

Penn State Studies Show:

Less Expense, Better Results With Tomato Harvest by Machine

Tomatoes, the leading Pennsylvania vegetable crop for processing, can be harvested more economically by machine than by hand, it was announced February 9 at the annual Vegetable Conference at Pennsylvania State University.

The savings in machine harvesting can equal \$6 to \$10 per ton over the cost of hand picking, reported Dr. William Hepler, associate professor of plant breeding at Penn State.

In experiments during 1970 and 1971, machine harvesting costs averaged \$10 to \$14 per ton, compared with \$20 per ton for hand harvesting. These costs include labor and depreciation on equipment.

The studies were the first full-scale, farm-based Penn State experiments to harvest tomatoes by machine. Dr. Hepler spoke for four College of Agriculture faculty members conducting the studies. The other three were Robert F. Fletcher, Extension horticulturist; Richard W. Poorbaugh, research economist; and Donald R. Daum, Extension engineer.

Preliminary findings indicate that 40 to 50 acres is an economical size planting for machine harvesting, Dr. Hepler affirmed. Machine harvest yields ranged from 12 to 28 tons per acre with an average yield of 18 tons per acre, he stated. The experiments are being continued.

Findings to date refute the common belief that hand harvesting recovers all of the tomato crop. Comparisons on large scale acreage in 1971 found that hand picking recovered only 62 per cent of the crop. Machine harvesting, while retrieving only 60 per cent of the crop, yielded the best grade of tomatoes.

Acreage planted to tomatoes, and cost of a harvester, are obviously limiting factors in economical machine harvesting, Dr. Hepler observed. He said western harvesters, such as those used in the leading tomato state of California, cost over \$35,000. Harvesters for eastern acreage are being developed and manufactured for \$15,000 to \$20,000.

The studies have tested 13 new tomato varieties and breeding lines for use in machine harvesting. Three breeding lines were found superior for per cent ripeness at harvest, yield per acre, and ability of fruit to stay on the vine until harvested.

This information aided the U.S. Department of Agriculture in releasing three tomato varieties adapted for machine harvest in Pennsylvania. These varieties are Merit, Red Rock, and Potomac. If seed is available, it is possible that 3,000 to 4,000 acres might be planted with these varieties in the Commonwealth this summer, he estimated.

Dr. Hepler cautioned that additional information is needed on weed control, varietal responses to various fertilizer rates, plant populations, and spread of harvest season using combinations of variety and type of planting.

Performance factors for a tomato harvester, he claimed, should include efficiency of operating time, acres harvested per day, tons harvested per acre, and number of hours of machine operation per season.

Cooperating on the studies during the past two years were five Pennsylvania tomato processing firms and the U.S. Department of Agriculture. The

three-day Vegetable Conference at Penn State was sponsored by the College of Agriculture, the Pennsylvania Vegetable Growers Association, and the Pennsylvania Food Processors Association.

Transplanting of seedling tomatoes was done in May for the August and early September harvests. Direct field seeding was done in April for harvesting by mid to late September.

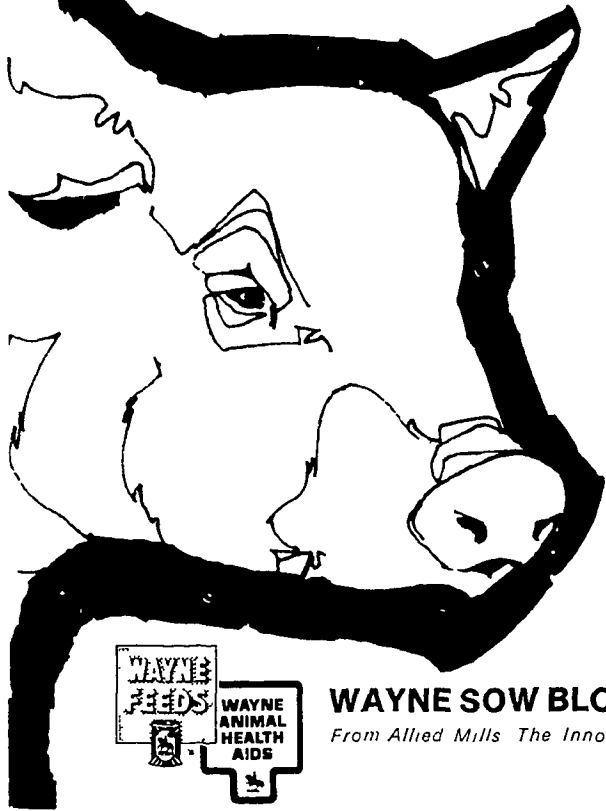
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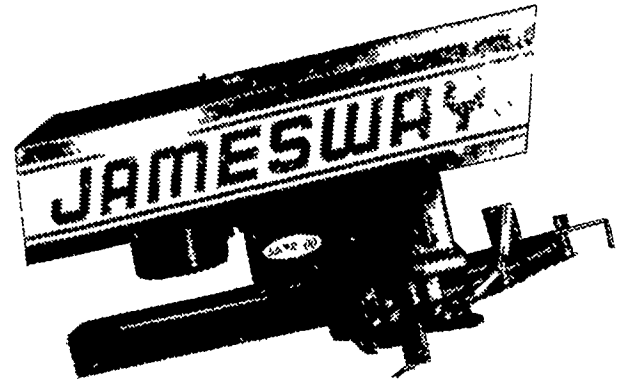


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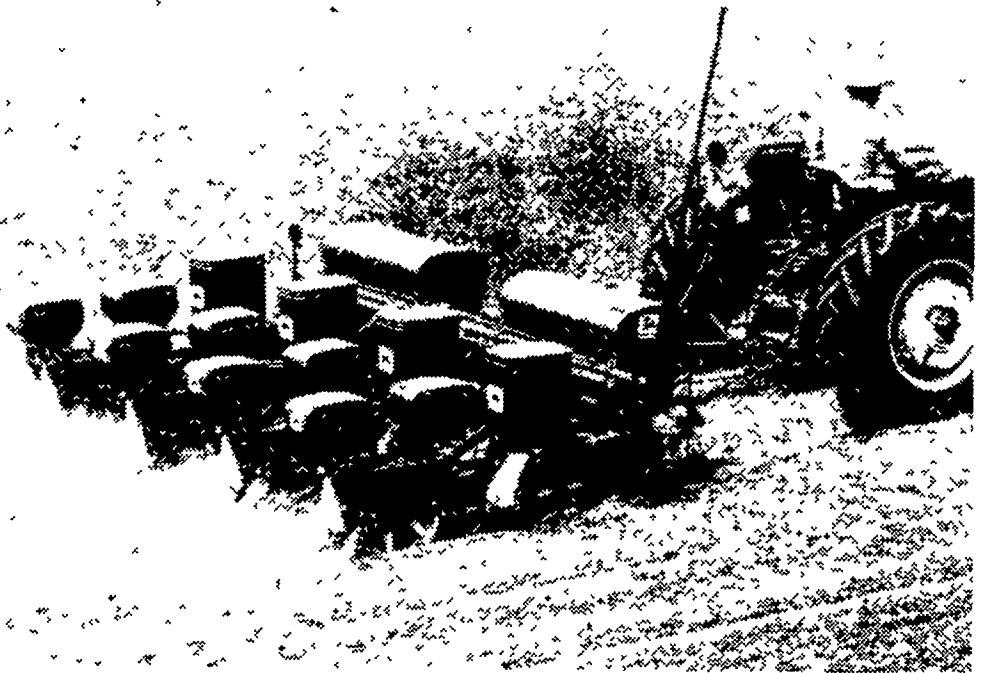
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