

U.S. enters computer age crop stewardship

BELTSVILLE, Md. — Tomorrow's crops — their potential strengths and weaknesses — are being tended by today's computers.

Plant scientist Quentin Jones, of the USDA's Agricultural Research Service said recently at the National Wheat Research Conference that the National Plant Germplasm System — combining the best of U.S. botanical sciences with computer technology — is moving the nation toward better stewardship of its plant genetic resources.

Plant germplasm refers collectively to genes or units of heredity that determine plant traits, such as growth habits, nutritional values of edible plant parts, or diseases resistance.

Stimulated largely by a near national disaster — the 1970 epidemic of corn leaf blight — federal, state and private organizations created the National Plant Germplasm System eight years ago to help offset so-called 'genetic vulnerability' of modern crops.

According to Jones, who is National Coordinator of NPGS, national and in some cases world trends have led to a few high-yielding varieties dominating overall production of certain crops. Such uniform varieties often replace more traditional types, with the result that unique traits useful for adapting varieties to changing conditions can be lost forever.

Simply put, the NPGS is an at-

tempt to insure that plant breeders and other scientists have a diversity of plant germplasm to continue to make crops more productive.

Jones provided an update of the system for many of the nation's wheat growers, as well as agricultural scientists, and industry and government officials attending the first National Wheat Research Conference. The coordinated system, he said, is already more efficient and workable than the haphazard assortment of previously independent research and collection stations that have joined the NPGS.

A computer-assisted Germplasm Resources Information Network is the central nervous system of the NPGS, Jones said.

When fully operational, GRIN will provide both 'suppliers' and 'demanders' of germplasm with abundant data on over 400,000 accessions of germplasm in the form of seed and vegetatively propagated stock. Many of the accessions are wild or semi-wild progenitors of today's crop plants and other 'unimproved' germplasm that will extremely valuable to breeders in the future.

Suppliers (7,000 to 15,000 new accessions are added each year) acquire, maintain and distribute plant germplasm and data. Major suppliers include plant collection curators and staffs of various USDA plant introduction stations. Demanders or users of the NPGS include plant breeders, scientists and nurserymen.

Jones told the Wheat Conference audience that some GRIN hardware is installed and that USDA Regional Plant Introduction Stations are loading the Network with data.

"Though we now have more access to germ plasm data, the NPGS needs to increase its human resources," said Jones. "For example, we need more evaluation and enhancement of NPGS stock". With collections of such living materials as seeds, there is periodic need to remove samples for field evaluation, and to improve the quality and quantity of seed accessions.

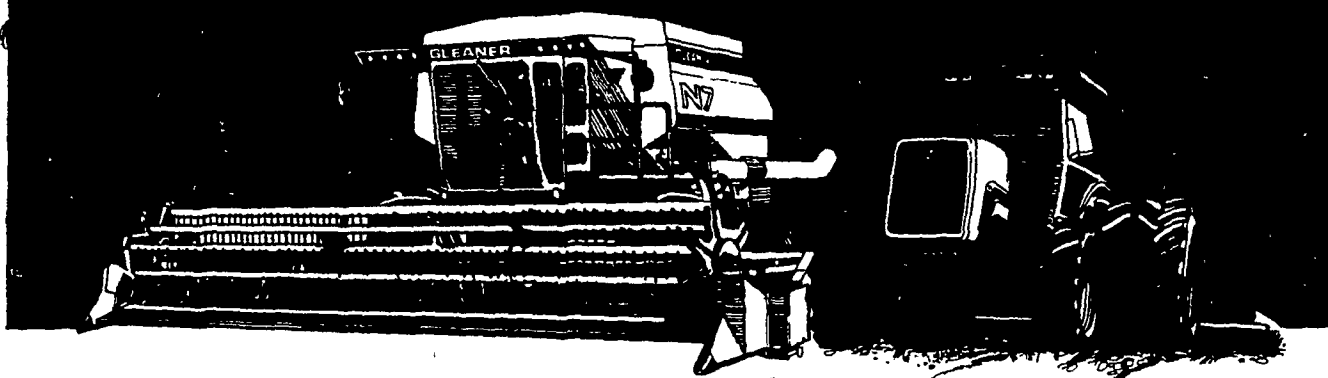
The National Plant Germplasm System also includes many advisory groups. Crop advisory committees, for example, provide research guidelines, and policy and management activities for a specific crop. The NPGS is also a major component of an international plant germplasm network.

For further information on the NPGS or its components, contact Stephen M. Berberich, USDA-ARS Public Information Specialist 301/344-3542.

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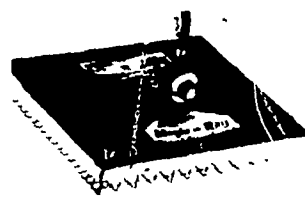
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