Lemon Industry in California

new economic and technological developments create market interactions between fresh fruit and lemon products

Sidney Hoos

The following article is the first of a series on the economic situation and outlook of the California lemon industry.

Economic and technological changes of recent years—in conjunction with industry operations—have resulted in various problems for growers, processors, and distributors of lemons and lemon products.

The organizational structure of the lemon industry provides a setting whereby the interests of one participant are different from those of other participants, but the issues and developments are of such nature that they cut across the interests of all participants.

Returns—or value at the on-tree level—are of basic concern to growers who rely upon the fresh fruit market as the mainstay of their crop income. But the increased returns from the processed—or lemon products—outlets, beginning in 1949–50 and continuing until 1954–55, have attracted attention to the growing of lemons for processing. However, the increased returns from processing lemons stemmed more from the greater production of higher valued lemon products than from the increased volume of lemons processed.

The favorable position of returns from processed products changed in 1954–55 and the situation returned closer to the usual one prevailing prior to 1949–50. It is this type of interaction between the fresh and products markets, and their relative returns, which is the focal point of this study.

Among a large number of influences on current and prospective developments in the lemon industry are the new and potential plantings of lemon acreage in the California-Arizona desert area and in Florida; importations from foreign production; market relationships between fresh lemons and lemon products; the longer term market potentials for lemon juice products; and consideration of the lemon products marketing order and its operation.

Plantings

The improved returns to lemon growers—in some of the recent years—generated an interest in new plantings of lemon acreage. The higher level of on-tree returns from fresh shipments during the 1950–51 to 1953–54 period—and the unprecedented levels of on-tree returns from lemons used in products—attracted attention. Many growers who had not previously considered lemons as a production alternative began to give serious attention to the crop, and some went forward with plantings.

Several areas may be considered as potential new sources of lemon supply for the fresh market and for the products market.

The Yuma Mesa of Arizona—a recognized citrus area—has contrasting high summer temperatures and relatively cold periods in the winter. As part of the desert area, the Yuma is characterized by sandy soil which does not hold water well. Yet, with irrigation developments, water is not in short supply and the cost of irrigation water probably averages less per acre per year than in California lemon-producing areas.

The new plantings of lemons in the Yuma are, in large part, on acreage that otherwise would likely be used for alfalfa as an alternative, and perhaps some acreage could go to early grapes. An Arizona state regulation requires Arizona-grown nursery stock and a limited stock supply in several past years probably slowed down plantings. It is estimated that of a total of about 3,000 acres of lemon trees on the Yuma Mesa, 2,500 acres have been planted in the past two or three years.

The Yuma crop is harvested once a year—in the late fall and early winter—and may be planted primarily for the lemon products market outlet. In that case, interest in further plantings in the Yuma may be related to the economic status of the lemon products market.

The Salt River Valley of Arizona has also attracted attention as an area where there have been new plantings of lemon trees, although the water situation there is probably less favorable than in the Yuma Mesa.

Present lemon acreage in the Arizona Salt River Valley is estimated at about 1,100 acres out of a total of about 15,000 acres of citrus. As in the Yuma, the lemon crop is harvested during the October-December period.

For both the Yuma Mesa and the Salt River Valley areas of Arizona, the physical base for further plantings is evident. The outcome depends on potential returns which are considerably less than they were three or four years ago. Marketing problems rather than production problems appear to be the major determinant of prospective planting intentions in Arizona.

It is only in the past few years that Florida has attracted attention as a source of lemon supplies. This attention has coincided with the growth in the higher valued lemon products—such as concentrate for lemonade—and has followed certain years when supplies for concentrated lemonade were light.

In prior years it was recognized that Florida could grow lemons, although not varieties and qualities conventionally acceptable for commercial fresh shipment. Where fresh fruit appearance and keeping quality are minor and other characteristics are of major importance—as in fruit destined for processing immediately after harvest—the Florida lemon assumes a different position.

There has been a relatively sharp increase in Florida lemon plantings, particularly in 1953–54 and 1954–55. Whether the uptrend will continue is not yet clear but an interest in lemon plantings has been excited in Florida.

In the summer of 1954, there were only a small number of producing lemon trees in Florida although some 600 to

Concluded on page 15

CALIFORNIA AGRICULTURE

Progress Reports of Agricultural Research, published monthly by the University of California Division of Agricultural Sciences.

William F. Calkins.....*Manager*
Agricultural Publications

W. G. Wilde.....*Editor and Manager*
California Agriculture

LEMONS

Continued from page 2

900 acres were planted the previous fall and winter. Also, some budding of old stumps took place. It is widely stated that some acreage of grapefruit was budded to lemons. Probably there are about 3,000 acres of new plantings of lemons in Florida. It has been reported that 50,000 boxes of Florida lemons will be processed into juice in 1956.

In Florida, as in Arizona, the production potential exists. The real impact—of the production—will be on both the fresh and processed products markets. One important reason—for California growers—for that impact is that the flow of lemons into products is not controlled in Arizona or Florida as in California. Yet important indirect effects can spill over into the fresh shipping market because—in terms of economic operations—the fresh and processed markets are more closely interrelated than they were in the prewar and immediate postwar years.

About 600 acres of lemon plantings in the California desert area can be documented, including nearly 100 acres from five to seven years old. More new lemon acreage may be in prospect for the California desert area. However, the cold winter temperature—with the resulting risk of freeze damage to the trees—is a major uncertainty and is likely to be the main limiting factor, although there seems to be some opinion that there are sufficient warm sections, as in the Coachella Valley, where lemons can be grown successfully.

As in the Yuma Mesa and the Salt River Valley of Arizona, California desert lemons are mainly a once-a-year crop, with the economic outlook depending a good deal on the strength of the lemon products market.

When potential new plantings and lemon production are considered, developments in foreign countries must not be neglected. With the economic incentive, Italian production could well increase and provide additional export surplus in the form of products destined for the American market. In addition to Italy, lemons from Chile, Spain, and Turkey enter into world commerce. The effects of such potentialities are of direct concern to the outlook for the products market as an outlet for domestic-grown lemons.

In consideration of potential production from new plantings of lemons, historically important producing counties in California—Ventura, Los Angeles, Santa Barbara, San Bernardino, Orange—require attention. Reliable data on nonbearing lemon acreage in California since 1950–51 show a relatively substantial increase for the past two years; but the total lemon acreage in the state is under the level of 10 years ago. Those earlier levels can be regained if growers anticipate profitable operations from expansion. Moreover, lemons from these sources are not fall harvested primarily for products but have direct effects on the fresh and the processed products markets.

Sidney Hoos is Professor of Agricultural Economics, University of California, Berkeley.

The second article in this series will appear in September.

ISOPROPYL

Continued from page 6

number of orchards in the vicinity of Corona. In addition to these, a continuous history of both isopropyl ester and diethanolamine salt forms added to single annual applications of oil spray applied to mature Valencia orange trees near Tustin was available for the period of 1946 through 1953. Evidence from surveys conducted in these orchards showed that damage to the trunk bark at the soil line or other symptoms of injury had not occurred from the use of the isopropyl ester of 2,4-D.

Careful use of the isopropyl ester of 2,4-D—at the correct concentrations—on mature trees should safely give the desired responses.

Henry Z. Hield is Associate Specialist in Horticulture, University of California, Riverside.

L. A. Riehl is Associate Entomologist, University of California, Riverside.

T. A. De Wolfe is Associate Specialist in Plant Pathology, University of California, Riverside.

POLLUTED AIR

Continued from page 10

are important to the successful operation of the filters, they should be designed according to the engineering principles of air conditioning equipment.

Air Pollution Crop Survey

The occurrence and distribution of air pollutants in California were determined by reporting plant damage in a statewide experimental survey conducted in 1955. The response of plants to specific air pollutants permits the identification of toxicants, such as ethylene, fluorides, herbicides, ozone, sulfur dioxide, and oxidized hydrocarbons, or smog. Although instruments are available for the measurement of ozone, sulfur dioxide, and some atmospheric oxidants, there is no suitable instrumental measuring system for ethylene, fluorides, herbicides, and the airborne toxicants which cause oxidized hydrocarbon damage.

The survey covered 40 field and glasshouse-grown crops and eight sensitive weeds. A total of 2,668 reports from 51 counties showed 544 cases of plant damage due to air pollution in 12 counties in and about the San Francisco and Los Angeles areas.

Results of the air pollution crop survey in California in 1955. Solid black areas report plant damage; lined areas report no plant damage. No reports received from white areas.

The air pollutants responsible for plant damage are recognized in decreasing order of importance as smog or oxidized hydrocarbons, ethylene, fluorides, and sulfur dioxide. Smog is widely distributed within the air basins associated with urban development. Fluorides are apparently distributed near and on specific industrial sites. Ethylene seems to be confined to urban areas, although this may be due in part to the fact that ornamental plants, such as carnation and orchid, are usually grown near large population centers. Sulfur dioxide damage rarely occurred and was usually confined to specific industrial locations.

Surveys of economic loss to agriculture in the affected areas are in progress.

J. B. Kendrick, Jr., is Associate Plant Pathologist, University of California, Riverside.

E. F. Darley is Associate Plant Pathologist, University of California, Riverside.

John T. Middleton is Plant Pathologist, University of California, Riverside.

A. O. Paulus is Extension Plant Pathologist, University of California, Riverside.

The above progress report is based on Research Project No. 1633.

The air pollution crop survey was conducted with the co-operation of the University of California Agricultural Extension Service.