

Story Title Feathering Techniques Are Critical For a Modern Apple Nursery in NY or Elsewhere in the US

Program Lake Ontario Fruit Program - Lake Ontario Fruit - Profitability in Fruit Production

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Is this related to an Equal Program/Employment Opportunity? Yes

Impact "Nugget" Currently the future use of Tiberon is in doubt since Bayer Corp. which sells the product informed the apple nursery industry that Tiberon would not be available for use on fruit tree nursery stock this year. If Tiberon will not be available in the future, there is a great need to evaluate alternatives to ensure growers will have access to highly feathered apple trees in the coming years. Maxcel, a cytokinin plant growth regulator, is already labeled for several uses on apples, but it is not registered for chemical branching of nursery apple trees in NY or elsewhere in the US. CCE Lake Ontario Fruit Program conducted research to determine the effect of Tiberon and Maxcel on branching of apple nursery trees under NY growing conditions.

Issues/Needs and Audiences Feathered nursery trees are a critical component of most high-density apple planting systems including the Tall Spindle. The number of feathers on US grown nursery trees has improved significantly in the last decade. However, U.S. nurserymen need more options for chemical branching of apples trees across different climate regions in the U.S. As the benefits of highly feathered trees were discovered, it became necessary to develop nursery management techniques to stimulate lateral branch development. This “desired product” led to the development of the two-year branched tree, the two-year “knip” tree, leaf removal/pinching techniques, fertigation and the use of plant growth regulators such as Promalin, Maxcel, and Tiberon. As these practices and new products have been implemented by nurseries around the world, the quality (caliper, tree height, feather positioning along the trunk, crotch angles, number and length of feathers) of nursery trees has improved considerably over the last 20 years. If Tiberon will not be available in the future, there is a great need to evaluate Maxcel to ensure growers will have access to highly feathered apple trees in the coming years.

Extension Responses CCE Lake Ontario Fruit Program conducted research to determine the effect of Tiberon and Maxcel on branching of apple nursery trees of four apple cultivars in a nursery located in Wolcott, NY. The replicated trial tested proprietary formulations of cyclanilide (Tiberon) and benzyl adenine (Maxcel). All plant growth regulator treatments were applied with a manually operated Solo backpack sprayer with one single nozzle directed to the shoot tip of each tree. Leaf removal or leaf twisting was not conducted for all treatments. Nursery trees were not irrigated and were treated for fire blight control with streptomycin before and after the treatments were applied. The nursery was tilled as needed for weed control and pre-emergent herbicides were not used. In the Fall, trees were measured in the nursery for: (1) trunk diameter measured five inches above bud union, (2) length of central leader above ground level to tip, (3) total number of feathers (any lateral shoot longer than four inches), (4) distance from the ground level to each of the induced feathers, and (5) length of each feather.

Accomplishments and Impacts The results of the project were shared through the CCE LOF publications "Fruit Fax" and "Fruit Notes", by speaking at national and international conferences, and by inviting other US and Canadian researchers to continue research of Maxcel under different growing conditions (in the west and east in the United States) with funds provided by the Northwest Nursery Improvement Institute and the International Fruit Tree Association. An article titled "The Use of Plant Growth Regulators for Chemical Branching" was published in the NY Fruit Quarterly which reached to 1,500 subscribers. There is another article recently submitted for publication in 2013. Our results with multiple applications of Maxcel have been very promising. For the coming years, it appears that the potential use of Maxcel if applied multiple times (3-4 sprays of 500ppm) will help US nurserymen to continue producing highly feathered apple trees similar to the ones produced in the last 3 years with Tiberon. If Tiberon will not be available in the future, there is an opportunity for Maxcel to become a good alternative for chemical branching in the US.

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