop, or you can delay maturity 1-4 weeks depending on application timing, dosage and the number of applications.

Specific guidance

Macs, Gala and Honeycrisp are targeted now, especially in PYO Blocks

Macintosh - apply full rate 28 days before anticipated harvest plus 10ppm NAA – it takes up to a week for ReTain to kick in for stop drop, NAA prevents early drop until ReTain kicks in. (*Timing for Macs around here in MA is about now into next week.*)

PYO - one of the most important uses is for PYO growers who want to delay maturity of early varieties, like Macs, Gala, Honeycrisp until mid- or late-September when it is easier to get customers to come out for apples. For this, consider using double rate (two pouches spaced out). Apply one full pouch 28 days before harvest and the second full pouch 14 to 21 days after the first.

In Northern New Jersey we expect the Gala and Honeycrisp harvest to start a bit earlier, probably late August. (*Please, not until after Labor Day up here except for Premier Honeycrisp maybe.*)

Gala - in North Jersey. Apply 2 weeks (or even 1 week) before expected first harvest. ReTain will permit Gala fruit to remain on the tree an additional 14 days resulting in improved fruit size (1 box size with a 21-day delay). Although color development will be delayed if harvest is also delayed then good color will develop. ReTain delays maturity but results in a more even maturity on the tree. Multiple picks on Gala can be reduced to 2 or even 1 picking in some cases. ReTain also reduces fruit stem end cracking and greasiness that are problems as Gala fruits mature in the second and third picks. ReTain also has reduced stem end flesh browning during storage and thus ReTain is a suggested strategy for fruit destined for long term storage where stem end flesh browning can be a severe problem.

To delay Gala maturity until the end of September for PYO blocks apply a full pouch Retain 28 days and a second at 14 days.

Honeycrisp - is a variable ethylene producing variety that has very uneven ripening but can have significant pre-harvest drop in some years. We recommend a very low rate of 1/3 pouch per acre of ReTain applied 1-2 weeks before expected harvest in blocks which have had a drop problem in the past. A note of caution: ReTain (or Harvista) on Honeycrisp can have negative consequences during storage of this variety. If the risk of bitter pit is high, then ReTain will increase the bitter pit incidence during storage. The decision on whether to use ReTain or Harvista on Honeycrisp should be made only after an assessment of the risk of bitter pit risk.

If you want to pick Honeycrisp and Gala at the "normal" time, use no more than one-third to one-half pouch (half rate approximately) and apply closer to harvest, 2 weeks.

Note at my fruit blocks at Rutgers Snyder farm I always had better luck with a full pouch and picked multiple times by color, maturity was delayed 2 weeks.

For late September and October varieties the negative effect of ReTain on fruit color development is much less than in early September varieties, thus we suggest the use of the full pouch/acre of ReTain to provide a consistent reduction of fruit drop and greasiness. For late September and October varieties which are harvested under cooler conditions, application timing should be 3 weeks before normal harvest date. For cultivars that suffer from greasiness problems or internal flesh pigmentation (bleeding) as the fruit mature, ReTain applied 3 weeks before normal harvest can be a very effective control strategy.

Organosilicone surfactant — always include an organosilicone surfactant with ReTain. The organosilicone surfactant improves the uptake of ReTain better than other surfactants thus ensuring that sufficient ReTain is absorbed by the leaf to suppress ethylene production. Examples are Silwet L-77. Surfactant or Sylgard 309 at (6.4 to) 12.8 oz. per 100 gallons. For optimum results, apply ReTain with 100 gallons of water per acre as a complete spray. Do not tank mix ReTain with sunburn reducing products.

ReTain's performance is improved when combined with NAA since the two products work synergistically to reduce fruit drop while ReTain suppresses the increased production of ethylene triggered by the NAA.

Harvista — note each cultivar is treated at different stages of maturity as measured by starch iodine. Call your Harvistia rep for details and a site visit. Generally, it is applied closer to harvest.

Harvista observations and recommendations

- Safe delay of harvest for additional color and fruit size development.
- Maintenance of fruit firmness before and/or after harvest (storage benefits are short term).
- Slowed starch conversion.
- Delayed and reduced incidence of water core.
- Greater consistency in maturity for improved storage performance.
- Fewer pick dates required for multiple-pick varieties
- Recent research has demonstrated a reduction in soft scald in Honeycrisp

Sources of reference

Double ReTain for Significant Delay in Harvest for PYO Blocks (contact Win Cowgill for article)

ENYCHP - Dan Donahue

PennState- Dr. Jim Schupp- Apple pre-harvest Drop Control Sprays

[ReTain label](#), Valent [ReTain website](#), and [ReTain Technical Manual](#)

Research by Win Cowgill

NAA-Read Dr. Schupp's guidance on using NAA attached

Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

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[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

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[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

[CCE ENYCHP Tree Fruit Blog](#)

The next Healthy Fruit (most likely just an apple maturity report) will be published on or about August 29, 2023. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

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