

Del. Researcher Seeks Drought Resistant Corn

Corn is one of Delaware's biggest agricultural crops. Some 194,000 acres of corn were grown in the state last year, much of this in Sussex county. Yields from that size planting should have been around 15,520,000 bushels (figuring an average of 80 bushels an acre). As everyone knows, though, that's not what Delaware farmers got last year. Even with a bumper crop in New Castle county to offset the disaster downstate,

Delaware's 1974 corn yield was only 12,416,000 bushels—some three million less than it should have been.

The drastic effects of last summer's drought underline what growers and agronomists have known all along—the major problem in corn production on the Delmarva peninsula isn't disease or insects, but moisture stress at critical periods during the growing season.

People are looking at a number of solutions to the problem. Some are suggesting weather modification as an answer. Others look to irrigation as the cure. Many feel this would be the best and safest way to meet the need for water, but only a few growers have irrigation now, and for one reason or another a large percent of corn farmers aren't likely to get irrigation systems for themselves in the near future.

This leaves two other solutions—the modification of cultivation techniques and the development of corn hybrids that are drought-tolerant.

University of Delaware plant geneticist, Dr. Sue Sullivan, wants to see what can be done to modify existing corn hybrids to make them more tolerant of the frequent drought conditions of lower Delaware. "Most of our hybrids are a result of research and development in mid-western

corn states," she explains. "A whole different world exists there. Soil types and fertility are different, climate varies in regard to humidity—which gives different disease problems—and there are different patterns of moisture stress and different effects of stress due to the water-holding capacity of soils in the two regions."

Dr. Sullivan sees a need to develop new hybrid combinations which will perform better on the light, sandy soils of the Delmarva peninsula. She plans to begin work in this direction this summer at the University of Delaware's Agricultural Experiment Station farm in Georgetown. The first thing she will be looking for are the factors in corn plants that contribute to drought tolerance.

These factors include fast-developing, deep-growing root systems better able to extract moisture from the soil and the ability of some plants to use water more efficiently—possibly by closing leaf pores (stomata) in stress conditions so that they lose less water into the air. Some hybrids have multiple-ear tendencies, others will produce larger ears at lower plant populations—other important factors. Since the corn plant's need for water is greatest around silking time, the geneticist will also be looking for plants which silk well under moisture stress. There may also be higher-

yielding early-season hybrids which miss or "avoid" moisture stresses altogether.

Promising corn hybrids that Dr. Sullivan identifies will be used in no-till tests being conducted by fellow plant scientists at the Experiment Station, as well as in conventional tillage studies. What the researchers as a group hope to come up with, says Dr. Sullivan, is a package of drought-tolerant hybrids and crop management techniques which will result in higher, more consistent yields for Delaware corn growers.

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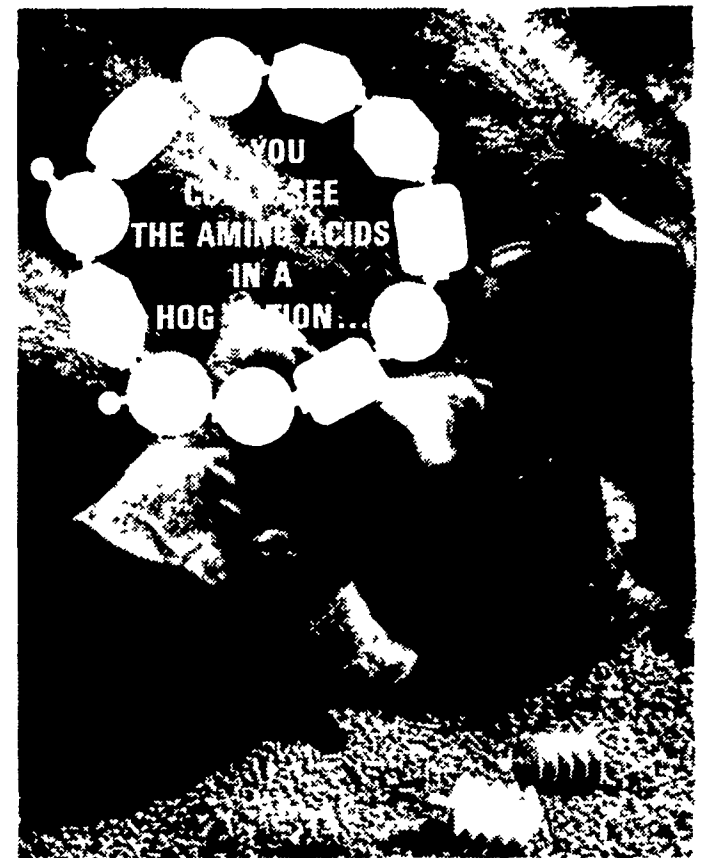
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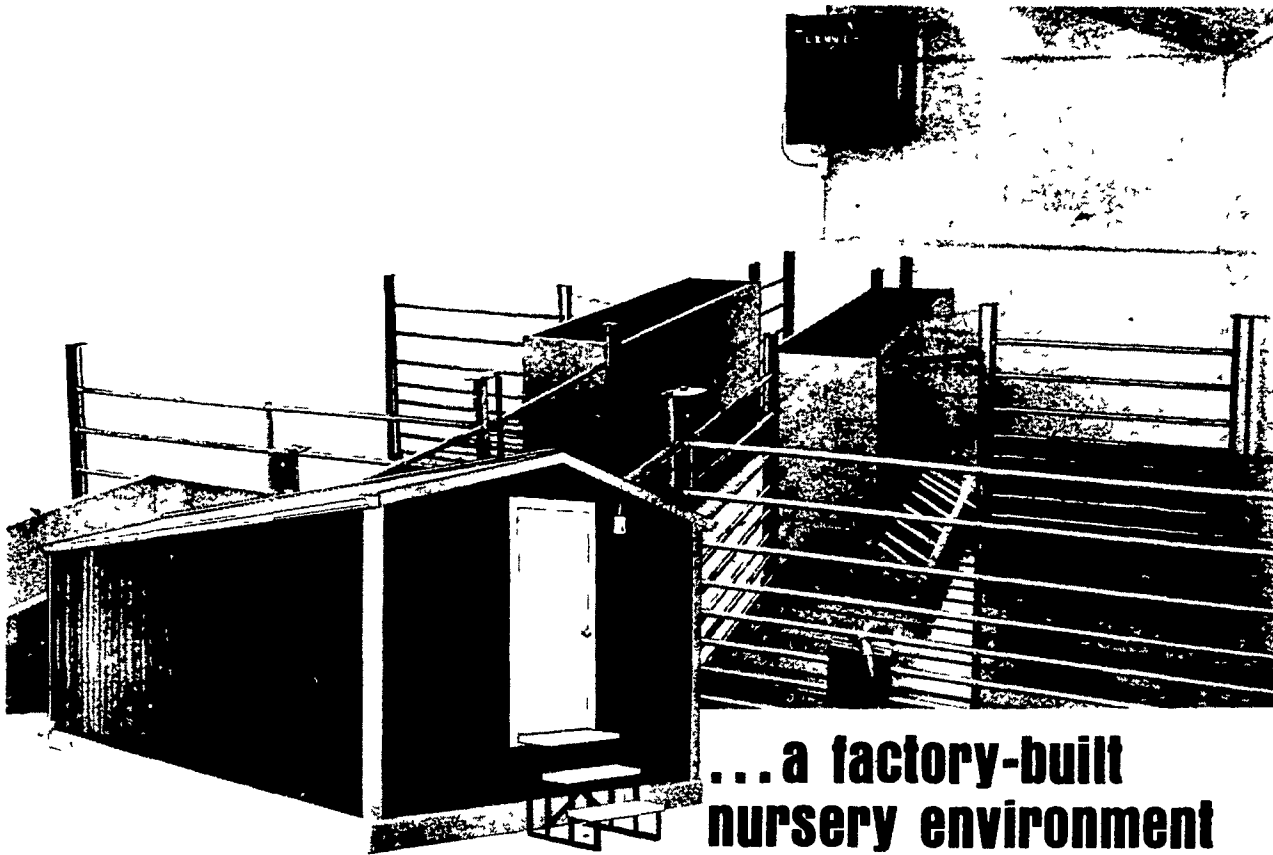
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