

Program Helps Fruit Growers Manage Frost

UNIVERSITY PARK (Centre Co.) — A single frost can devastate fruit crops, inflicting damage that takes years to correct. Soon a computerized expert system being developed in Penn State's College of Agricultural Sciences may make it easier for growers to protect their orchards from frost damage.

"In one season, growers can lose hundreds of thousands of dollars worth of fruit to frost damage," said Dr. Paul Heinemann, assistant professor of agricultural and biological engineering. "Yet even as scientists demonstrate that frost protection systems pay for themselves in reduced crop loss, growers remain reluctant to install them. Many fear that the cost is too expensive or that managing such a system would be too time-consuming."

Heinemann hopes that one of his research projects—a computer program that makes frost protection decisions easier, reducing management time and effort—will increase growers' acceptance

of crop-saving frost protection systems.

When completed, the Frost Protection Decision Support Program will allow vegetable crop managers to use a personal computer for planning, implementing, and managing a frost protection system. The program, which is expected to be available in 1994, also should be helpful to cooperative extension personnel and consultants.

"The program has four main components," said Heinemann,

"frost protection strategies, operational management, forecasting, and instrumentation." The first module, frost protection strategies, summarizes frost protection methods and compares them economically. "This part of the system also includes information on risk partitioning, site selection, heating design, sprinkling, wind machines, and cover systems."

The operational management component guides the crop manager during a frost night. "A grower could use this part of the program to determine sprinkler rates for

under-and over-tree irrigation, heater requirements, and the effectiveness of wind machines," Heinemann said.

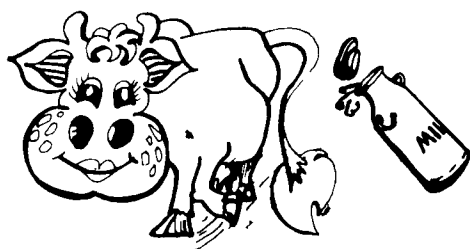
The forecasting section of the program includes long-term tools for determining "frost windows," periods when a particular area is susceptible to frost. "It also features short-term tools to show how far temperatures will drop during a particular night and how long the cold may last.

"The fourth component, instrumentation, shows the grower how to locate sensors in the field

and what types of sensors to use," Heinemann said.

The frost program will be available in both Macintosh and IBM PC versions. Other fruit management expert systems that have already been or are being developed at Penn State include the Penn State Apple Orchard Consultant, PeachES, and VITIS.

For more information, contact Paul Heinemann at The Pennsylvania State University, 246 Agricultural Engineering Building, University Park, PA 16802, (814) 865-7685.

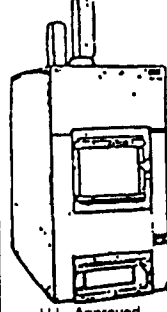


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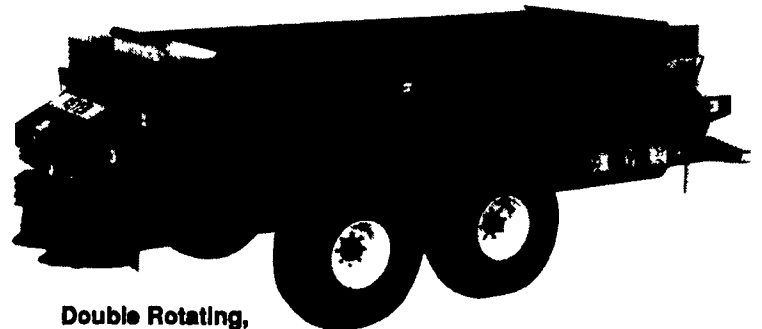
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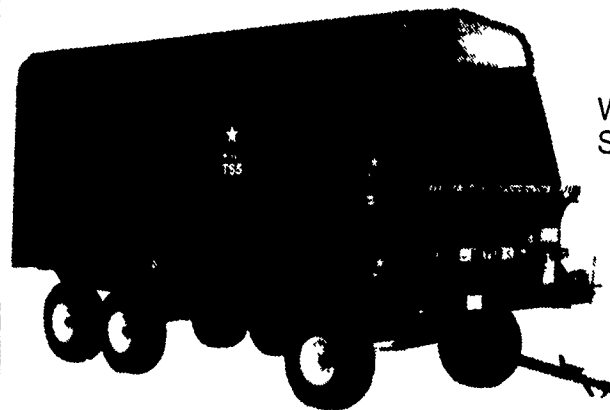
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