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The Agricultural Situation And The Outlook In Mid-'47

H. R. Wellman

Condensed from an address delivered before the California State Association of County Assessors, Sept. 2, 1947, San Francisco, California.

The outstanding fact in the present agricultural situation is the current high level of farm incomes.

Up to 1945, net farm income in California increased more rapidly than in the country as a whole. Over the past two years production expenses of California farmers have risen about as much as cash receipts from farm marketings.

During the first four months of this year cash receipts from farm marketings in California were nine per cent larger than in the corresponding period of 1946. This gain occurred in livestock and livestock products; cash receipts from crops were slightly below last year.

Among the major classes of agricultural products, fruits alone are bringing less money this year than last. But fruits are a very important component of California's agriculture, much more so than in the rest of the country. In 1946, for example, 35% of California's cash receipts from farm marketings came from fruits; in all other states combined only four per cent came from fruits.

In March of this year the index of prices received by farmers in the United States reached a new high record, 20% above the 1946 average and 125% above the 1941 average.

Prices Result of Demand

The explanation of high farm prices is to be found in the demand situation.

Domestic demand is exceptionally strong with national income and employment at record high levels. Foreign countries are eager for our exportable surpluses.

The 1947 farm output in this country is large and is bringing high prices. Thus far in 1947, national cash receipts from farm marketings have run well ahead of those of 1946.

Farmers are in an excellent financial position; in the aggregate they have reduced their debts substantially since 1940, and in addition have accumulated large liquid assets.

The Outlook

Despite the current highly favorable situation farmers are somewhat apprehensive as to the future.

This apprehension stems in part

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Pre-emergence Spray For Weed Control In Sugar Beets Seeded In Undisturbed Soil Successful

W. W. Robbins and Roy Bainer

Preliminary field tests on the University Farm, Davis, indicate that pre-emergence spraying offers promise as one method of controlling weeds in sugar beets. The method may be applicable to other row crops.

The field tests were as follows: In December the field was disked and floated; a portion of the area was left flat, the remainder ridged and formed into beds; the field was left in this condition throughout the winter; seedings to sugar beets were made on February 24 and March 12.

At the time of seeding there was a good growth of various winter weeds, mostly in the seedling stage.

Decorticated sugar beet seed was drilled in at three different depths: 1 inch, 1½ inches, and 2 inches. A precision drill was used, the seeding rates ranging from four to five pounds per acre.

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Control of weeds in sugar beets by the use of pre-emergence sprays. A. Normal weed growth at the time of spraying. B. Adjacent soil after spraying. Beet seedlings appeared in these plots within five to six days after spraying. C. The strip of weedy growth in the middle was unsprayed while the soil on either side was sprayed. D. The plot in the right foreground was sprayed, the surrounding soil was not sprayed. Plots C and D were neither cultivated nor irrigated. The photographs of these two plots were taken about 45 days after spraying.

Bulk Handling of Milk By The Ranch To Factory System

E. L. Jack and R. L. Perry

Milk-holding tanks on dairy farms, used in conjunction with tank trucks, are bringing about savings to the dairyman and to the milk buyer through the elimination of the ten-gallon milk can.

Traditionally, milk on the farm is run over a cooler to bring the temperature down below 50°F. It goes from the cooler directly into a ten-gallon can where it is held in a cold room until hauled to the milk plant.

In this new method the milk goes into a large storage tank on the farm instead of into the cans. It is pumped from the storage tank into a tank truck and hauled to the milk plant.

This bulk-handling method saves a considerable tonnage in hauling; does away with handling the cans on the ranch, on the truck and in the plant; recovers more milk than is possible in cans; and does away with can washing.

Direct Benefits to Dairyman

Some of these savings benefit the dairyman directly. He does not have to have someone attend the cooler during milking to fill the cans and put them in the cold room. On larger dairies this one feature alone may save the expense of one man.

The dairyman also gains directly in the amount of milk for which he is paid. Under the tank system he is paid for all the milk that is in the tank when the truck arrives. It is measured there directly. Under the can system he is paid only for the amount of milk that drains from the cans at the milk plant receiving platform. Approximately one-eighth of a pint remains in each can and therefore is not weighed. This additional recovery of milk is estimated by one firm to increase the annual receipts of a dairyman shipping twenty cans per day by 750 pounds a year.

There is also a great savings in hauling. A ten-gallon milk can which holds 86 pounds of milk weighs in the neighborhood of 25 pounds when empty. This means that approximately one-fifth of the total load of milk in cans comprises container weight, rather than milk weight. At prevailing rates milk is hauled in tank trucks from ranch to factory from one-half to six-tenths of a cent per gallon cheaper than in ten-gal-

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Citrus Orchard Cost Study And Analysis Made In Orange County Over 21-Year Period Is Reported

Harold E. Wahlberg

Over one hundred citrus growers in Orange County have cooperated with the Agricultural Extension Service for the past 21 years in a cost study and analysis of orchard management.

The growers furnished detailed cost reports on their orchard operations. The reports were summarized and divided into two groups—the higher return orchards and the lower return orchards. An average was struck for the entire study. A wide range of costs was reported in most items.

Fertilization

Fertilization is an example of the wide range of operational costs.

In 1946, one grower reported a fertilizing cost of $137.18 per acre. Another grower spent only $7.16 per acre. The best 20 orchards averaged $41.03 per acre and the average of all orchards was $53.65 per acre.

In most years the orchards with the highest fertilizing costs were not the top orchards. The extra dollars spent, often for the more expensive mixes, did not justify the added expense.

It appears from these studies that about three pounds of nitrogen per mature tree, in normal thrift, is optimum. Very large trees may use four to five pounds.

Last year, three pounds of nitrogen per tree at 80 trees per acre, cost

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Control Measures In Trichomoniasis Abortion By Cows

H. S. Cameron

Abortion and sterility constitute major sources of loss to the dairy cattle producer.

Infection is probably responsible for the greater portion of these losses, and brucellosis is, by far, the leading offender in the classification.

Bovine trichomoniasis should be considered as next in importance, because serious losses can result when the infection gets into a herd and is allowed to persist.

Unlike an abortion storm from brucellosis the onset is very gradual, the first thing noticed being an unusual number of cows, assumed with calf, returning to heat.

Bull is Carrier

The disease is transmitted only by

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Water Infiltration Rates Into Yolo Loam Studied To Determine Irrigation Efficiency Factors

Arthur F. Pillsbury

Water infiltration rates into Yolo loam during irrigation were measured in 96 basins in a series of experiments conducted in Los Angeles County over a period of five years.

Several different treatments were carried on, permitting the isolating of a number of factors which influence the rate of water entry into the soil.

Organic Matter

Organic matter is known to improve soil structure and infiltration rates, but the belief often prevails that to do so it must be incorporated into the soil.

Applications of straw or other crop residue as a mulch were found to be at least as valuable on the surface as when incorporated in the soil—provided they were kept relatively moist so as to decay rapidly. Normally, there was insufficient decay through the summer to cause appreciable infiltration rate increases.

After a mulch had been in place for a while during the winter, increases in the rates of water infiltration were up to seven times greater than the rates in those plots without mulch.

Benefits from organic matter are largely from the products of the rotting mulch which are carried into the soil by the water.

Shade

Since organic matter mulch shades

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Pre-emergence Spray For Weed Control In Sugar Beets Seeded In Undisturbed Soil Successful

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There was no disturbance of the soil prior to seeding. The seed was drilled in through the weeds.

It is known that with most weed species only those seeds germinate which are within the upper one-quarter to one-half inch of the soil.

If, as is the usual practice, the first crop of weed seedlings is destroyed by cultivation, the stirring of the soil brings more weed seeds near the surface and soon another crop of weeds appears.

Pre-emergence Sprays

Prior to emergence of the sugar beet seedlings, the entire plot area was sprayed with several different general contact weed killers.

Average Results of Pre-emergence Sprays
(All depths of planting averaged)

Spray Treatment	Per cent of Germination Stands: Seeding date, Feb. 24, Herbicide applied 1 to 2 days before emergence of beet seedlings	Seeding Date, Mar. 12, Herbicide applied about 6 days before emergence
1. Diesel oil (straight)	44.8	65.1
2. Diesel oil and Dow Generals* (1 qt. to 30 gals. of oil)	14.8	53.4
3. Diesel oil (1 part), water (4 parts), and emulsifier	47.0	47.4
4. Diesel oil (1 part), water (4 parts), Dow General (1 qt. to 30 gals. of mixture) and emulsifier	——	56.4
5. Diesel oil (1 part), water (9 parts) Dow General (1 qt. to 30 gals. of mixture) and emulsifier	10.4	52.8
6. Diesel oil (1 part), water (1 part), Dow General (1 qt. to 30 gals. of oil) and emulsifier	11.9	75.2
7. Diesel oil (1 part), water (1 part), 4 lbs. sulfur to 30 gals. of oil, and emulsifier	46.1	63.5
8. Diesel oil (1 part), water (4 parts), pentachlorophenol (4 pounds to 100 gals. of oil) and emulsifier	35.2	54.1
9. No treatment	52.1	72.4

*Active ingredient, dinitro secondary butyl phenol.

Most of the above sprays were applied at the rate of 50 gallons per acre, while certain plots were covered at the rate of 30 gallons per acre.

Results

The results may be summarized as follows:

1. All applications gave a satisfactory weed kill.

2. The rate of kill was more rapid in the case of those sprays which were "fortified" with either Dow general, sulfur, or pentachlorophenol; and, the rate of kill increased with an increase in the amount of oil mixture contained.

3. Little injury to emerging beet seedlings resulted from any of the applications when they were applied about six days before their emergence; injury to beet seedlings occurred, however, when the materials fortified with Dow General and pentachlorophenol were applied one or two days prior to emergence. This is reflected in the accompanying table.

4. The sugar beet seedlings in sprayed plots developed in relatively weed-free soil, and without the competition which young weeds cause. These beet seedlings soon surpassed those which emerged in unsprayed plots in which beet seedlings entered into competition with weed seedlings.

5. Cultivation of sprayed plots was not necessary until well after thinning.

6. The cost of blocking and thinning sprayed plots was much less than that on unsprayed plots.

7. Analysis of germination stands resulting from different seeding depths shows a greater percentage of "singles" from seeds at two inches than from those at shallower depths.

Advantages

Advantages of pre-emergence spraying, based upon the above field tests, appear to be as follows:

1. It permits the preparation of seed beds in the fall, their subsequent settling during the winter, and seeding without any preliminary treatment, that is, re-working of the beds.

2. The best seedlings emerge in a weed-free soil, and lacking competition, make rapid, vigorous growth.

3. The first cultivation after emergence may be delayed until the seedlings have attained considerable size.

4. It favors the use of the precision drill, and a low rate of seeding.

5. It reduces the cost of blocking and thinning, probably making possible the accomplishment of these two operations in a once-over with the long-handled hoe.

Other Factors to be Considered

It appears from these field tests that it is highly advantageous that weeds be sprayed when small—one to two inches high — and succulent. Weeds that make their growth during cool, moist weather are less resistant than those of equal size that develop during warm, dry weather. The more resistant weeds, including weedy grasses, require fortified oil.

The fortifying reagents and the emulsifier, even though required in small quantities, add considerably to the cost of the spray materials, but at the same time increases their effectiveness. Further field tests this coming season will aim at reducing costs, and adapting equipment and methods of application of pre-emergence spraying.

There are indications that if pre-emergence spraying is to be practiced, beet seeds should be planted deeper than usual—soil and weather conditions permitting—in order to delay their germination and to secure a greater percentage of "singles."

W. W. Robbins is Professor of Botany and Botanist in the Experiment Station, Davis.

Roy Bainer is Professor of Agricultural Engineering and Agricultural Engineer in the Experiment Station, Davis.

Control Measures For Barley Stripe Are Recommended

Coit A. Suneson

Stripe is one of the most destructive diseases of barley in California.

For more than 10 years barley growers have had available a highly satisfactory seed treatment for its control, yet field surveys in each year since 1943 show that more than 20% of the barley fields in the state have stripe. An increasing proportion of fields have more than 10% of the plants killed by stripe.

Recommended Treatment

Proper seed treatment with organic mercury dust will control stripe.

Two things are fundamental: 1. Precise amounts of the fungicide—1 oz. per 100 pounds—must be applied; 2. The dust must contact all seeds.

The dust is a poison and very offensive to some people, but as yet there is no other way for growers to control stripe.

Breeding Resistant Varieties

Plant breeders have not been able to produce severe stripe epidemics at will which is necessary when breeding for resistance.

Through the use of male-sterile barley, a round-about method has now been devised and work begun for transferring resistance into several of the leading California varieties.

An early result from this work has permitted answering the question—How much does stripe reduce yield?

The data from 28 paired plots, comparing variously diseased plants over a range up to 60% stripe-disease with healthy plants, indicate that for every plant among 100 killed by stripe there is a three-quarters of one per cent reduction in yield.

This situation illustrates why we are seeking to produce stripe resistant varieties of barley, while urging farmers to treat their present seed—and to do the job well.

Coit A. Suneson is an Agronomist, U.S. Department of Agriculture and an Associate in Agronomy in the Experiment Station, Davis.

The Agricultural Situation And The Outlook In Mid-'47

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from the present unsettled state of the world.

Another cause for distrust is the present inflationary boom in this country. This boom is fully as great as that which followed World War I and which broke in the summer of 1920. Within the brief span of 12 months farm prices fell on the average of 50%.

There is no means of knowing how far the present inflationary boom will go, when it will end, or how serious the repercussions will be.

The export situation is also causing some anxiety. Europe's need for American agricultural products will be even greater in the fiscal year 1947-48 than in 1946-47, but foreign countries are running out of dollars with which to buy from us.

Need, however, is not the only component of effective demand. Equally important is ability to buy. It is the scarcity of the means of payment, rather than lack of need, which may restrict foreign purchases of our goods.

Great Britain has announced its intention to reduce purchases from us. Among agricultural products the cuts will apparently fall heaviest on cotton, dried eggs, and fresh, canned and dried fruits.

Other countries too are feeling the pinch of the so-called "dollar shortage."

France, Canada, and most of the Latin American countries are all buying substantially more goods from us than they are selling to us. This situation cannot continue indefinitely.

The dried fruit industry of California is faced with the prospect of distressingly low returns this season, unless means can be found to offset the loss in exports.

(On September 5 Secretary of Agriculture Clinton P. Anderson announced that the Commodity Credit Corporation will purchase up to 133,000 tons of dried fruits for foreign relief feeding and domestic school lunches.)

Before the far around 40% of our dried fruit output was shipped abroad, mainly to central and northern European countries.

Even with the high buying power in this country, it is very doubtful that domestic markets would take all of our production of dried fruits, however low the price to growers might be.

Downward Trend in Exports

In the long-run a gradual downward trend in our agricultural exports is in prospect. The drift toward a high degree of self-sufficiency in essential foods which appeared in several European countries after World War I may again be resumed, and may extend to still other countries.

The United Kingdom seems to be moving in that direction. Also, over much of the world international trade is shifting from private to government hands. State trading is in the ascendancy, and political considerations are influencing the terms of trade.

Still another cause of concern is the farm land boom in this country. Farm land values are much inflated, especially in this State. On March 1, of this year, the index of California land values was 100% above that of 1940, and 45% above the highest peak reached after World War I. Farm mortgage debt which had declined steadily from 1940 to be the beginning of 1946 has now turned upward.

The longer-run outlook for large exports of our agricultural commodities is not particularly encouraging. But even more disastrous than a shrinkage in export outlets would be a marked drop in domestic demand, such as would occur in the event of a severe business depression.

The Economic Problems

From the standpoint of agriculture as well as of the rest of the economy, the basic economic problem facing this nation is that of maintaining continuous high level production and employment in industry and trade.

It is not meant to leave the impression that good consumer markets such as would prevail with continuous high level employment in this country would solve all of the economic problems facing farmers. Not so. There would still be problems, but these would, I think, be manageable ones.

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Bulk Handling Of Milk By The Ranch-to-Factory System Offers Direct Savings To The Dairyman

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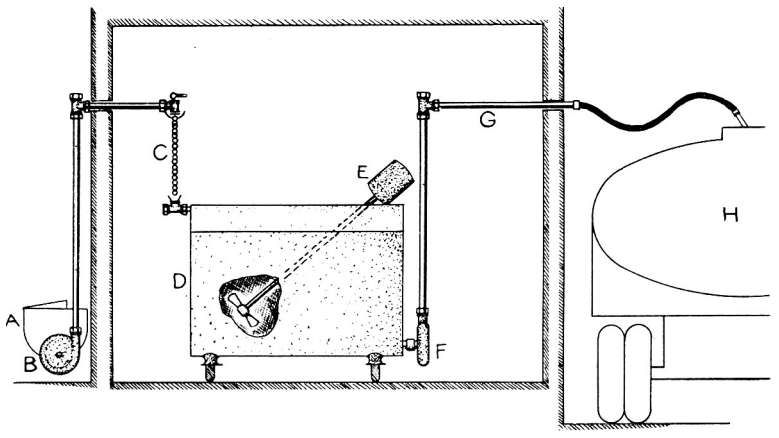
lon cans. This is a very material saving.

At the milk plant the milk is pumped directly from the tank truck to the processing equipment and does not have to be dumped by hand in ten-gallon lots.

There is not a multitude of cans to be washed after each truck load. The clean-up of a farm tank and a tank truck are much simpler than washing and sterilizing a lot of cans. Large flat surfaces are relatively easy to clean.

Responsibiliy of the Truck Driver

Measuring and testing, and acceptance of quality are the responsibilities of the truck driver. He must be a licensed weigher and sampler.



Diagrammatic illustration of tank truck picking up milk from a storage tank in the farm milk-house. A. Dump vat. B. 1-inch milk pump. C. Surface cooler. D. Farm storage tank. E. Agitator. F. 1½-inch milk pump. G. Sanitary pipe line. H. Insulated stainless steel tank on truck.

Each milkhouse tank, at present, is gaged for volume by the county sealer of weights and measures.

In some cases a removable gage bar, scaled in feet and hundredths, is calibrated—adjusted to measure the contents of the tank—to the nearest gallon.

In other cases, a stainless steel float actuates a scaled steel tape which passes over a roller and which is read at an index mark.

There is need for a sanitary, accurate milk meter to replace the gage bar.

The driver gages the tank, then starts the agitator motor, next connects his hose, takes a sample which will be carried to the laboratory in a refrigerated compartment on the truck, starts the pump, records the gage mark and completes the tag for the day's receipt. He waits a few minutes until the tank is emptied, disconnects his hose and replaces the cap on the truck and on the milkhouse line. This takes him from 12 to 20 minutes, for a pickup of from 300 to 1000 gallons.

The control of milk quality is partly met by selection of reliable producers.

Farm Milk Tanks

There are many styles and sizes of farm tanks in use. In some dairies the tubular surface cooler is retained and the milk is run directly into an insulated storage tank. In other dairies tanks with built-in regfrigeration are used. In these tanks the milk is cooled by running over a cold wall of the tank.

Some coolers and tanks have a water section in the cooling surface to reduce the milk temperature from 95°F to approximately 75°F before using mechanical refrigeration.

The refrigeration requirements are approximately the same for the bulk system as for the can system if adequate water cooling precedes mechanical refrigeration. If the entire cooling job is done by mechanical refrigeration it requires about 50% more for the bulk system.

Farm tanks now in use range in size from 300 gallons to 1500 gallons capacity. Some are rectangular and others are circular. All are constructed of stainless steel so that no metallic contamination of the milk can occur.

Bulk Handling of Milk in California

Bulk handling of milk has developed in California because milk is produced here from relatively large herds. It is generally thought now that a minimum of 180 to 200 gallons of milk at each stop is necessary for the efficient operation of a tank truck route, but new developments will probably lower this minimum. Some few stops are now made for 100 gallons.

The farm tank-tank truck method of handling milk is now in use on market milk dairies in the Los Angeles area, the San Joaquin Valley, and the milk-shed areas of San Francisco and the East Bay cities. It is effecting material savings in handling milk in these areas, and laboratory tests show that quality can be maintained and even improved by this system.

The bulk handling of milk will not realize its full possibilities however, until it is extended to the handling of manufacturing milk.

The big advantage of this method with market milk is the savings effected. Substantially the same savings will be obtained with manufacturing milk and a very marked improvement in quality should be noticed. This will happen through prompt cooling of this milk to low temperatures. Such milk is not now cooled to sufficiently low temperatures to secure the highest quality.

Bulk handling of milk from ranch to factory is an important development in the dairy industry of California. This practice seems certain to increase in use throughout the dairy sections of the state.

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