Current Economic Research

agricultural economic studies cover farm management, conservation, marketing, commodity analyses

Sidney Hoos

Current research projects in agricultural economics are planned to provide adequate bases for constructive decisions pertaining to agriculture.

Work in farm management and production includes the study of the most effective systems of protecting citrus groves from frost damage under varying conditions existing in California. The purpose of the investigation is to determine the conditions under which benefits from frost protection to the grower are greater than the costs.

Conservation

To find out how to measure the direct benefits of soil conservation, a case study is in progress to determine the effects of conservation practices on apple yields. The age distribution, natural factors such as soil and climatic characteristics, and management practices are considered. The objective of the project is to ascertain the effects of conservation management practices on the costs and returns for different natural conditions.

Another current project appraises the physical, economic, social, and legal aspects of the ground water problem in California.

About 40% of the total land area of California is owned and administered by the federal government, and a major use of this land is for grazing by private ranchers and farmers.

Economic research studies are being made of the problems of public grazing land tenure and utilization to provide leads to the efficient and equitable use of public lands for grazing.

Marketing Investigations

An important part of the complicated economic system is the marketing structure which is concerned with getting farm products from the primary producers to the ultimate consumers.

In recent years many research projects have been initiated. Some of them are specialized and deal with only local problems while others are of general interest. But nearly all of the marketing projects are concerned with one or more of the following four points: *1*, whether any particular operation or process could be performed at a lower cost without sacrificing standards of quality and service; *2*, whether the market operates smoothly, quickly, and effectively in equating supplies of and demand for farm products both in the short run and in the long run; *3*, to what extent new techniques affect established marketing practices and the supply and demand for particular products; *4*, and how specific types of governmental activities affect the efficiency of marketing operations and procedures.

As an example of part of the program pertaining to marketing costs and efficiency, operations in a number of deciduous fruit packing houses are being analyzed.

Economic statistical analyses are being made of the daily volume of plant output and daily labor use; the costs of materials, power, and operating expenses; investments and annual costs for buildings and equipment. The data are being studied to find out how the costs of specific packing house operations are influenced by such factors as plant capacity and volume handled, the organization of space and equipment, and by work methods.

The statistical analyses are supplemented by engineering studies of plant layout, equipment, and methods, and by studies of the effects of proposed plant reorganizations on operating costs. Time and motion studies of key operations are included.

Economic research studies on citrus packing house operations involve a series of phases bearing upon improved efficiency in citrus marketing operations. These phases include a re-examination of packing techniques in orange houses, revised sampling techniques for use in juice plant operation in respect to equity problems and to blending techniques—and bulk handling problems.

The workings of auction markets for live poultry and cattle are being analyzed: The operations of the recently established live poultry auction in Petaluma; and the part livestock auctions—estimated at about 80 in California—play in the marketing of livestock in the state.

Milk prices in California are established by a public agency, and not set on a free market, so it is essential to determine the importance of economic factors which are no longer free to express themselves through the mechanism of price. Hence, economic research on milk and milk products aims at a more complete understanding of the contribution of the interrelated forces and their effect upon the determination of milk prices. This involves research in price relations between markets, uses, pricing formulas, quality premiums, effects of fat differentials in terms of returns to producers, cost to distributors, and the general welfare of consumers, as well as the influences of sanitary requirements on the prices and supplies of milk.

Studies are being made of the behavior of prices and margins of such farm products as fruits, tree nuts, and vegetables of which a total of almost 3.5 million tons are marketed annually by California for fresh consumption. The movement of selected products from the producing area to the consumer are being investigated. Included in the studies are the amounts of cross-hauling and back-hauling that might be eliminated to obtain more efficient marketing; the types of buyers and sellers, and their relative importance; and the size of the marketing margins taken by dealers before the fruit or vegetables reach the retail store.

Another project is concerned with the shipment of fresh citrus fruits—oranges, lemons, and grapefruit—to eastern markets. With California competing with other producing areas, it is important to understand the behavior of citrus prices in general, and to know the price and marketing differences between California citrus fruit and that from other states. Marketing margins for oranges are being compared, and the impacts of the increased use of canned and fresh-frozen juices on the consumption and prices of fresh oranges investigated.

Commodity Analyses

A number of continuing studies in progress are on factors affecting the annual average prices of California farm products. Included are statistical analyses of supply and demand for products grown in the state.

These investigations provide California agricultural industries with information for use in formulating their production and marketing policies and plans. Studies

Continued on page 14

WALNUT

Continued from page 4

The dry ingredients should be slurried, and added to the spray tank—with agitator going—when the tank is one third to one half filled with water. The oil should be added when the tank is three fourths or more full. This treatment does not appear to cause an increase in orchard mites over that which occurs where no DDT is used.

In areas where the codling moth has not presented a serious problem, the DDT wettable powder can be omitted from the spray. A single, thorough application of the spray mixture should result in adequate control of the codling moth, if applied before the first brood of larvae begins to enter the developing walnuts. This is just before, or about the time, the average diameter of the nuts reaches one half inch, and in the Linden area this is usually about the first week in May.

The aphicide to use in combination with the codling moth spray applied by a conventional sprayer would be one of the following: 2⅔ ounces of 25% parathion; one half pound of 25% lindane; one pound of benzene hexachloride containing 6% gamma isomer; one pound of 14% nicotine dry concentrate; or ⅛ pint of 40% tetraethyl pyrophosphate in 100 gallons of water.

Under no conditions should benzene hexachloride be applied later than in the early codling moth spray and then never at higher rates than the above amount. There is some danger of off-flavor to the nuts.

When application is made by air carrier sprayer satisfactory results in codling moth control may be obtained with 50% DDT wettable powder at the rate of two pounds per 100 gallons of spray.

Regardless of the number of trees per acre, the dosage—in terms of the amount of 50% wettable DDT powder—should be 7½–8 pounds per acre.

Although 1950 investigations showed that a liquid depositor could be substituted for the oil and dry DDT depositor, the later is recommended pending further studies with the liquid depositor. It appears that the following mixture is the best to use for codling moth and aphid based upon investigations to the present time:

50% DDT wettable powder	**10 pounds**
DDT depositor	**3 pounds**
14% nicotine dry concentrate	**9 pounds**
or	
25% wettable parathion	**1¼ pounds**
or	
Benzene hexachloride (6% gamma isomer)	**9 pounds**
Light medium summer oil emulsion	**3 gallons**
Water	**500 gallons**

To insure the proper rate of application, the optimum number and kind of nozzles and the rate of speed to travel for the spray rig in use, should be known.

Where these concentrations are used approximately 400 gallons of dilute spray should be applied per acre.

To gain satisfactory aphid control with such insecticides as parathion and tetraethyl pyrophosphate, it is necessary to obtain exceptionally good kills. This means that the aphid population should be reduced to such a low level that it is nearly impossible to find any live individuals following treatment. Insecticides also destroy the natural enemies of the aphids, and if many aphids escape treatment they will soon increase to a destructive level.

To avoid any possibility of aiding in the selection of a resistant strain of aphid it will probably be a desirable practice to alternate two different insecticides in the aphid control program. For example, parathion might be used in one treatment and nicotine dry concentrate in the next.

Insecticides used for the control of walnut insects are poisonous, and care should be taken in handling and applying them. Particular caution should be used with parathion, and tetraethyl pyrophosphate. Precautions as given by the manufacturer should be observed.

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ECONOMICS

Continued from page 6

of orange and lemon demand, of almonds, of canned cling peaches, canned asparagus, canned apricots, and canned pears are being used in this way.

Various statistical data are compiled which are necessary to chart trends in production, shipments, uses, and prices of many commercial crops produced in California.

A comprehensive set of index numbers on major aspects of the state's agriculture is being kept up to date. These index numbers measure—for the state as a whole—changes in production, shipment, and prices of major commodity groups.

Another example of the compilations necessary, are the statistics on temperatures and related factors being compiled in connection with a study on the development of frost insurance for crops such as citrus.

The current situation and outlook for many agricultural commodities are evaluated. Examples include commodity studies on apples, asparagus, avocados, dried beans, eggs, grapes, lettuce, milk and milk products, olives, peaches, pears, plums, tomatoes, walnuts, sheep and wool.

Situation and outlook bulletins on lemons and oranges are in preparation. Also a detailed economic analysis is being made of the complicated interrelations existing among the grape industries including wine, raisins, and fresh shipping grapes.

To evaluate the situation and outlook for a crop, it is necessary to have an adequate picture of the national situation, and even the international situation for some crops. Trends in items such as national income, industrial production, employment, and the general price level must be recognized.

National agricultural policy on production, price supports, and marketing agreements affects California agriculture. The state also has its own legislation on marketing agreements and orders. These types of governmental influences are major aspects of some of the agricultural industries in this state.

Adequate emphasis on these—and other—factors is a necessary part of the research by the Division of Agricultural Economics to provide useful information for the state's agricultural industries.

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PREDICTION

Continued from page 3

Six weeks after full bloom the heat units for that period are calculated, placed in the formula, and the prediction made.

Two mathematical formulae are used. The first determines how close the relationship of heat accumulated for the first six weeks after full bloom is to the period between full bloom and harvest time. If a high correlation exists, it may be assumed that the prediction of harvest time halfway through the season may be good to excellent.

The second formula predicts the number of days between full bloom and harvest time. In calculating the harvest time of Blenheim apricots at Brentwood in 1950 the computation gave a figure of 103 for the predicted number of days between full bloom and harvest. Since full bloom occurred February 27, harvest was predicted for June 9. Actual harvest began June 8.

The method has been applied to similar data for Bartlett pears and French prunes with good results.

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