

This is request for an extension on the SARE project: #FNE95-101, **"Organic Hardy Kiwi Production" by Klaas and Mary-Howell Martens.** Because of two factors beyond our control, we were unable to complete the stated goals. First, the vines did not bear fruit this year, possibly due to drought, but more likely due to their young age. Secondly, because of the drought, we were unable to perform the soil water tests as planned. Therefore, we used this year to construct trellis, establish weed control, and to evaluate vine growth.

Aesthetically marketable fruit is one commodity that is difficult to grow under organic farming systems. The hardy kiwi fruit, *Actinidia arguta*, is a smaller-fruited, fuzz-less relative to the highly successful kiwifruit (*A. deliciosa*) of California. It shares many of the flavor, appearance, and nutritional characteristics (extremely high in Vitamin C) that makes *A. deliciosa* so popular, but is much hardier and is reportably not attacked by any of our common pests - fungal, insect or bird. Testing in the Pacific Northwest indicates that this should be a viable crop for New York, but, to the best of our knowledge, it has only been marginally evaluated here and is mostly unknown.

Our goal for this SARE project was to develop a trial of hardy kiwi vines with two main variables. First, we were testing several kiwi varieties for suitability to Northeast production and second, we were testing organic cultural practices that included different mulching techniques for weed control.

#### **A. Materials and Methods**

Shortly after receiving notice of our SARE grant, we met with our three collaborators to discuss our plans and to consider their suggestions. From this meeting, we developed further plans about which factors we would closely observe as the kiwi vines grew.

As part of the SARE grant in 1995, we purchased 5 additional kiwi vines. Three male vines were obtained from Teltane Nursery because we did not have enough vigorous male vines to successfully pollinate our female vines. Two female 'Ananasnaja' vines were obtained from Northwoods Nursery since this variety is reportedly of very high quality. These were added to our already existing planting of Geneva #1 and Geneva #2 vines. All vines grew well in the 1995 season, but required extensive irrigation due to the drought. Setting up and application of drip irrigation involved the non-SARE grant purchase of several hundred feet of irrigation hose and fittings and irrigation was provided 4-5 times during mid-summer.

Hardy kiwi require a substantial trellis similar to but much sturdier than that usually provided for table grapes. With the SARE grant, we constructed a suitable trellis for our plants as described in detail in the original SARE proposal. We enclose a diagram of the trellis, as it was constructed, and several pictures that show what the finished trellis looks like. A substantial amount of time was spent training the vines to grow on the trellis throughout the season.

We fertilized the vines with composted sheep manure from our own sheep and with composted poultry manure that we purchased from a nearby egg farm. We also used Greensand and Rock Phosphate from the Fertrell Company to supply additional nutrients. The continued presence of actively growing alfalfa between vines that was mowed as needed will hopefully provide nitrogen to the vines.

For weed control, we used one main technique with a variation. We purchased woven horticultural landscape fabric, sold as Weed Mat, from Gardener's Supply. For most of the vines, we placed this mat in a 2 foot radius around the base of the vine and then covered it with wood chips. The wood chips served both to anchor the fabric and to slow the degradation of the fabric by sunlight. On 2 vines, we did not use the fabric, and just mulched heavily with wood chips for weed control. In both cases, the soil outside the 2 foot radius was mowed regularly to limit but not eliminate alfalfa growth, so as to reduce soil erosion and provide nitrogen.

## B. Results and Observations

Our vines continued to grow vigorously throughout the season. The male vines are definitely less vigorous and without precautions in subsequent years to protect the males, there is the possibility that they may be overgrown by the much more vigorous females. Without the addition of irrigation in 1995, we probably would have lost the new male plants, but the established females seemed fairly able to grow vigorously without irrigation.

To date, the trellis design has proven very satisfactory, providing good support for the vigorous young vines. The only change we would suggest is to make the trellis wires higher since it is difficult for tall people to get underneath the trellis to work and for the small garden tractor, used for mowing, to conveniently maneuver.

We had based our training techniques on those used for grapes, which was what we were most familiar with. After this year of observation, we would suggest several major changes, since kiwi vines grow much differently than grapes. First, they do not seem to readily produce as substantial a trunk at a young age. This makes the support of the vine extremely important, but different. The original support posts next to the vines seem to be an important factor in the trellis design. The kiwi vines at this age (4 years and younger) still need quite a lot of additional support or else they will "slump" and pull themselves off the trellis or out of shape. Persistent attention to the straightening and pulling up of the trunk shoots was needed throughout the growing season.

Second, kiwi vines are much more prone to climbing and twisting around whatever support they can find. This has meant that without frequent checks to update the training, we had shoots twisting around anything in the vicinity, and then we had to untwist the shoots which often damaged them. Their twisting habit also is much tighter than for grapes, and once a shoot is firmly twisted around an object, it is hard to remove. We also found that where we used baler twine to train the shoots, the twine has cut into the bark and girdled some of the shoots as the vines twisted tightly around the twine.

Additionally, unlike with grapes, kiwi continue to generously produce new shoots throughout the season from nearly any point on the vine. This also requires frequent attention to remove the extra shoots. In 1996, we will be much more stringent on early season training and on pruning off all but a few shoots per vine throughout the season.

One other difference of kiwi vines is that they apparently bear at an older age than do grapes. Most grape varieties will bear a small crop in their third year, but we have recently learned that other kiwi growers have found that production does not begin before the 4-6 year (contrary to what many nursery catalogs state), and then it is dependent on the presence of sufficient female and male flowers. Since the

male plants are less vigorous and slower growing, this seems an important consideration in planning when a crop can be expected. We hope to see fruit in 1996 and we think we can expect the female vines to start flowering then, but we're afraid that fruiting will depend on how well our male plants grow once the season starts.

Our fertilization and weed control techniques seemed to be quite successful, but soil water quality was not tested due to the drought. One of our collaborators, Dave Peterson of Cooperative Extension, did wonder how important it is to control weeds or even provide much nitrogen around such vigorous vines. Perhaps a little healthy competition and growth restriction would be good to control the kiwi vine vigor! Certainly once the vines mature, producing a heavy canopy of leaves, weed control will be of much less importance. Another of our collaborators, Jim Balyzcek, had planned to take observations on soil erosion under the vines, but with the drought, erosion was not a problem during the summer. However, excessive snow melt and rain this winter caused substantial erosion in most other fields but none has been seen under the kiwi, despite the vines being on slope. Therefore, we feel that the combination of weed mat, wood chips, and mowed vegetation should be effective against erosion. The weed mat did do a good job of controlling weeds immediately around the base of the vines.

Late in September, about 6 of our vines were partially defoliated by deer. This has alerted us to the need to protect the vines against deer in the future and we will be hanging small bags containing fragrant soap on the vines and trellis before growth begins in the spring.

Because we had no crop to show, we did not hold the formal demonstrations showing fruit as we had planned when we submitted the SARE proposal. However, we held one OCIA Chapter meeting at our farm in September, one organizational meeting of prospective organic growers in April, and one NOFA-supported meeting of prospective organic farmers in August at our farm. At each of the three meetings, there was considerable interest and inspection of the kiwi planting. One of the farmers, as a result, has planted hardy kiwi vines and is propagating additional vines from wood we supplied. Because the location of the planting is next to a major road and because the trellis is so distinctive, we had innumerable people stop during the season to discuss our project.

Hopefully in 1996, we will have fruit and will be able to show our progress to others who are interested both through open houses and through articles. In 1996, we are starting a CSA for the Penn Yan area and this will provide a fine opportunity to test the consumer acceptance of hardy kiwi fruit. Dave Peterson of Cooperative Extension has volunteered to help us publicize a demonstration meeting during the 1996 season to interested growers.

### C. Update on the Farm

Klaas is a full time farmer, growing over 800 acres of corn, soybeans, wheat, alfalfa, dry beans and spelt. We own approximately 130 acres of the land. In 1995, 170 of the 800 acres was certified organic with OCIA, with another 550 acres in transition. In 1996, over 500 acres will be fully certified organic and the rest in transition. Mary-Howell assists with all aspects of the farm, and is in charge of the farm office bookkeeping and of the new CSA. In 1995, Klaas was elected President and Mary-Howell was elected Secretary for the Finger Lakes (NY) Chapter of OCIA (Organic Crop Improvement Association) and we are quite active in assisting other farmers in the area who wish to farm organically.

Our collaborators on this SARE grant, both for 1995 and 1996, are:

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Soil/Water Quality Advisor

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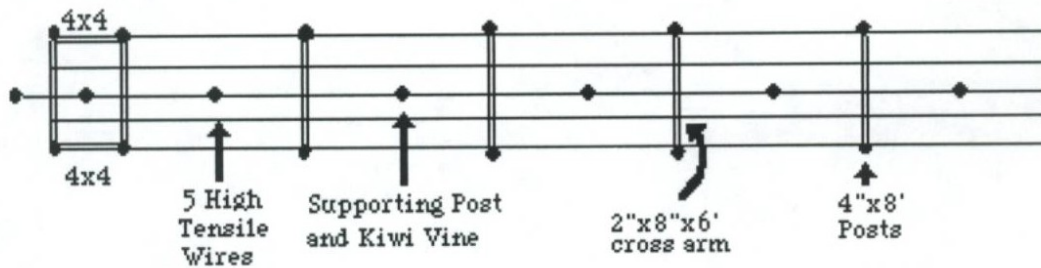
David Peterson  
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Small Fruit Advisor

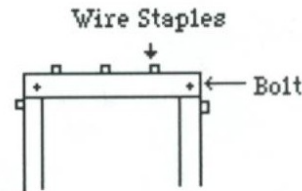
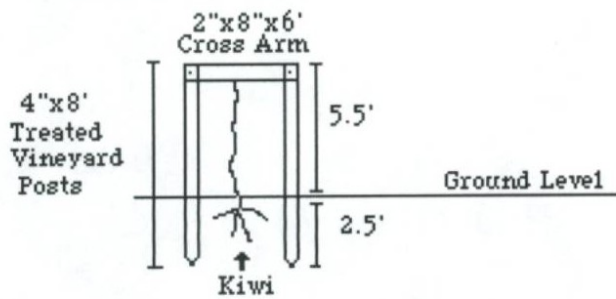
# TRELLIS CONSTRUCTION FOR HARDY KIWI

Klaas and Mary-Howell Martens

Overhead View of the Trellis



Side View of the Trellis



3 Center wires stapled to top of trellis  
2 outside wires stapled 8"-9" below center wires on sides of posts

End View of Trellis

