

# Thousands Of Apple Varieties Available Free For Grafting

By Jim Ruen, Contributing Editor

"We have more than 2,000 different varieties of apples and crab apples that are available to the public free for grafting," says Thomas Chao at the USDA germplasm repository, Geneva, N.Y. "In addition, we maintain seeds from more than 1,500 genetically unique apple trees. Most of these are wild apples, not selected varieties."

There are 49 known wild species around the world with only 4 in North America. Seeds collected from them are reservoirs of genetic combinations that may include disease or pest resistance, or other valuable features.

"We don't do apple breeding, but others utilize our germplasm in their breeding programs," says Chao.

Chao and his counterparts travel the U.S. and the globe in search of new germplasm to add to the collection. Unlike other collectors who look for rare heirloom apple varieties, Chao looks for area specific variations of the wild species in the U.S.

In August, he visited Pennsylvania looking for *Malus coronaria*, the wild species native to the northeastern U.S. While the repository has seed from the species found in other

states, there is none from Pennsylvania. The genetics of the species there will be different from that found elsewhere.

"Also, if you come back to the same location 50 years later, the gene combination will have changed," says Chao.

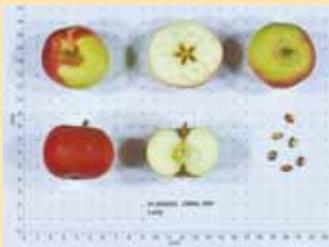
In addition to apples, Chao also works with 1,400 cold hardy grape varieties and 230 cherries. His is only part of the national Genetics Resources Unit at Geneva. The vegetable collection has more than 12,000 samples, including 6,000 tomatoes.

One thing that makes Chao's operation unique is that it still supplies budwood or dormant scions to growers. "Fewer and fewer repositories have budgets that allow them to do that," says Chao. "We do request that unless needed for research purposes, people seeking scion wood for grafting should check with commercial nurseries first. A good place to start is Good Fruit Grower magazine's buyers guide for nurseries ([www.Goodfruit.com](http://www.Goodfruit.com)).

FARM SHOW readers who are interested in Lady, Roberts Crab or other unique apples and know how to graft budstock or dormant scions can visit the repository's online



Thomas Chao grows Spokane Beauty, (upper left) the largest apple variety on record, often over 2 lbs. in size, as well as Roberts Crab (above), an English apple with dark red flesh. Add Lady, an apple variety that has been documented back to 100 A.D. (left), and you begin to understand what he does as horticulturist and curator of apples at the USDA germplasm repository.



catalog. Once they have identified up to 25 different accessions, they can place an order, and they will receive 2 sticks with about 10 buds each.

Chao does ask that orders be placed before the deadlines listed in the catalog.

Contact: FARM SHOW Followup, Plant

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## Hoop House Cover Cropping Keeps Soil Fertile

Anne and Eric Nordell like their hoop houses, but they are also believers in crop rotation and cover crops. That's what prompted them to come up with easy-to-move "portahoopies" with space in between for cover crops. They outlined the pioneering system they have used for 25 years in a recent issue of Rural Heritage Magazine ([www.ruralheritage.com](http://www.ruralheritage.com)) and gave permission for us to share their story with FARM SHOW readers.

"We grow produce in the tunnels for 2 years, followed by 2 years of cover cropping," they say. "This simple rotation reduces weed pressure while preventing the buildup of salt and disease in the soil."

Their gardens are laid out with alternating 18-ft. strips of hoop houses and cover crops. The cover crop strips are planted, mowed and tilled with a team of horses. Every 2 years the hoop houses are moved laterally onto fresh soil, and the previously planted soil is rejuvenated for 2 years.

To move each house, the Nordells take them apart and move the 4 by 4-in. rough-cut beams that run down either side. They are placed on 12-ft. centers and are anchored with 20-in. long, 5/8-in. rebar driven through drilled holes every 4 ft. They are driven to a 12-in. depth, leaving 4 in. of rebar above the beam.

"Even in our stony soils, the rebar is easy to pound in and pull out," say the Nordells.

The hoops are 20-ft. lengths of 1-in. schedule 40 pvc pipe that slide on over the exposed rebar. A ridgepole made with 20-ft. lengths of pvc pipe are secured to every 5 hoops with 1/4-in. carriage bolts. Pvc couplers left unglued connect the ridgepoles.

"To move the portahoopies, we simply tap the couplers apart from the ridgepoles, grab a couple of hoops and walk the half a dozen steps to the new site," explain the Nordells.

Once the hoops are in place, plastic is secured to the sill beam with lath. While the plastic helps stabilize the hoop house, it doesn't allow for side ventilation. Instead, the Nordells limit the length of their hoop houses to no more than 60 ft. and use end door ventilation.

"Originally, we built double doors made from plywood and 1 by 4's. Now as these doors have begun to deteriorate, we are replacing them with a single drop-down curtain made from greenhouse plastic with wire battens. These make the end walls considerably lighter and easier to move."

The Nordells can also hook the drop-down plastic at different heights to regulate ventilation and keep out pets and wildlife.

Each house has room for three, 3-ft. beds with two, 15 1/2 in. pathways. "We plant 2 rows of lettuce in each bed and then interplant a row of tomatoes down the center of the bed a few weeks later," say the Nordells.

Their system has served them well. In 2016, they reported sales of nearly \$20,000 from the 4,000-sq. ft. of bed space.

The Nordells practice cover cropping across the entire farm. More details can be found in their "Weed the Soil, Not the Crop" booklet. It's available for \$10 plus \$3 S&H or in a DVD form for \$15 plus \$3.

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Every 2 years the "portahoopies" are moved over onto fresh soil, and the previously planted soil is cover cropped.