

**Vegetable Conference Research Examines Stake System, Transplants, Planters**

**Stake System Provides Better Tomatoes, Income For Growers**

(Continued from Page A1)

look down from above it you see no plastic, according to Sanders.

The North Carolina system harvests three times in the season. Also, growers are careful to inspect for wind or storm damage and to ensure the trellises remain upright.

While many growers rely on the staked, trellis system for better yields, bigger fruit and more uniform growth, research is under way at North Carolina to provide a "self-pruning, self-supporting upright" tomato system. So far, results from studies have been encouraging.

Cost before harvest for such a system is about \$3,500 an acre, for net returns per acre of \$7,500, because of the higher volume of fruit over conventional systems. Other research has examined the dramatic effects of foliar boron applications on potassium uptake and keeping nutrient, mostly potassium, levels up in the plant to ensure a more marketable fruit.



**Dr. Robin Brumfield, Rutgers University farm management specialist, provided results on a cost analysis study involving stake-grown tomatoes in New Jersey.**



**Pennsylvania's 1994 tomato growing champions were honored on Tuesday at the state vegetable conference. From left, James Kohl, president of the state vegetable growers; Clyde Kreider, class 3 machine harvest, 25-39 acres; Cliff Charles, class 1 machine harvest, 60 or more acres; Dale Frank, class 2 machine harvest, 40-59 acres; Darwin Nissley, Nissley Brothers, class 4 machine harvest (15-24 acres); Bernard Nissley; and Robert MacBeth, class 1 hand harvest, 15 or more acres. Photo by Andy Andrews**

**Stake-Grown Tomato Cost Study**

Dr. Robin Brumfield, Rutgers University farm management specialist, provided results on a cost analysis study involving stake-grown tomatoes in New Jersey.

Fresh market tomato sales for New Jersey reached \$20 million in 1992, according to Brumfield, and while acreage has been falling, production has been increased because of the stake-grown method.

But growers who use the system must keep in mind the costs of materials for the system and the labor costs that go into a stake-trellis system of production.

Field studies were undertaken at the Rutgers University Snyder Farm from 1991-1993. Six commercial growers were also involved in the study, including three large growers (more than 15 acres). The Rutgers University farm served as the "model" farm for the study, using a combination of drip irrigation and black plastic mulch.

The study incorporated information on the market price per box of fresh tomatoes, state labor costs, and examined all the materials, time, and labor used to provide a fresh-market, stake-grown product.

The conclusion of the study showed that while the cost per box of tomatoes was considerably higher than the conventional, bare-ground method of growing fruit, because of the substantially



**Dr. Douglas Sanders, extension specialist with the North Carolina State University at Raleigh, presented information about staked tomato plant research to a roomful of vegetable growers on Tuesday at the 1995 Pennsylvania Vegetable Conference and Trade Show.**

increased yields, cost per box dropped and net returns increased significantly.

Forty percent of cost per box was tied up in labor. Total costs per acre were \$11,415 with the staked system, compared to \$4,788 with the conventional method. But in the end, profits with the stake system were higher. Net profit was \$5,400 per acre with the staked

system versus \$1,698 per acre with the conventional, bare-ground system.

Brumfield said growers obtain higher yield and better fruit with the staked system and a good net return on investment. But growers have to get the yields up (using irrigation) because a lot of money is invested in the stake system.

**Comparing Transplants**

Overall, growers can benefit in a bigger, more robust plant and perhaps better yields when using a Pennsylvania-grown tomato transplant, according to Joseph Ciardi, Penn State University graduate student.

Ciardi presented the results of a tomato transplant study comparing Florida-grown and Pennsylvania-grown transplants during a two-year period.

Penn State evaluated eight different tomato transplant production methods in the study during the 1993-1994 growing seasons. Researchers used the same variety, Hypeel 696 from Peto, a processing tomato. The transplants used a non-fortified plug mix with an ebb and flow watering system in tables, in Todd planter flats from Speedling, using 392-cell trays.

The transplants, when planted to fields, were all seven weeks old.

Several transplant methods were utilized. One used Hydretain, a water uptake material, drenched in the roots. Another used a nutrient conditioner in solution, soak-



**The Pennsylvania Vegetable Growers Association honored two members with lifetime memberships, presented by James Kohl, president of the association, far right, on Tuesday evening. From left, Donald Daum, University Park; Tom Jurchak, Clarks Summit; and Kohl.**

ing roots for three days. One set of transplants were chilled at 55 degrees, once for three days (in 1993) and for seven days (in 1994). Some were hardened for a week in cold frames. Transplants went in fields by hand the third week of May in 1993 and 1994.

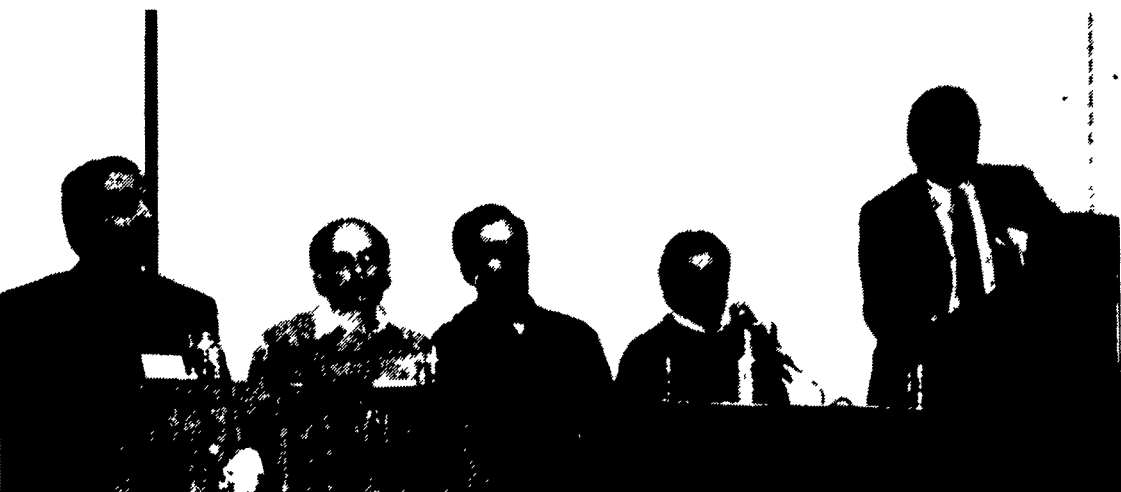
What they found was that the water uptake material increased plant growth, making the plants taller and more spindly at transplanting. The nutrient bath provided a more vigorous transplant, but the roots intertwined in the

trays. The chilled plants provided a higher growth rate and helped the transplants adapt more readily to cold soils in the spring.

What the researchers found was that, in both 1993 and 1994, despite different growing type years, the locally grown transplants grow much larger than the Florida counterparts, according to Ciardi.

According to Ciardi, Pennsylvania-grown transplants had a higher growth rate and a

(Turn to Page A38)



**Dwight Hess, a grower for Furman Foods in Marletta, far right, moderated a panel that discussed tomato grower experiences using carousel planters. All agreed there was a definite and significant advantage to using either six-cup or eight-cup transplants over the finger method. From left, Ken Martin, farm manager, Furman Foods, Northumberland; Dale Frank, Elizabethtown; Dan Mowrer, Marletta; Cliff Charles, Lancaster; and Hess. Photo by Andy Andrews**



**Richard Pallman, Pallman Farms, Clarks Summit, left, presents a special award to James Kohl, president of the state vegetable growers, at the banquet during the state vegetable conference Tuesday evening.**