Scientists score breakthrough in disease control

UNIVERSITY PARK -Scientists at Penn State have made "breakthrough" in managing genes to solve some of the age-old problems of protecting crops from diseases.

From experiments, the scientists have discovered that single genes once considered ineffective in controlling diseases - and thus discarded - are resistant when combined.

programs, such genes complement other genes and can strengthen greatly the disease resistance of plants, according to Richard R. Nelson and David R. MacKenzie, plant pathologists with the Agricultural Experiment Station at Penn State.

Nelson and MacKenzie developed a disease model to

Used in plant breeding vestigating the powdery mildew disease of wheat, they found that disease resistance known as racespecific and race non-specific are both conditioned by the same genes.

"This discovery makes it possible to use more of the race non-specific genes in breeding programs, thereby improving the developed a disease model to disease resistance of plant evaluate genetic strategies. In- varieties," Nelson stated.



Penn State plant pathologist Richard Nelson, left, and

David MacKenzie, right, examine wheat and rice seedlings in

their search for new sources of resistance to disease. Their

research into gene management is expected to contribute to

Local group asks consistent ag policy

EPHRATA - Morris Brown, Jr., president of PennAg Industries Association, Thursday called upon national leaders to form a more consistent and definite policy to continue the economic health of the nation's top industry Agriculture.

"This week we celebrated Agriculture Day nationally," Brown stated "Let's take time to assess the assets that agriculture and related industries have provided us and take steps to continue its economic growth."

U.S. agriculture, with a 1980 record \$927 billion in assets, employs over 15 million people and has been a top inflation fighter with productivity growth five times that of non-farm businesses during the last five years.

Ag-related businesses were also active in exporting \$40 billion farm products in 1980 to qualify as the nation's top exporter.

"We have noted two recent examples of inconsistencies in our national ag policies concerning the USS.R.," Brown said "On the one hand, the US has

apparently decided to continue the grain embargo which has proven more annoying than effective to the Soviets. Indeed, some students of Russia even suggest the con-

tinuation of the embargo may be counter-productive to our expectation. Soviet ag policy makers are under greater-than-ever pressure to make their nation selfsufficient."

"On the otherhand," Brown continued, "PennAg has learned the Soviet officials have been working to obtain American projections of Russian crop production. These projections are based on satellite runs over the Soviet Union."

According to a report recently released in U.S. News & World Report, Soviet agricultural officials in Moscow have admitted the U.S. information on their country's outlook is better than that available from the Kremlin.

When contacted, Washington officials neither denied nor confirmed that such information has been shared with the Soviets.

although they did note that all such crop production information is made public at regular intervals and therefore could be used by Russian officials.

Whether or not such information is given directly in indirectly, Brown believes a more consistent ag policy is needed; one that is devoid of political overtones and protects the future of the nation's top industry.

community have echoed Brown's sentiments. Stressed in the call for such a national commitment have been such key elements as: assurance of fair rate of return on investment; preservation of prime agricultural lands; support of research and development; renewed emphasis on the federal. state and local government partnership; and reasonable laws and regulations



worldwide significance. The Other leaders in the agricultural disease is so destructive that rice grown in much of the tropical world must be sprayed weekly with fungicides or the crop will die. "Major areas of Africa and South America could now be growing rice were it not for this disease," MacKenzie said. "The

casual fungus is so genetically explosive that the usefulness of a rice variety lasting more than two years is considered unique."

The Penn Staters are now working with scientists of the International Center for Tropical Agriculture in Cali, Colombia, South America. The project is reorganizing breeding strategies to enable genes to resist the rice blast. The project is financed by the Rockfeller Foundation through the Agricultural Experiment Station.

a more stable food production.

One immediate practical ap-

plication of this information will be

to control rice blast, a disease of

Benefits for American farmers

will come from this new discovery, the Penn Staters point out, as plant breeders begin to conserve genes for resistance rather than discarding them out of frustration.

"Plant breeders may soon be in a position to manage many of the classic diseases of major food crops, greatly reducing our dependence on fungicides and the prospect of famine," Nelson affirmed.

Resistance to plant disease is said to "break down" when variants among disease organisms become dominant. Unfortunately, changes in the population of disease organisms can occur rapidly. Diseases among crops like wheat and rice currently limit production of these crops in many parts of the world.

MacKenzie and Nelson indicated in their report that the science of plant breeding requires a constant war against disease organisms such as bacteria, fungi, and viruses.

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