



## Healthy Fruit, Vol. 26, No. 18, August 10, 2018 (Special ReTain Edition)

### Pre-harvest drop control suggestions for using ReTain® in 2018

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#### HONEYCRISP

Honeycrisp is an apple that often displays significant pre-harvest drop. The initial harvest usually occurs during the second week of September and this frequently coincides with periods of hot weather. Consequently, a strategy is necessary to retard drop until the crop can be harvested. ReTain is often applied at the relatively low rates of 1/3 to ½ pouch of ReTain per acre to minimize negative effects that result in retarded red color development. These rates are not always adequate to retard drop and the way the weather has been so far this summer, and this may be the case in 2018. McIntosh and Gala ripen about the same time as Honeycrisp thus creating a harvest management dilemma for growers. Honeycrisp is generally the most popular apple grown in New England and there are advantages to having Honeycrisp available on the tree in good condition during the first two weekends of October. In 2017 we did a study where we applied two full rates of ReTain (2 pouches of ReTain per acre). The first application was made at about 3.5 weeks prior to the normal harvest of Honeycrisp and the second 2 weeks later. We followed preharvest drop starting in the first week in September and continued through the Columbus Day weekend. We harvested fruit at 7-10 day intervals starting on September 14, the date of the first regular harvest of untreated Honeycrisp and the last harvest was made on October 12. Fruit quality was assessed on each of these days. All remaining fruit on the tree were harvest on Oct 12 and placed in regular air storage. Complete results of this experiment can be found in [Fruit Notes](#) Vol. 83, Summer 2018, 1-7.

The two applications of ReTain effectively controlled preharvest drop and limited cumulative drop to less than 12% by October 12 (Figure 1). Ripening of treated fruit was delayed, flesh firmness loss was dramatically reduced, and the quality of fruit harvested between October 5 and 12 was exceptional. All fruit on the tree developed good red color such that only one harvest was needed. On October 12 fruit were placed in regular air storage at 32° F until Thanksgiving.

When removed from storage treated fruit were in good condition and showed no significant elevation of storage disorders.

Use of high rates of ReTain on Honeycrisp appears to be an excellent strategy if you wish to have high quality Honeycrisp available for pick-your-own in October or if you wish to delay ripening of Honeycrisp as a management tool to more effectively schedule harvest of Honeycrisp, McIntosh and Gala. Honeycrisp harvested during the first two weeks in October do have storage potential so you will have flexibility in marketing the remaining fruit at harvest. We do suggest, however, that fruit should be sold within a month of harvest.

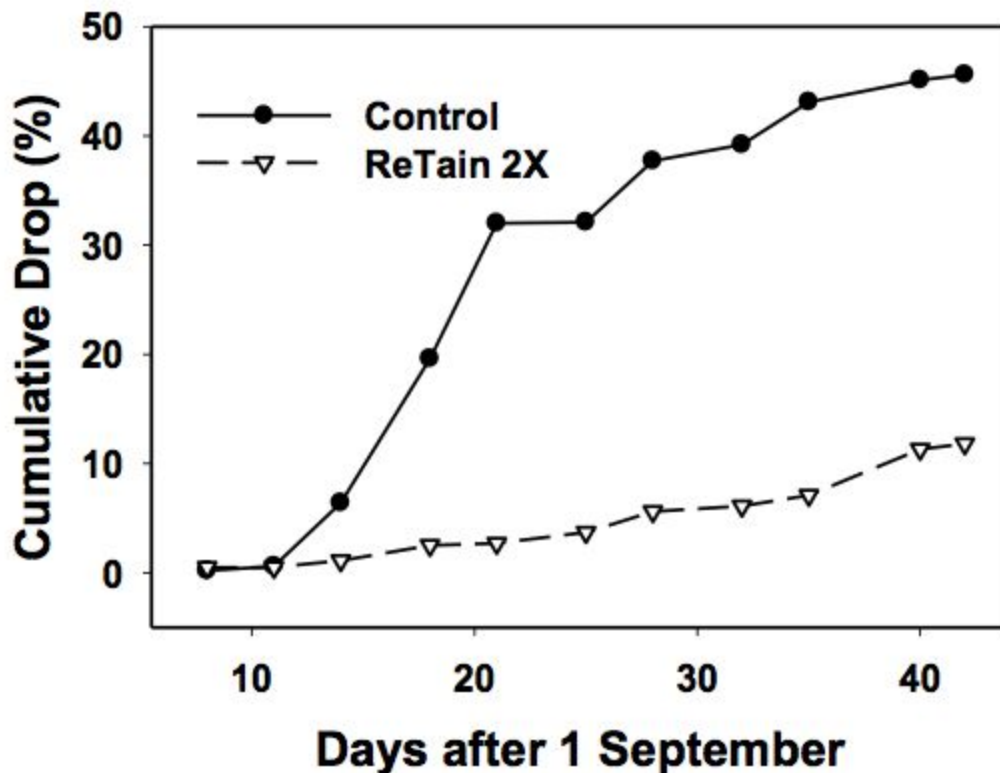


Figure 1. Influence of two full rates of ReTain (two 333g pouches/acre) on preharvest drop of Honeycrisp apples

### **CORTLAND**

Cortland is a high quality apple that remains very popular in New England. Unlike McIntosh, it is not prone to pre-harvest drop. Consequently, the harvest of Cortland is sometimes delayed longer than optimal in order to harvest McIntosh, Gala and Honeycrisp. Cortland does soften especially if it is allowed to stay on the tree too long. While evaluating the use of higher rates of ReTain on McIntosh we noted that the treated pollinizer Cortland in our block that received two full rates of ReTain had developed good red color in early October, had higher flesh firmness and had outstanding flavor. Some growers in Massachusetts are using high rates of ReTain on

Cortland with excellent success. Fruit harvested in early October has excellent quality and good red color.

The most satisfactory results were obtained when two full pouches of ReTain were used, applied either at one time or as a split application. The first application should be made at the time the first ReTain application is made on McIntosh or 3.5 to 4 weeks before anticipated harvest of Cortland. If the application is split, as we normally do, the second application should be made 2 to 2.5 weeks later. We determined that if these ReTain-treated fruit were gassed with SmartFresh right after harvest in October, fruit removed from storage in December had firmness 2 pounds higher than those just receiving ReTain alone. In order to get the maximum fruit benefit, Cortland need to be treated with both two full rates of ReTain followed by treatment with SmartFresh at harvest.

## **MCINTOSH**

ReTain was first registered for use on apples in 1997. Because of its tendency to display excessive pre-harvest drop, McIntosh has been the variety most frequently treated in New England. The ReTain label has undergone some modification over this period of time. Because of this long use period, most growers have developed a program for use on McIntosh that is tailored for use in their orchard.

## **General comments and suggestions for ReTain use**

- The earlier ReTain is applied the greater the delay in ripening and red color development. Most growers make an initial application 3 to 3.5 weeks before the anticipated start of harvest. Delay of application to one to two week prior to harvest will have less effect on retarding ripening and red color development but the period of drop control will be extended later into the season. It requires 10 to 14 days for ReTain to start to delay preharvest drop. Consequently, if the initial application is made 1 week before harvest some early drop may be expected.
- There is flexibility in timing the first application of ReTain. It is important, however, to apply ReTain under favorable weather conditions, especially weather conditions that favor good spray coverage (low wind) and slow drying time. Generally it is recommended to apply ReTain in the morning or evening and not during the heat of the day.
- ReTain should be applied with an organosilicate surfactant such as Silwet L-77 or Sylgard 309. Often these surfactants are used at a rate of 0.1% (12 oz/100 gal) but if the temperature is relatively high the surfactant concentration should be reduced to 0.05 %.
- In order to get meaningful control of drop at least one pouch (per acre) of ReTain should be used. Generally, 1 pouch of ReTain will control drop for between 33 to 40 days, depending on the weather. For drop control into October more than one pouch of ReTain will be required. An option for growers is to apply lower rates of ReTain more frequently during the season to extend the drop control period and reduce the effect on red color development. Split applications may result in drop control extending later into the season.

The label restricts the total amount of ReTain that may be used in a season to two pouches.

- The label suggests that ReTain should be applied in about 100 gal of water per acre. If the foliage is damp or wet at the time of application it may result in reduced activity due to runoff. Under most circumstances, however, apply ReTain in 100 gal of spray volume per acre has proved to be very satisfactory. Good coverage IS important.
- For drop control to extend into October we recommend application of 1 pouch /acre of ReTain 3 to 3.5 weeks before anticipated harvest followed by a second 1-pouch application 2 to 2.5 weeks later. Two pouches of ReTain may be applied 3 to 3.5 weeks before anticipate harvest but red color may be adversely affected than when the same amount of ReTain is applied in a split application.
- The label suggests that ReTain should not be applied if rain is expected within 8 hours. With the erratic nature of weather and scattered showers and thunderstorms common this summer, planning may be difficult. It has been my experience that if a full rate of Silwet L-77 is included with ReTain the majority of drop control activity will achieved if the spray has had an opportunity to completely dry. Silwet provides some degree of rainfastness for ReTain.
- ReTain does not work well on stressed trees (drought, heat, foliage damage). The healthier the tree the better chance there is to have ReTain work as expected.
- Some recommend application of NAA with ReTain. It has been our experience that when NAA is applied with ReTain improved drop control has not been consistently achieved (50% yes, 50% no). We have also noted that some fruit harvested late that receive ReTain with NAA may become extremely soft in storage leading to a pack with inconsistent firmness. At least one half of a pouch of ReTain is necessary, and a full rate is better to overcome any advance ripening that may be triggered by 10 ppm NAA. There may be some merit in including NAA with ReTain applied one week before anticipated harvest to supply initial drop control until the drop control properties of ReTain can take effect 10 to 14 days after application.

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The next Healthy Fruit will be published on or about August 14, 2018. (Maybe.) 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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