does not mean no movement; it means movement only after inspection and appropriate treatment to ensure compliance with the regulations. Some products may be dried; some may go into cold storage for set periods of required temperatures; and some may be canned or processed with correct disposal of culls and waste material.

III. Malathion–protein bait sprays. Frequent applications, every five to seven days during maturity season. Effects on ongoing IPM programs are unknown.

IV. Baytex to control forms in the soil.

V. Release of sterile male flies.

VI. Parasite releases.

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MECHANICAL HARVESTING

Most of the mechanical harvesting of citrus has been in grove plantings located on the ridge section of the state. Usually in these plantings the ground is loose sand and clean cultivated. When compared to bedded grove conditions, the trees on the ridge are older and tend to be open with a strong limb system. The terrain ranges from level to steep hills.

About 20 per cent of Florida citrus acreage is planted in beds for the purpose of water level control (1). These plantings pose unique problems for mechanical harvesting, especially for gathering the fruit following removal. Usually bedded groves have one to several rows of trees on a single bed with a furrow or ditch between each bed. To maintain the bed profile against erosion, the beds and furrows are usually covered with grass sod. However, bedded groves have the advantages over groves on the ridge of being planted on level terrain and of the mature trees being smaller, making fruit removal easier and more complete.

Because of the special mechanical harvesting problems associated with bedded grove conditions, researchers at the Agricultural Research and Education Center at Lake Alfred

NC UNDER BEDDED GROVE CONDITIONS

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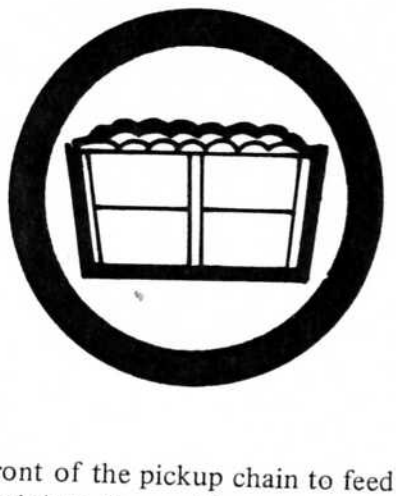
began looking at these problems to see what could be done to adapt mechanical harvesting to these grove conditions. The first trials were in the LaBelle area in Hamlin oranges planted on eight-row beds with trees spaced 15 x 25 feet (3, 4). The beds were flat and sodded with grass except for a 15-foot herbicide-treated strip down the row. The half-mile long rows and flat bed surfaces made the grove especially suited for mechanical harvesting. Average fruit yield was 400 boxes per acre.

The fruit was loosened by spraying with abscission chemicals three to five days before harvest. A combination of Release at 100 ppm and 2.5 ppm Acti-Aid gave good loosening in January. The concentrations of Acti-Aid was reduced to 1.5 ppm in February to prevent damage to the young growth that appeared.

Preharvest fruit drop caused by the abscission chemical combination ranged from eight to 97 per cent depending on weather conditions. Most of the remaining fruit was removed with a small air shaker developed at Lake Alfred for bedded grove conditions. The total fruit removal averaged 98 per cent in five tests during the months of January and February.

The fruit was gathered into windrows at the edge of the tree skirts with a tractor-drawn windrow rake and picked up with an offset pickup machine. The grass sod caused both rake and pickup problems. Most of the problems could have been controlled by

removing the loose grass left from mowing before harvest. Small stones picked up with the fruit were graded out on the pickup machine. The pickup principle developed for loose sand on the ridge worked equally well under sod conditions by adding a rubber-belted reel in



front of the pickup chain to feed fruit into the machine.

An economic analysis of the harvesting trial operations indicated an average harvest capacity of 1800 boxes per day would have to be maintained for 50 days during the season for the system to be competitive with handpicking in the LaBelle area. Whether or not this capacity can be obtained depends to a large extent on weather conditions and the ability of the processor to handle the fruit in a short period of time. These factors are serious weaknesses in implementing this harvest system whether in bedded groves or not.

Some thought has been given to using this harvest system on single and two-row beds. In groves with single beds, the fruit could be loosened and shaken off the trees with the air shaker and might, at the same time, be blown into the furrows. This possibly could be done with present equipment. The unique problem is how to gather the fruit from the furrows. A solution may involve changing the shape of the beds to accommodate present pickup equipment or developing a whole new pickup concept.

In groves with two-row beds, a limb shaker could be used to remove the loosened fruit. The shaker would operate on the beds between the two rows and the detached fruit caught on a canvas roll-out collector operating from the furrows. There has been some grower concern that shaking shallow rooted trees grown on beds would lower subsequent fruit production. However, a three-year test conducted in the Fort Pierce area showed that shaking trees with a limb shaker had no effect on subsequent fruit production (2).

Many problems will have to be resolved before mechanical harvesting can be successfully adapted to bedded grove conditions. However, it is another step toward the ultimate goal of developing mechanical harvesting for all areas of the citrus industry.

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DEFENSE AIMED AT MED-FLY

By
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Editor's note: Four days after this manuscript was mailed to The Citrus Industry, three Mediterranean fruitflies were discovered in Tampa. The Division of Plant Industry went into action immediately with ground spraying, which was followed by aerial spraying within three or four days. At presstime, the source of the Tampa flies and the extent of the infestation had not been determined.

The Florida Dept. of Agriculture has mobilized an all-out defense aimed at intercepting any invasion of this state by the Mediterranean fruitfly, which already has become a major threat to California's $14 billion annual agricultural output.

This threat, agriculturalists agree, also hangs over the entire crop-rich southern tier of U. S. states including Florida—and possibly could reach here or anywhere else in stages or by "hitch-hiking" on produce or in a vehicle or luggage. All think it will be a long time before the possibility of this threat can be called off.

This is the many-billion-dollar question Florida and the other southern states are now faced with. With the constant modern