

## Stress affects lima yields

NEWARK, Del. — Lima beans have been an important crop for Delaware farmers since the turn of the century. The smaller seeded baby lima, as opposed to the larger seeded Fordhook, has been the main type grown. Delaware still produces more baby limas than any other state except California. Acreage in recent years has leveled off at the 10,000 acre mark, but got as high as 24,500 in 1949.

Yields per acre have fluctuated, too, but don't seem to have improved over the years, like peas. Compared to lima beans, the historic yield per acre of Delaware grown peas shows a general trend upward from 1,000 pounds of

shelled peas per acre in Delaware in the 1910's to between 2,600 and 3,000 pounds in the eighties. This is primarily the result of better varieties and improved irrigation practices, says University of Delaware extension vegetable specialist Ed Kee.

Lima bean yields, on the other hand, have hovered between 1,500 and 2,000 pounds an acre over the same 30-year period, except for some occasional dips down to 1,000 pounds.

What's the problem with limas? "Why aren't we seeing the kind of improvement peas have shown?" Kee asks. "Some very good varieties have been introduced.

Most have resistance to several strains of downy mildew disease, making it possible to reduce or even eliminate spraying some years."

Advances in irrigation technology have been applied to lima bean acreage, just as they have to peas. Why haven't these improvements boosted yield averages?

"The fact is," says Kee, "lima beans are simply more sensitive to the extreme summer growing conditions on Delmarva. Flowers and newly set pods, called 'pins,' will drop off under moisture or temperature stress. And we get a lot of both."

For years, area scientists have studied the effects of these stresses, measuring the relationships between rainfall, temperature, humidity and yield. They have found that vegetative growth of the lima bean plant is adversely affected during any period with temperatures above 94 degrees, or when temperatures above 90 degrees are combined with high humidity.

Pollination, on the other hand, suffers whenever temperatures reach 90 degrees under low relative humidity. Lack of rainfall or irrigation for seven days negatively affects both general plant growth and pollination.

When researchers at the University of Delaware Agricultural Experiment Station plotted actual weather conditions over past growing seasons, and compared these with lima bean yields, they found a definite correlation between the frequency of stress periods and average

statewide yield. In 1966, for example, the average Delaware yield was 1,000 pounds an acre. "That year, there was an extended drought," Kee says, "with no 7-day period between June 30 to September 19 receiving more than one inch of rain. As you would expect, there were also periods of high temperature throughout the season."

The following year both rainfall and temperatures were more moderate and in response Delaware's average lima bean yield rose to 1,740 pounds per acre.

"Understanding the climatic factors which affect lima bean yield has clear implications for irrigation management," Kee says. "Not only is soil moisture important, but higher humidity levels will also encourage pod set. We also use this information about the lima bean plant's response to stress when we test new lima varieties for their adaptability to this region."

## Computer program slated

FLEMINGTON, N.J. — A one-morning program on farm and home computers is being planned by Hunterdon County, N.J. Extension on Friday. This will be an opportunity to see how computers apply to present day farm operations.

Topics include "Do I Need a Farm Computer?"; "Crop Management by Computer;" and a discussion panel and actual demonstrations to round out the program.

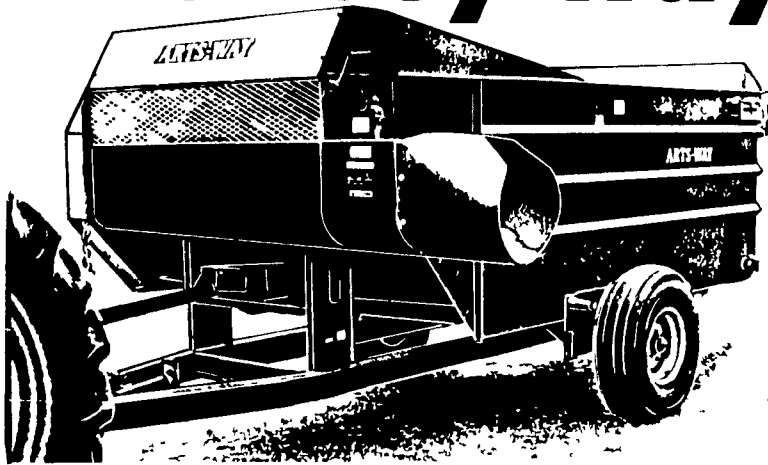
Speakers will be David Lee, Salem County Agent, and Ray Samulis, Burlington County Agent. Both have had extensive experience in working with crop growers in computerizing their operations. Lee is a dairy and field crop agent and Samulis works principally with vegetable and fruit growers.

Supporting the program is the First National State Bank of West Jersey. David Buchholz of its staff will be on the panel and will also

provide a computer and a few programs for demonstration.

Frank Wright, Rutgers' Dairy Specialist, and Bill Bachenberg, farmer and computer systems consultant, will also participate in the panel discussions and demonstrations.

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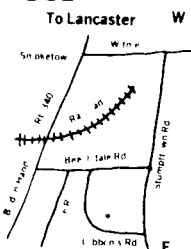
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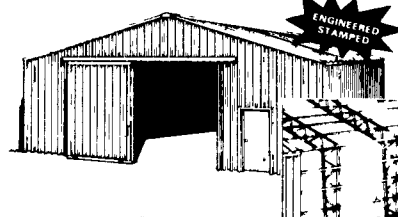
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