

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

(Continued from page 1)

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 General* (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:

- All applications gave a satisfactory weed kill.
- 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.

- 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.

- 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.

- Cultivation of sprayed plots was not necessary until well after thinning.
- The cost of blocking and thinning sprayed plots was much less than that on unsprayed plots.

- 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:

- 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.
- The best seedlings emerge in a weed-free soil, and lacking competition, make rapid, vigorous growth.
- The first cultivation after emergence may be delayed until the seedlings have attained considerable size.
- It favors the use of the precision drill, and a low rate of seeding.
- It reduces the cost of blocking and thinning, probably making pos-

sible 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."

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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 Agricultural Situation And The Outlook In Mid-'47

(Continued from page 1)

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 ascendency, 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

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.

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

(Continued from page 1)

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.

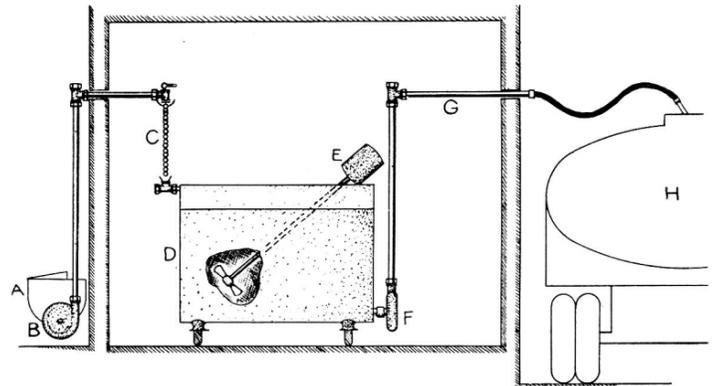
There is not a multitude of cans to be washed after each truck load. The clean-up of a farm tank and a tank truck are much simpler than washing and sterilizing a lot of cans. Large flat surfaces are relatively easy to clean.

Responsibility of the Truck Driver
Measuring and testing, and acceptance of quality are the responsi-

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.



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. 1 1/2-inch milk pump. G. Sanitary pipe line. H. Insulated stainless steel tank on truck.

bilities of the truck driver. He must be a licensed weigher and sampler.

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 refrigeration 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

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 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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