

Quick Response Report #134

**Citrus Growers Attitudes
in North-Central Florida**

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2000

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This material is based upon work supported by the National Science Foundation under Grant No. CMS-9632458. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

**Citrus Growers Attitudes
in North-Central Florida**

During the 1980s freezes in 1981, 1983, 1985, 1987, and 1989 dealt devastating blows to the thriving citrus growing industry of north-central Florida. Many groves at the "northern fringe of citrus cultivation" were permanently destroyed (or recovery became questionable), while others embarked on restoration by introducing new cultivars, improving methods of frost prevention, and implementing modern management techniques.

More than ten years after the damaging freezes of the 1980s, the industry has made a comeback in certain areas and vanished forever in others. No serious freezes occurred during the 1990s, and the question arose whether the surviving growers had gained a greater margin of security because of the innovations they had introduced and whether they were facing future frosts with greater confidence.

At the end of 1998, NOAA weather forecasts suggested the possibility of cold snaps and even killing frosts during the height of the winter of 1998-1999. Under this prospect, a study about the perceptions and preparedness of the citrus growers seemed appropriate.

Questions to be investigated were:

- Has the perception of freezes among citrus growers changed in the course of ten years without freezes?
- What innovative elements were introduced in citrus cultivation to allow for a more confident attitude?
- Do the premises applicable to environmental threat and group response apply to a population that has been successful during the last decade?

THE ANTECEDENTS

Citrus grove management practices and growers' attitudes toward freezes and other threats to their activities were surveyed by Doris Edwards between 1992 and 1994 as basis for her masters thesis. The findings - published as an article in *The Florida Geographer* (1999) and in the fascicle *Hazards of Citrus Growing in North-Central Florida: A Survey Report* (1999) - reveal the extent of the damage caused by the 1980s freezes and reflect the attitudes of the growers interviewed. Answers to a 42-item questionnaire by 80 growers in Marion, Putnam, Lake, Volusia, Orange, and Seminole counties were evaluated and are included in the fascicle which was printed with the support of Q.H.R.P.

RESEARCH STRATEGY

- a. In 1999 a summary of the survey was mailed to all growers interviewed by Edwards in the early 1990s who at that time had expressed an interest in knowing the results of her investigation.
- b. Next those growers were asked in a letter if they would agree to a follow-up interview.
- c. A new questionnaire was produced addressing particularly changes in attitudes and innovations in cultivating practices.
- d. Those interested in the follow-up study were then approached by telephone and asked whether they preferred a personal interview with a research person or would rather respond in writing and return the questionnaire by mail. Twenty-two chose the questionnaire and thirty agreed to a personal interview.

CHARACTERISTICS OF THE SAMPLE POPULATION

All 52 citrus growers surveyed are engaged full-time in citrus cultivation. They are a mature group of individuals with a median age of 65 years. The large majority have been in the industry for more than 25 years, which makes it possible to gauge their attitudes over time, starting with the "good years" before the 1980s freezes through the hardships of the 1980s and on to the last 10 freeze-free years.

The majority are very well informed. They belong to associations promoting citrus growing and marketing, are recipients of technical publications distributed by the state agency on citrus and by the corresponding branch at the University of Florida, and are aware of the state and federal programs of assistance and counseling. This awareness very much accounts for these individuals' openness to innovations introduced in the industry during the freeze-free decade.

The size of the holdings - 7 to 1505 acres - indicates a range from small growers, who tend their groves to complement other income, to large commercial entrepreneurs. More than 80% of those interviewed inherited their holdings and affirmed that the groves have been in the family for more than 80 years.

Generally, the citrus grower is a seasoned individual, knowledgeable in his field, and aware of the opportunities offered by innovations in agricultural sciences, the options offered by finance institutions, and the support available from government agencies and private associations.

PRELIMINARY FINDINGS

Based on an initial assessment of the responses, interesting findings emerge in four areas of citrus growing:

The Perceptual Aspect

When questioned about the threats to citrus growing in the region, the interviewees were prompt to recognize three issues: a) the damage caused by freezes, b) the threat of canker, and c) international competition and price controls.

Citrus growers in north-central Florida have an acute sense of the role played by climate in their activities. Although during the 1990s no cold snaps impaired the productivity of their groves, all growers remember the damage caused by the freezes of 1985, 1983, 1989, and 1987 (in the order of severity). Thus, freezes are regarded as the most important natural impediment to the industry.

In spite of the absence of freezes during the last decade, the interviewees expressed that the regional "climate" had not changed and that the threat of freezes was still latent. A small number of respondents mentioned the cyclical character of climate anomalies, revealing a keen environmental perception.

Recognition of site-specific freezes is now more acute than in the past when topography was largely ignored. The advantages of locations bordered by lakes and the usefulness of wind breaks are well known and considered now.

There is a strong belief among the growers that human ingenuity can deal with the negative consequences of climate fluctuations, which has increased their confidence in novel cultivation practices and the introduction of new cultivars.

Canker, a virus that particularly kills young trees, was mentioned by a third of the growers as being more dangerous than freezes. Strict monitoring of outbreaks and rapid extermination of sick trees are regarded as effective control measures.

While in the earlier survey, state intervention in price fixing and competition with citrus concentrates were mentioned by more than half of the respondents as negative external factors secondary to freezes and canker, in the present survey they were mentioned by one-fifth of the interviewees.

The Coping Strategies

The freezes of the 1980s prompted a thorough revision of the coping strategies utilized by citrus growers at that time. These ranged from giving up citrus cultivation altogether to adopting frost-protective measures. In the survey conducted by Edwards, nearly 37% of the respondents had opted for abandoning citrus cultivation. In the present survey this has been an option for less than 5% of the growers.

Among those who decided to stay, strategies varied from using traditional methods of freeze protection, such as water sprinklers, to changes in grove tending procedures. There is much reliance on technological fixes and the advances of agricultural sciences.

The present widespread use of sprinklers reveals that the growers have learned from the freezes of the 1980s. These advective freezes were caused by cold winds, which rendered ineffective protective devices for combating radiative freezes, such as oil burners, tire burning, or wind machines. Today all those techniques have been abandoned in favor of sprinklers, which protect the entire tree with an isolating coat of ice under conditions near 32°F. However, this development strains the area's water reserves. Concerns about the availability of water for such operations were expressed by more than half of the growers surveyed; this reflects a general growing problem associated with the competition for water between agriculturalists and residents in central Florida.

The Introduction of Innovations

Several of the interviewees acknowledged that innovations in cultivating practices and cultivars had reduced the damage caused by freezes. However, one should not that the absence of serious freezes during the 1990s has not provided an opportunity to really test the effectiveness of innovations. The innovations fall under the following categories:

1. *Use of freeze resistant rootstocks.* Citrus trees grown for commercial purposes consist of "scions" grafted to "rootstock." Rootstocks are selected according to their resistance to cold and disease. Sour orange is the rootstock still preferred by most, but its use has decreased compared with use in the early 1990s. Inroads have been made by Swingle citrumelo, now in second place, and Cleopatra mandarin in third place. Newcomers such as Carrizo citrange and Trifoliolate orange (although disease-prone) are being used, but in small percentages.
2. *Productive scions.* A substantial change has occurred in the use of scions in favor of trees that occupy less space and bear more fruit. Early maturation has become a prime consideration; growers prefer trees that produce fruit early in the season and thereby avoid freeze damage in January or February. Early-maturing Navels, Hamlins, and Parsons Brown have seen increased use, while late-ripening Valencias are declining. A surge in grapefruit planting reflects heightened consumer use. Marsh Red dominates, being preferred by 89% of the growers interviewed. A large increase in freeze-resistant hybrid mandarins reveals the growers' increasing preference for genetically engineered varieties.
3. *Tree spacing and microjet irrigation.* In comparison with citrus planting prior to the 1980s freezes, new groves have greater tree densities due to the use of smaller trees. Inter-row space has also been reduced, and thus evaporation is lowered. Watering has also become more effective: microjets have replaced former flood irrigation methods, which helps to conserve water.
4. *Scientific grove maintenance procedures.* Consistent with the previous point, and reflecting the view that a "healthy tree" withstands freezes much better than one not well-tended, citrus growers now seek the services of grove maintenance companies to assure the proper supply of nutrients to their trees and to battle diseases. This is a considerable change from previous decades; it definitely strengthens the growers' faith that their new groves will withstand an eventual killing frost in much better condition than in the past.

The Role of Governing Institutions and Policies

Although not climate-related, citrus growers perceive the intromission of state or federal rules and regulations as deleterious to their activities. This reveals a high degree of independence and spirit of initiative. On the other hand, more than half expect the state as well as the federal governments to assist them in emergency situations and to protect their activities from the increasing competition of citrus products from Brazil and countries affiliated with NAFTA.

CONCLUSION

The survey revealed an optimistic outlook of the industry when compared with that of the early 1990s when the freezes of the 1980s were still fresh in the growers' memory. There is strong confidence that the industry will be able to survive a future severe freeze considering the advances made in plant engineering, site selection, and grove management procedures. Only a strong frost will test these expectations.

A future survey in such an eventuality will be necessary. To this effect, it seems advisable to distribute the results of previous surveys to interested growers. Since they are well-informed individuals, they appreciate knowing the results of previous surveys in which they participated as references for future planning. These results also allow them to revisit previously held attitudes, concerns, or assumptions, and to advance an educated prognosis of the future of their activities.

In an agricultural activity, such as citrus growing, which is subject to a-periodic climate singularities such as freezes and droughts, or biological hazards such as canker, it is both helpful and prudent to maintain an ongoing survey of attitudes and practices, because they reveal substantial changes in perception and in the adoption of new coping strategies. This underlines the scientific and social importance of institutions that support longitudinal studies of hazards and disasters.

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November 16, 2000

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