# Identifying diseases

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Delaware is to develop purely selective media–a different one for each bacterium," he says. "That way, if you're testing for block rot in a batch of cabbage seeds, for instance, if anything at all grows in the medium we've developed for black rot, that's it."

Initially Sasser and co-researcher, horticulturist Donald Fieldhouse, set out to develop selective media for a group of about 100 bacteria responsible for plant diseases.

The first step involved testing hundreds of carbon and nitrogen compounds, antibiotics, fungicides and inhibitors in various combinations, to learn how these effect different bacteria. Then they went to the computer and asked it to develop recipes for possible selective media, based on this information.

The recipes they got back were ranked by the computer in order of porbably effectiveness.

The scientists tested each recipe and every time they came up with a formulation that looked promising, they sent it on to a specialist in that particular bacterial disease at a research station in another state for further testing.

Once 1980 summer trials are over, Sasser expects to receive feedback from researchers all over the country who are cooperating on this stage of the project.

Recipes for 10 or 12 selective media will soon be ready for release. These will make it possible to quickly and accurately identify about half the major bacterial organisms which affect economic crops in the U.S.

Though still in the experimental stage, a number of the media Sasser and Fieldhouse have developed are already in use around the country because they're so much more accurate than existing screening methods.

In the course of their work they have developed one medium for a bacterium that doesn't even exist in the U.S.–and hopefully never will. This causes a South American citrus disease which could devastate the American citrus industry, should it every become established here.

The medium is now being used at ports of entry around the country. It is also being field tested in Argentina under the direction of a specialist located at the U.S. Department of Agriculture's fruit pathology lab in Beltsville, Md.

Another medium developed at the Delaware Agricultural Experiment Station identifies a very destructive bacterium that attacks a popular houseplant, diffenbachia (dumb cane).

This medium is being used by Florida nurserymen to monitor soil, cuttings and water in order to prevent costly field losses they can experience in producing this ornamental crop.

The medium developed for selection of bacterial leaf spot on peaches was sent to Rutgers where a plant pathologist is using it to find out how the bacterium causing the disease overwinters. In time this work may lead to more effective controls for this disease.

Here in Delaware, Fieldhouse is using two experimental media to study the spread of disease on cabbage and peppers. Again, by learning how the infection spreads, more effective controls may result.

Bacterial diseases of crops weren't too important until growers lost mercury as a seed treatment about ten years ago, says Sasser. Now, instead of a tenth of an ounce per acre of mercury applied on seeds, producers of crops like peppers and tomatoes must apply anywhere from 10 to 20 pounds of copper per acre over the growing season through repeated applications of an antibacterial spray.

Millions of pounds of copper are used this way in the U.S. alone each year. Besides the cost and dubious protection afforded by the sprays, Sasser and Fieldhouse are concerned about what this does to the environment.

"We've really just traded one heavy metal for another," says Sasser. "And there's always the chance that these can accumulate to toxic levels in the soil. In time, this could render farmland incapable of producing plants any more."

Instead of using potentially polluting copper, the scientists are shooting for what they consider a much more effective approach-detection of bacterial disease in seeds and seed treatment.

"We're after a procedure

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