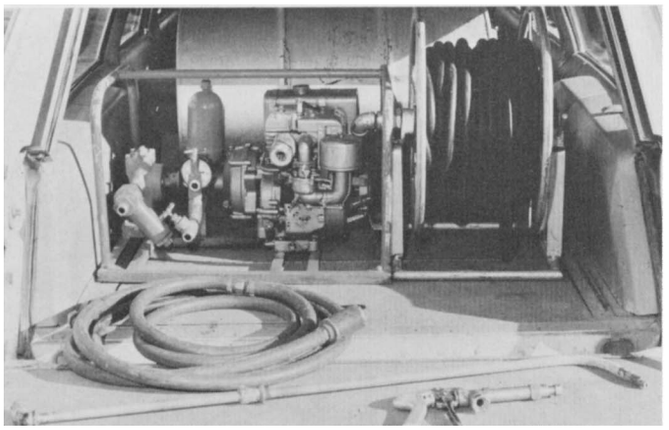
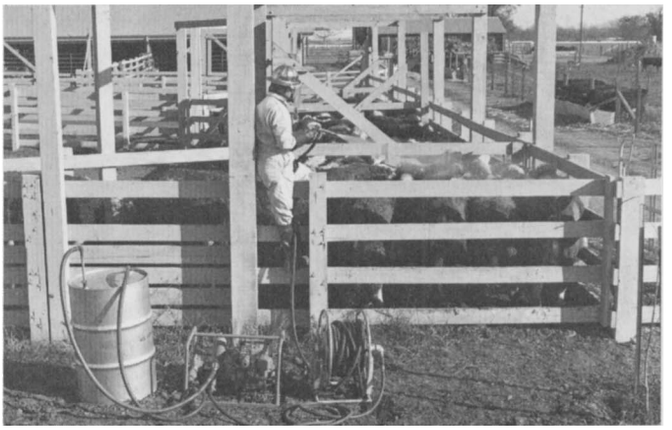


Spray equipment is easily loaded for transport in a station wagon or pick-up truck.



Spray equipment can be easily located close to a corral for complete coverage of livestock.

travel. Nozzle outlets were spaced at 2-inch intervals providing further quick, easy adjustment to a variety of crop row spacings and nozzle arrangement. Boom height is easily adjusted by use of the lift arms operated by the power take off (PTO) on the tractor or by use of the slide adjustment on the boom support pillars. A 160-lb pressure gauge was fixed on the boom to provide more accurate pressure readings, in addition to the 600-lb pressure gauge on the pump unit. Spray flow from the pumping unit to the boom is controlled from the tractor by a single-pull, quick-shut-off valve. Two single-throw valves control the flow to each half of the boom.

Although this equipment was designed to be small and compact for easy transportation, the pump operates at high enough pressure (to 400 psi) to handle a variety of farm applications. The pump unit can be used on a variety of tank types and sizes, from trailer tanks or truck tanks to assorted barrels. Also, fire fighting, white washing, high pressure equipment cleaning, orchard spraying, and herbicide treatments for weed control are a few of the possible uses for this versatile sprayer.

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SUGAR BEET *yields increased by early planting, yellows-resistant varieties and aphid control*

F. J. HILLS • W. H. LANGE • J. KISHIYAMA

A combination of control measures to reduce damage from "yellows" disease of sugar beets has resulted in yield increases of 42 per cent in the overwintering area of central California. The yield increases were made possible through earlier planting with suppression of sugar beet yellows through the use of a resistant variety, and aphid control.

UNIVERSITY OF CALIFORNIA at Davis is the approximate center of an area that overwinters a large acreage of sugar beets for spring harvest, usually extending from March through May. Overwintering plays an important role in distributing the harvest for better use of sugar-processing facilities throughout the year, and has become an economically established practice during the last decade. Unfortunately, this results in the maintenance of a large reservoir of plants infected by viruses that cause "yellows" disease of sugar beet. The green peach aphid, the principal known vector for these viruses, acquires viruses from infected plants during dispersal flights which usually occur in March and April, and carries them to young plants that are planted in April and earlier. Dispersal flights of the green peach aphid decline by June, and little of the virus is spread from plant to

plant during the summer months. Later plantings often escape infection, so it has become the practice in this area to delay planting until May or later to avoid virus infection. Although economically profitable crops can be grown with delayed planting and spring harvest, the recovery of a portion of the spring growing period allows the possibility for greatly improved production.

The recent release of the sugar beet variety, US H9, which is resistant to the yellowing viruses offers the possibility for considerably improving yield despite moderate levels of virus infection.

Production improved

Experiments since 1962 have shown that production can be improved 15 to 20 per cent by (1) planting in early April instead of May, and (2) by protecting the young plants from virus infection through controlling aphids with an effective aphicide during the period of dispersal flights.

In 1968, an experiment was conducted at Davis to assess the possibility of recovering a portion of the spring growing period by combining control measures. Planting dates were March 28 and May 7. The varieties used were the non-resistant US H7 and the resistant US H9. One-half of the plots of each variety (at each planting date) were sprayed for aphid control with Meta-Systox-R (oxydemetonmethyl) when emergence was complete and subsequently once a week for four weeks.

The effects of the combination of variety, insecticide, and planting date on sugar beet production are shown in the table. Compared with the practice of planting a non-resistant variety in May, planting the non-resistant variety six weeks earlier resulted in nearly the same production. Increased yields due to decreased yields about 16 per cent. By planting was offset by an increase in yield due to earlier planting. Controlling aphids on the earlier planting of the non-resistant variety, or planting the resistant variety earlier with no aphid control, both increased yields about 16 per cent. By planting the resistant variety earlier, and spraying for aphid control, yields were increased by 42 per cent.

Drawback

One drawback to the use of aphicides for virus suppression is the necessity for repeated applications at a time of the year when farmers are extremely busy. However, it is quite probable that the same degree of virus suppression might be achieved by using three applications of Meta-Systox-R at about 10-day intervals. The graph shows that aphid flights ceased by May 12. Trials are now underway to test systemic materials that are longer lasting and are applied under the seed at planting time. Such materials offer promise for effective virus suppression with fewer applications.

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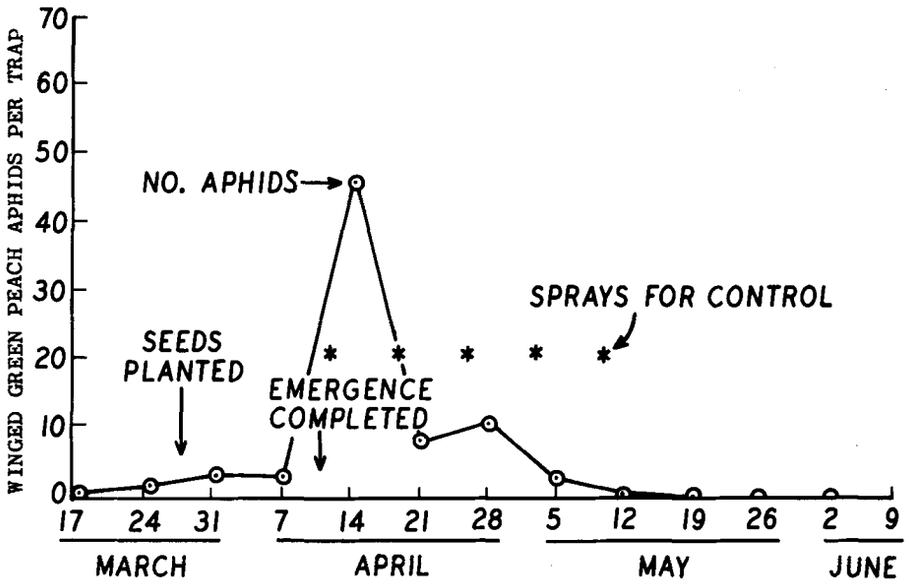
GREEN PEACH APHIDS TRAPPED DURING SPRING FLIGHTS AFTER SUGAR BEET PLANTING IN MARCH



EFFECT OF PLANTING DATE, VARIETY, AND APHID CONTROL ON SUGAR BEET YIELD AT DAVIS, CALIFORNIA, 1968

Date planted	Variety	Insecticide applications	Yellows Aug. 10	Root yield Oct. 9
		no.	%	tons/acre
March 28	US H7	0	93	27.1
		5	74	30.5
	US H9	0	59	31.0
		5	36	37.7
May 7	US H7	0	31	26.5
		5	7	29.5
	US H9	0	15	29.8
		5	2	29.7
LSD, 5%				2.6

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QUALITY SWEET CORN PRODUCTION. Cir. 557. This circular describes field practices and discusses harvesting, packing, and cooling methods for sweet corn that will greatly help preserve quality. Varieties and principal marketing districts are discussed, and important pests and their control are touched upon.

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MECHANICAL HARVESTING OF CLING PEACHES. Bul. 851. This publication discusses design criteria and operating procedures for an economical mechanical harvesting system for cling peaches. It describes the effect of mehcanical harvesting on canning peach quality and it discusses how to modify trees to improve fruit recovery, reduce fruit injury, while minimizing loss of yield.

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