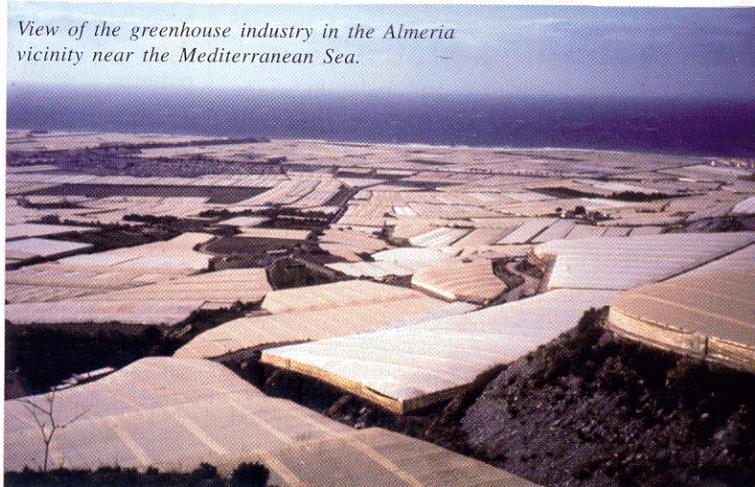


Can Florida Compete with the Spanish and Dutch Greenhouse Industries?

by Daniel J. Cantliffe and John J. Vansickle

Editor's Note: The following is Part 2 of a two-part series. Part 1 appeared in the June, 2002 issue of *The Tomato Magazine*. Daniel J. Cantliffe and John J. Vansickle are both stationed at the University of Florida, IFAS, Gainesville, Fla. Cantliffe is with the Horticultural Sciences Department, while Vansickle is with the Food and Resources Economics Department.

View of the greenhouse industry in the Almeria vicinity near the Mediterranean Sea.



Greenhouse Production Practices

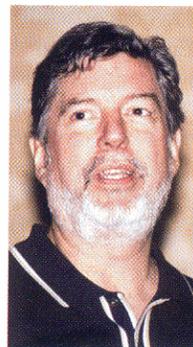
Almeria is located in the Andalucia region in southeastern Spain. It has an average temperature of 68°F with about 3,000 hours of annual sunshine. Besides the crops mentioned in Part 1 of this presentation, Almeria produces some 30 different vegetable species. Most of the producers are family-owned greenhouse operations and have low capital investments. Generally, they produce on 2.5 to 3.5 acres. Approximately 90 percent of tomato production cultivation is still being done by sand culture. This culture utilizes sand, gravel and manure, and most growers use drip irrigation. There is, to some degree, a scarcity of water and growers tend to use a lot of pesticide, especially against whiteflies and thrips, both of which spread various viral diseases.

Some producers are switching to more modern greenhouse types, including Dutch glass and plastic houses. Most of the world's vegetable seed companies have experiment stations somewhere in the vicinity. Over the past 25 years, production has increased dramatically, from approximately 600,000 metric tons in 1975 to 2.7 million metric tons in 1997-98. Almeria produce is sold via auction or through cooperatives. At present, approximately half of the total production from this area is exported to the

European Union, especially Germany, France and The Netherlands. For these reasons, quality control, food safety and pesticide residues are major concerns for producers from these regions and quality certification has become a priority. As such, Almeria has become very competitive, selling on the basis of high quality, not low price.

Because of location, climate and lack of water, Almeria is not urbanizing at a fast pace, although it is rapidly developing as an agricultural area. Throughout Andalucia the major sources of income are from agriculture, tourism and white marble. Agriculturally, citrus and greenhouse vegetable production are most important. Previously, agricultural production was based solely on grapes and citrus.

Originally, table grapes were produced on wire trellis systems. They were covered with plastic to induce earliness for the table grapes to be shipped to the European markets. Some growers began growing vegetables and, because of the greater profitability in growing and shipping vegetables, most, if not all of the grape acreage quickly dissipated during the 1970s and 1980s. In addition, a large amount of new acreage has been devoted to vegetable production. By 1997-98, 90 percent of Almeria's total agricultural production was from



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vegetables.

In The Netherlands, similar changes were taking place. Between 1980 and 1998 the value of fruits and vegetables almost doubled, reaching approximately \$2.5 billion. This figure represents 37 percent of the total Dutch horticultural production.

In Almeria, vegetables are generally grown as two types of crops. One is winter crops, such as tomato, pepper, cucumber and certain squashes; the other is summer crops, such as various muskmelons, watermelons and green beans. The production peaks are December-January wherein tomatoes, cucumbers, green beans and peppers are harvested and then again in May-June when many melons, especially the Galia-type, are harvested. Tomatoes and sweet peppers represent the greatest acreage

and are followed by watermelons and muskmelons (Galia). The most important tomato cultivar is the long shelf-life "Daniella." It represents about 80 percent of the total production. In the Netherlands, tomatoes, sweet peppers and cucumbers are the most important vegetable crops.

Comparing production per square meter of crops (tomatoes, sweet peppers, cucumbers, etc.) to The Netherlands, yields from the Almeria area are considered quite low (see Table 5). For example, in 1998 Almeria produced approximately 20,000 acres of tomatoes, or about 770,000 metric tons. In Almeria, growers are producing approximately 22 to 26 pounds of tomatoes per square meter versus approximately 90 in The Netherlands.

During the 1980s, due to low market prices, many growers in Almeria producing pot plants and cut flowers went bankrupt. For this reason, there is presently very little area devoted to such crops. This is not so in The Netherlands where cut flowers and pot plants exceed \$3 billion in value.

Approximately 90 percent of Almeria's

Table 5. Productivity (kg/m²) of various vegetables.

Crop	Almeria, Spain	The Netherlands
Tomato	10-12	42
Pepper	6-7	26
Cucumber	8-9	58
Snap beans	5	32

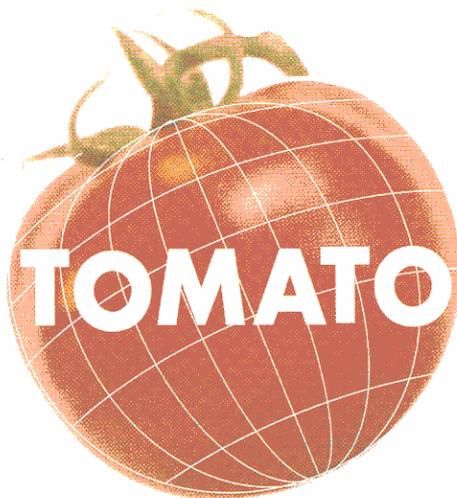
Sources: Smith and Taylor, 1999 and Calatrava-Requena et al., 2000.

greenhouse area is an artificial soil called Enarenado. The soil mix has been created to overcome the region's extremely poor indigenous soils. This is a soil mix drawn up by the local growers. It sits on top of the original soil base, wherein they put approximately 10 to 12 inches of new soil. This is partly clay and includes an inch of manure and about 4 inches of special sand. A gravelly bed sand placed on top. The remaining 10 percent of the area uses either perlite or rock wool as soil-less media. Production on this soil-less media is expected to increase in the future. Dutch producers generally use hydroponic systems with rock wool for a media. Some producers do well with the nutrient film technique.

Water quality is a prime factor in determining the price of land in Spain. Presently, water scarcity does not seem

to be a major issue for Almeria area growers but may in the future as more demands are placed on existing water supplies. There are about 200 mm of rain per year in the Almeria area, however, there is a requirement of 800 to 1,000 mm for greenhouse production. Water efficiency has improved dramatically, especially with the use of drip irrigation. However, because of high EC water, sometimes drainage may exceed 60 percent of the irrigation water.

As previously mentioned, most production is through family companies and averages 2.5 to 3.5 acres. Such companies generally retain low labor costs and have a strong motivation for work. Since the area is new to this type of agricultural production, second and third generation growers are now coming into the business. Because production



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becomes seasonal, so do the labor requirements. Producers use a lot of temporary labor, especially from African countries. Spain has one of the highest unemployment rates in the European Union. However, most of the labor is brought in from Morocco, various African countries and Central and South America. Certain eastern European groups are also migrating to south Spain for work. Recently there have been clashes between growers and immigrants, especially the Moroccans. This is largely due to poor working and living conditions for foreign laborers. Several growers have faced strikes and labor issues appear to be some of the greatest problems facing producers in the area. Dutch producers generally must look to workers from outside the country. Wages are high, generally exceeding U.S. costs for hourly labor. Also, the Dutch government tightly controls wages and worker rights.

Production Costs

Productivity in European greenhouses is more than three times that of Florida field production. Data reported by Calatrava-Requena et al. (2000) indicate that Spanish greenhouses growing fresh tomatoes in the Almeria region averaged 5,081 and 4,607 cartons (25-pound equivalents), respectively, in the 1996/97 and 1997/98 production seasons (See Table 6). These compare to yields in the Manatee Ruskin production area of 1,785 cartons in 1996/97 and 1,554 in 1997/98.

Preharvest costs for Spanish greenhouse tomatoes totaled \$10,339.85 per acre in 1996/97 and \$9,192.84 in 1997/98. Gross margins for paying for fixed costs and packing and marketing costs totaled \$13,249.91 per acre in 1996/97 and \$20,313.32 in the 1997/98 season. These gross margins compare to \$9,436.41 per acre for field production in the Manatee Ruskin area in Florida in the 1997/98 production season.

Costs of production between Almeria and The Netherlands differ somewhat. Broken into the three areas of production, marketing and total costs, it takes approximately \$0.12 per pound to produce tomatoes in Almeria and \$0.25 per pound in The Netherlands. Marketing in Spain costs another \$0.13 per

Table 6. Preharvest costs and marketing margins for fresh tomatoes produced in Spanish greenhouses, 1996-1997 and 1997-1998, compared to fresh tomatoes grown in the Manatee Ruskin producing area in 1997-1998.

	Manatee/Ruskin 1997-1998	Spain 1996-1997	Spain 1997-1998
Yield (25#/acre)	1,554	5,081	4,607
Average price (\$/25#)	\$9.15	\$4.64	\$6.40
Total Revenues	\$14,219.10	\$23,589.77	\$29,506.16
Preharvest costs (\$/acre)			
Fertilizers	\$326.22	\$2,395.50	\$2,124.46
Pesticides	\$1,143.18	993.66	767.20
Seeds	\$224.00	889.81	683.22
Water		653.20	709.89
Labor	\$462.64	\$4,778.85	\$4,319.48
Other	\$1,217.55	628.84	588.59
Total Preharvest Costs	\$3,373.59	\$10,339.85	\$9,192.84
Gross Margin (\$/acre)	\$9,436.41	\$13,249.91	\$20,313.32

Sources: Smith and Taylor, 1999 and Calatrava-Requena et al., 2000.

pound, while in Holland it is only \$0.07 per pound, leaving total costs for production and marketing of \$0.26 per pound in Almeria versus \$0.32 per pound in The Netherlands. As previously stated, Almeria exports most of its produce to Germany, France and The Netherlands. It also exports fair amounts to Poland, Hungary and Russia. Overseas, Canada and the U.S. are main export markets, although at present these volumes are very small.

The major difference between Almeria and The Netherlands is in energy and production costs. In Spain they are low, primarily due to natural climatic conditions, including good temperature and light. Also, greenhouse production costs in Spain are considerably lower than in The Netherlands, since many of the greenhouses are homemade and are primarily made of plastic. In The Netherlands, energy costs are considerably higher because of inherently poor light and temperature conditions in the winter season as well as higher costs in The Netherlands for labor and the use of more sophisticated greenhouse production systems. There, glass, computerization and soil-less media are the norm. The main issue for Florida growers is that Spain has managed to acquire a large market share in Europe and will now try to improve its export position by increasing its market share in other parts of the world, especially the U.S. Not only are prices competitive from Spain, but the quality of Spanish produce also is excellent.

Presently, the marketing scheme of auctions and/or cooperatives is not as efficient in Spain as in the U.S., The Netherlands and other areas. Also, transportation costs have increased dramatically, especially in the last year due to the increase in fuel prices. For production from Almeria to continue to increase, it will continually need to be more sophisticated in both production and marketing practices. There are several growers, especially in the Murcia area, that produce approximately 300 hectares of tomatoes. This equates to over 750 acres of greenhouse tomatoes for a single producer. These growers are well educated, seem to be financially sound and have new and exciting tomato products that they will be introducing into the U.S. marketplace this year. One such product is 'Baby Sweetheart' cluster tomatoes. These could be a high impact commodity for Spanish producers to break into

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the U.S. tomato market substantially.

In The Netherlands, rapid innovations have kept Dutch producers competitive. They are strongly vertically integrated and look to consumer- and retail-driven types of production. They thrive on producing high-quality products under environmentally sound production techniques. Unfortunately, the Dutch have the disadvantage of expensive raw materials, labor and a high demand for fuel in the winter season. Technologically, the Dutch are quick to adapt and innovate as needs demand improvements in their efficiency and effectiveness of production. The Dutch also have developed grower group organizations — small groups of growers with the same specific crop and in the same area. Within these groups, they visit each others' greenhouses and discuss matters related to production. Along with those at the national level, these groups operate under LTO, an organization of farmers and growers. LTO develops programs for producers and sets priorities for research. At this time, there is no effectively run extension service in Spain. There are several public and private research stations in Almeira. The Dutch privatized what they call their governmental advisory (extension) service several years ago, whereas the Spanish have never had an effective extension service cooperating with research center and university research programs.

Conclusions

Vegetable crop greenhouse production has increased throughout the world resulting in increased imports of greenhouse-produced vegetables from Canada, Mexico and Europe into the U.S. These vegetables compete with field-grown crops in U.S. supermarkets and institutional outlets. Higher productivity and competitive cost structures allow greenhouse vegetables to enter the U.S. and compete with field-grown tomatoes. It is critical that Florida growers develop new technologies to compete with the quality and cost of greenhouse-grown tomatoes. Increased imports from European sources are likely to continue and will force the U.S. industry to adapt to changes in consumer tastes that are being developed by these greenhouse-grown tomatoes. ■

calendar of events

September 4-6

27th Joint Tomato Conference, Ritz – Carlton Hotel, Naples, Fla. Contact: Florida Tomato Committee, telephone: (407) 894-3071; fax: (407) 898-4296; web: www.floridatomatoes.org.

September 15

Carmel TomatoFest, 12:30 to 4:30 p.m., Quail Lodge Resort, Carmel, Calif. Contact: www.TomatoFest.com or call toll free: (888) 989-8171.

October 9-10

Canadian Greenhouse Conference, International Centre, Mississauga, Ontario. Contact: Deborah or Bob Cobbledick, telephone (905) 945-9057; e-mail: info@canadiangreenhouseconference.com; web: www.canadiangreenhouseconference.com.

October 11-15

Produce Marketing Association's Fresh

Summit, New Orleans, La. Contact: PMA, telephone (302) 738-7100; web: www.pma.com.

November 10-12

International Pepper Conference, Club Maeva Miramar Hotel, Tamaulipas, Mexico. Fax: 52.833.213.4369; e-mail: pepper_conference@email.com.

November 15-16

19th Annual Hydroponic Grower's Conference, Radisson Hotel City Center, Tucson Ariz. Contact: CropKing, Inc., 5050 Greenwich Rd., Seville, OH 44273; telephone: (330) 769-2002; fax: (330) 769-2616; www.cropking.com; e-mail: cropking@cropking.com.

Note: To have your event listed, please send your information to: Editor, The Tomato Magazine, 417 North 20th Ave., Yakima, WA 98902; e-mail: brent@freshcut.com. Please send your information in at least 90 days in advance.



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