

IFTA helped growers bring fruit trees down to size

On March 5, the International Fruit Tree Association observed its 50th birthday – marking a half-century of fruit growers working together to bring trees down to manageable size.

Logically, such an organization should have been born in Europe, probably in England. But the IFTA was born in Michigan, in the United States, and was at first all about dwarfing rootstocks for apples. Very successful, IFTA became worldwide in influence and broader in scope than apples and rootstocks.

For 400 years, the Europeans have known the character of apple trees was affected by the root as well as by the wood.

Wood makes the variety, so scions need to be grafted if varieties are to be perpetuated. The ancient Romans knew that. But the Europeans also gradually learned that rootstock affects tree size, vigor, pest resistance, hardiness and to some degree fruit quality, and clonal rootstocks were selected and used in some parts of Europe.

In the United States, the Johnny Appleseed concept – growing an apple from a planted seed – persisted much longer. Varieties and grafting became important as people ate more apples fresh and less as cider, and dwarfing rootstocks took even longer to catch on.

After World War II, U.S. apple growers gradually began to realize that size-controlling rootstocks could affect the way they managed their orchards. Choosing the right rootstock became important, as well as choosing the right variety to graft it to.

That realization has dominated apple orchard management for the last 50 years.

It resulted in the taming of the trees.

The Dwarf Fruit Tree Association played a key role in spreading rootstock knowledge around the world. It was so successful that, in 1968, it added “national” to its name, and then “international” and, two years ago, it dropped the word “dwarf.” Apple trees, for all intents and purposes, were all dwarf.

As **Wally Heuser** tells the story, it's hard to believe that only 50 years ago apple trees were typically planted on 30- by 30- and 40- by 40-foot spacings, 21 to 48 trees per acre. Any apple seed would do. Plant a seed, graft a suitable variety onto the seedling. The trees were vigorous and big.

Today, orchard designers are considered conservative if they think in terms of 500 trees per acre; more radical designers use 1,000, even 2,000.

The Europeans began using rootstocks to influence apple tree size, vigor and pest resistance early on, Heuser said, but it wasn't until the 1920s that an Englishman, Ronald G. Hatton, working at the research station at East Malling near London, began to collect the different rootstocks from apple-producing areas across Europe. These rootstocks, like scion varieties, were collected and propagated as clones from established trees.

Hatton numbered them, in no particular order. These became the East Malling series, named with Roman numerals from I through XVI. And he began to catalog their characteristics. Only some of them were dwarfing.

A few Americans saw what was happening and became intrigued. One of these was Harold B. Tukey, a world traveler who worked at the Cornell agricultural research station in Geneva, New York. He brought the 16 Malling rootstocks to the United States and began to spread them to other researchers. In the 1940s, he became a professor of horticulture at Michigan State University and its department chairman.

At MSU, one of Tukey's associates was Robert Carlson and one of his students was Wallace Heuser. They became similarly enthralled by the controlling power of rootstocks and by the compelling message of their mentor.

Quite important as well, the Heuser family had a fruit farm, Hilltop Orchards and Nurseries near Hartford, Mich., and when Wally graduated in 1950 and went back to the farm, he had a place to try some of the things he learned at school.

At Hilltop during the 1950s, the Heusers planted the first commercial apple orchards on dwarfing rootstocks. Hilltop was both a producing orchard and a business that sold grafted nursery stock, so the farm had a dual desire to use better trees – and convince other growers to try them.

"They used to call me 'three in a hole' because I was planting so close," Heuser said. "And of course I was accused of just wanting to sell more trees. I used our orchard as a laboratory."

The key players surrounding the birth of IFTA were Joe Mandigo, a district Extension horticulture agent who wanted to show growers what dwarf apple trees looked like and how they should be pruned; Wally Heuser, whose family had such an orchard and an empty apple storage in which to hold a meeting; and Tukey and Carlson, the professors from MSU.

Instead of attracting 70 to 100 people, as expected, 300 came to the demonstration, not just from Michigan but from other states as well.

Tukey suggested the event become an annual affair, and he "volunteered" the services of his associate, Bob Carlson, to lead the formation of an organization. Carlson called a meeting of leading Michigan fruit growers, who became the governing body of the Dwarf Fruit Tree Association. Carlson stayed on as secretary, a position he held until 1986. Heuser was named the first president, a position he held for three years.

One of Carlson's early endeavors was a newsletter that, Heuser said, became "a piece of glue that held the new organization together in the early years."

In 1994, Carlson wrote a history of IFTA. In 1968, he said, it added the word "national" to its name, and in 1974 changed that to "international," two changes reflecting the explosive growth of interest in smaller trees on closer spacing that was occurring in those years.

"During the past 40 years, the fruit industry in the U.S.A. and in other parts of the world has gone through revolutionary changes cause by decreased labor, increased land values and changing marketing systems," Carlson wrote. "To stay in business the fruit grower had to (1) update his equipment, (2) increase his acreage in some cases, (3) remove unproductive standard trees, (4) change his planting schemes to increase acreage yields and (5) decide what new varieties and variety/rootstock combinations to

plant.

“IDFTA-sponsored activities have helped growers cope with these changes.”

IFTA continues to sponsor annual meetings and tours. In the last few years, growers have visited Italy, China, Mexico and Tasmania.

Tukey wrote, in one of the early newsletters that started in the first year of the organization, “Let everyone make his observations and bring them to the association for dissemination and discussion. In this way, we will shake the bugs out of the dwarf fruit tree, find where they belong and how to handle them. The formation of the DFTA could prove to be one of the important steps in the development of the fruit industry.”

“The Dwarf Fruit Tree Association was born out of a need for information,” Carlson wrote. “It grew because it provided practical growing and orchard management hints and because it came up with interesting annual meetings and tours in which everyone played a part.

“It became very evident 30 years ago that 40 trees per acre was no longer practical because the trees were not precocious (and were) difficult to prune, spray and harvest. Thus, enthusiasm for dwarf and semi-dwarf trees increased as more information became available.”

“It just sorta grew,” Heuser said. “We didn’t know how to handle dwarf trees and we made a lot of mistakes. But we learned from our mistakes and marched forward.”

Right from the start, dwarfing rootstocks had weaknesses, he said. Most of the rootstocks in the EM series were susceptible to woolly apple aphid. In England that was not a problem, but it was a problem “in the colonies,” in the warmer climates of Australia and New Zealand. That led to crossbreeding work at the English research station at Merton and the development of the Merton-Malling rootstock crosses that include MM 106 and MM 111.

It took 30 years before M 9 began to catch on, Heuser said. Of the 16 Malling stocks, M 8 was the smallest and M 9 next in size – and both needed support. That held growers back at first, he said. Dick Norton at Cornell was an early proponent of high-density plantings and the trellis systems needed to support them.

“Elaborate trellises didn’t fly,” Heuser said. “Grower ingenuity came into play. Growers use simple trellises now, single or maybe double wire.”

Other trends also “slipped by the wayside” over the years, Heuser said.

Interstems work but they are expensive and take another year to grow, so they aren’t much used, he said. Bed systems were tried, with double and triple rows of trees. But they had problems with light penetration and weed control, and apple orchards remain single rows of trees, even if the rows are closer and the space between trees is close.

Apples were the “first and only focus” for dwarfing work at first, Heuser said. There was only limited success with stone fruits until work by Werner Gruppe and his colleagues at Giessen University in Germany led to development of the Gisela rootstocks for sweet cherries. Heuser played a big part in evaluating them and bringing them to the United States. Growers on IFTA tours now take as much interest in cherries on dwarfing rootstocks as they initially did in apples on dwarfing rootstocks.

“I first heard of them in the mid-70s,” he said.

He traveled repeatedly to Germany and brought the Gisela rootstocks to the United States in 1979. They are gradually finding more applications.

Heuser believes better things are yet to come. Just as dwarfing rootstocks are now fully accepted for apples, they will shape fruit trees of all kinds in the future. Tart cherries have resisted dwarf rootstocks, but Heuser points to the work by MSU cherry breeder Amy Iezzoni as promising.

If dwarfing rootstocks can reduce tart cherry trees to bush size, he said, less invasive

harvesting methods might be applied. These are being developed by MSU horticulturist Jim Flore and USDA researcher Donald Peterson and others. "Shaking the bush" like a blueberry rather than shaking the tree could result in longer tree life and use of smaller, less expensive equipment in managing the orchard.

With IFTA firmly in place, Heuser believes, the mechanism is there to find, test and bring new ideas into commercial orchards. He has no doubts IFTA will organize lots of gatherings in fruit orchards in the future. He's proud of the part he played in starting that effort.

More proof that when something needs to be done right . . . count on a
Hartford Grad!

Wally is a [1946 Hartford High School Graduate](#).

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Revised: March 20, 2014
