Texas Agricultural Extension Service

Vegetable Production & Marketing NEWS

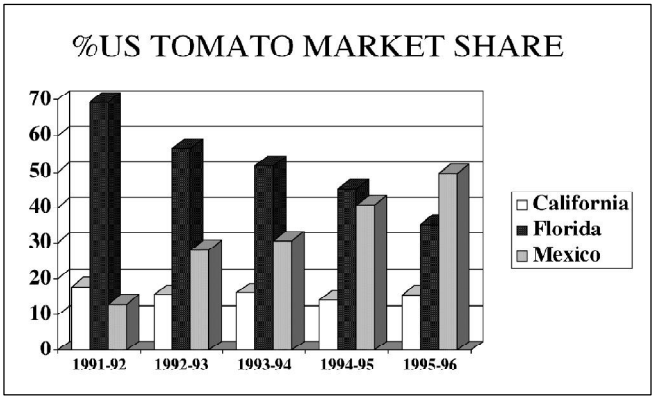
VOLUME 7, NUMBER 7 JULY 1997

Is NAFTA Working For Us Or Against Us?

By Dr. Frank J. Dainello, Extension Horticulturist,
Department of Horticultural Sciences, Texas A&M University, College Station, Texas

Several years have passed since the enactment of the North American Free Trade Agreement (NAFTA). Whether or not it has had the intended effect on our economy and that of our neighbors to the south is open to debate. As our vegetable acreage continues to decline, complaints are beginning to surface, attributing the 'sliding south' of the Texas vegetable industry to the negative impact of NAFTA. It is doubtful that NAFTA is the sole cause of our acreage decline; however, the Florida vegetable growers may have a strong case to support their belief in the negative effect of NAFTA.

The figures in the chart, taken from a recent issue of *The Packer*, indicate the rapid loss in market share that Florida has experienced since NAFTA. During the 1991-92 tomato season, Florida had a 70 percent market share. The market share dropped to approximately 35 percent during the 1995-96 season. This represent a 50 percent reduction in market share in 4 years! Mexico, on the other hand, increased their market share from approximately 10 percent in 1991-92 to 50 percent in 1995-96. Supporters of NAFTA claim that this was an inevitable situation, and that the pre-NAFTA tariffs were too low to have been a deterrent. I doubt that very many Florida tomato growers will agree with that assessment.



Texas Produce Convention

SEPTEMBER 10 - 13, 1997
CORPUS CHRISTI, TEXAS, CONVENTION CENTER

For more information contact Ray Prewett,
Texas Vegetable Association (210) 584-1681

Planting Method Affects Yield of Summer Squash

From an article by James E. Brown, Rudy P. Yates, Cynthia Channell-Butikes, and March S. West. 1996. Journal of Vegetable Crops Production, Vol.2(2):51-55.

Scientists from Auburn University in Alabama conducted a study to determine the effect of planting method on the yield of yellow crookneck summer squash, variety 'Dixie'.

Their investigation included the following planting methods: transplants grown on black plastic mulch (BPM) with spunbonded-polyester floating row cover (SPE); transplants with BPM; transplants alone; direct-seeded with BPM and SPE; direct-seeded with BPM; direct-seeded alone; and direct-seeded with SPE. The row covers were applied over these planting protocols immediately after planting, and were allowed to remain in place for approximately 20 days after planting.

Results obtained from this study indicated that the planting method had a significant effect on crop yield (Table 1). Transplants produced 51 percent more fruit than direct-seeded plants in the 2 seasons of this study. Direct-seeded squash did not perform as well as transplanted squash, regardless of mulch or row cover treatment. Neither black plastic mulch nor row cover had a statistically significant effect on total fruit yield.

Table 1. Effects of soil treatment, covering, and planting method on summer squash fruit yield and plant fresh weight in two seasons.

Treatment	Marketable yield lbs/A Total wt.
Soil treatment (ST)	
Black plastic mulch (BPM)	5,215a *
Bare soil (BS)	4,872a
Covering (C)	
Row cover (SPE)	5,189a
No row cover (NSPE)	4,924a
Planting method (PM)	
Transplant (TP)	6,063a
Direct-seeded (DS)	4,024b
Year (YR)	
1991	2,992b
1992	7,122a
Contrast	.....
1991 vs. 1992	NS (Not significant)
BPM vs. BS	NS (Not significant)
SPE vs. NSPE	.....
TP vs. DS	.
YR x ST	

* Means sharing a letter in common are not statistically different at the 5 percent level of probability.

The Role of Preplant Fertilizer with Drip Fertigation

This article by George Hochmuth appeared in Vegetarian 97-03, published by the Horticultural Sciences Department, University of Florida Cooperative Extension Service, Gainesville, Florida

Injecting fertilizer into the drip irrigation system is providing several benefits for nutrient management on the vegetable farm. Fertigation is particularly beneficial for the management of nutrients such as nitrogen and potassium, which are mobile in many light-textured soils. One often-asked question regarding fertigation programs is "What proportion of the total fertilizer amount should be placed in the soil as a preplant application?"

Our research and experience here in Florida shows that the answer depends on at least 3 issues. One issue concerns the nutrient in question, and the second issue relates to the native fertility of the soil being used. The third, and probably the largest issue, is the relative water-management capability of the drip irrigation system. We can look at these 3 issues individually.

PLANT NUTRIENTS. Certain nutrients are better managed with fertigation -- the soil-mobile elements such as N and K. However, a nutrient such as phosphorus (P) should be placed in the soil when the bed is formed and the mulch applied. Phosphorus does not leach from the vast majority of soils, so placing all of the P in the soil initially does not place it at risk of leaching from an untimely over-irrigation event. In addition, P can precipitate with calcium (Ca) in irrigation water containing large amounts of Ca, as is the case here in Florida with our water pumped from limestone aquifers.

Most recommendations call for all P to be applied preplant, but if an injection of P is required, precautions should be taken to insure that P remains solubilized during the injection. This is usually accomplished by acidification of the injected P solution or by injecting phosphoric acid.

Ethephon as a Controlled Abscission Agent on Paprika Pepper

From an article by Brian A. Kahn, James E. Motes, and Niels O. Maness entitled "Use of Ethephon as a Controlled Abscission Agent on Paprika Pepper" which appeared in HortScience, Vol. 32(2), April 1997

Traditional hand-harvests of sweet red pepper for processing as paprika result in a high percentage of marketable fruit, but are labor-intensive and expensive. Mechanical harvesting is essential to expand production of this crop. While a destructive mechanical harvest is efficient, the result is a mixture of marketable and unmarketable fruit. Unmarketable fruit reduce the value of the crop by diluting the intensity of the red pigment in the processed product. Unmarketable fruit often are separated from marketable fruit after harvest, but doing so requires time and increases costs.

One possible approach is to use ethephon to concentrate red fruit maturity. However, ethephon has given variable results as a fruit-ripening agent on pepper. The effectiveness of ethephon, when applied to pepper plants before harvest, varies with factors such as cultivar, rate, number of applications, and temperature.

An alternative approach to ethephon use is to eliminate unwanted blossoms or fruit at certain crop development periods. This should also assure more uniform fruit maturity, and thus reduce labor costs of multiple picking and separating of maturity classes for marketing. Ethephon has been used to selectively remove floral buds in several crops, including bell pepper. In order to determine if this approach could be useful in harvesting paprika, scientists at Oklahoma State University, conducted a study to identify a combination of ethephon rate and application date that would increase the percentage of marketable paprika pepper fruit in a once-over harvest.

Ethephon solutions of approximately 1,000, 2,000, 3,000, and 4,000 ppm were sprayed on the pepper plants. Treatments were applied on 23 and 30 September and on 9 October 1992. Average air temperatures Fahrenheit (F) on these dates were 61, 63, and 61, respectively. Treatments were applied on 15, 20, and 26 September and on 4 October 1993 to both cultivars. Average air means on these dates were 16, 26, 64, and 68 degrees F, respectively.

A single destructive harvest was made after a frost in each year to simulate grower practice. Dates of harvest were 9 November 1992 and 8 November 1993.

The results of this study indicated that total dry mass of harvested fruit decreased linearly as ethephon rate increased in all experiments. Marketable fruit, as a percentage of total harvested fruit mass, increased linearly with ethephon rate in 2 of 3 experiments. Ethephon decreased the percent of total harvested fruit mass due to green fruit in all experiments.

We recommend a single application of ethephon at about 2,000 to 3,000 ppm as a controlled abscission agent to increase the percentage of harvested red fruit in paprika pepper. The precise timing of the application will vary with the situation, but the last 10 days in September seemed an appropriate interval for southwestern Oklahoma.

The Role of Preplant Fertilizer with Drip Fertigation (Continued from Page 2)

SOIL TYPE AND FERTILITY STATUS. On very sandy soils, the placement of 20 to 25 percent of the total N and K in the bed with the P has been shown to lead to higher-yielding crops. This small amount of N and K helps the young plants establish a large root system, and provides nutrition to the crop during the early growth stages when large amounts of drip-applied water are not needed. The advantage of this preplant N and K is particularly evident in rainy crop-establishment seasons, such as the fall in Florida.

WATER MANAGEMENT. Preplant application of nutrients during bedding risks leaching of preplant nutrients as a result of either heavy rainfall or an inadvertent over-irrigation. Therefore, each grower should evaluate the nutrient-leaching risk in light of the potential for leaching. The coarser textured the soil is, the more critical this evaluation becomes. Water management is the key to optimal nutrient management, especially with drip irrigation. Maximize water-application efficiency and management, and you can do just about anything with the nutrient-application program. The nutrients will stay in the root zone until used by the plant.

SUMMARY. There is no universal recipe for nutrient management with a drip irrigation system. The specific plant nutrients required by the crop, the native soil fertility status, and water management in the field are key issues that need addressing. What works best for vegetable growers in some farming situations may not work in others. The considerations presented here should help with an analysis of the role preplant fertilizer application may play in your drip-irrigated vegetable crops.

Texas Agricultural Extension Service
United States Department of Agriculture
The Texas A&M University System
College Station, TX 77843

OFFICIAL BUSINESS
Penalty for Private Use $300

BULK RATE
POSTAGE & FEES PAID
USDA
PERMIT NO. G-268

Appearing Within . . .

- Is NAFTA Working For Us Or Against Us?
- Planting Method Affects Yield of Summer Squash
- The Role of Preplant Fertilizer with Drip Fertigation
- Ethephon as a Controlled Abscission Agent on Paprika Pepper

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture, Zerle L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.

Frank J. Dainello
Extension Horticulturist
Commercial Vegetable Crops
The Texas A&M University System
College Station, TX 77843-2134