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Germplasm and How to Protect It

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Plant improvement has been going on for centuries, but not until the state agricultural experiment stations began publicly supporting germplasm development research did plant breeding in the United States as we know it today come into being. This partnership of plant breeding research and public funding has, by any standard, produced incredible results in advancing the productivity of crops. Cooperation has expanded the partnership to include such public organizations as the Agricultural Research Service, Soil Conservation Service, the Forest Experiment Stations of the U.S. Dept. of Agriculture, and many parts of the private industry.

Nationally, plant genetic resources are managed through the National Plant Germplasm System (NPGS). Within this system, there are four regional Plant Introduction Stations, National Clonal Germplasm Repositories, and a Seed Storage Laboratory. A major component of the Germplasm System is the Germplasm Resources Information Network (GRIN). GRIN is a centralized computer database of information about these plant genetic resources. Its purpose is to facilitate management and operation of the NPGS and to enhance communication with scientists regarding the location and characteristics of plant germplasm they may wish to use for research purposes. The database is designed to permit flexibility to the users in storing and retrieving information. To make the data in GRIN understandable and consistent, Crop Advisory Committees composed of crop experts from the public and private sectors develop evaluation and characterization criteria as well as descriptor lists and standard methods of measurement and reporting. Any scientist from North America or an International Agricultural Research Center can request a log-in identification and an access code by writing to the GRIN Database Management Unit. Documentation and instruction for use of the system also are supplied. Scientists also can access the system by contacting their Regional Plant Introduction Station where GRIN operators are available to help with individual requests.

In recent years, there has been a significant decrease in public breeding efforts in response to the expansion of a private plant breeding industry, emergence of new research opportunities in bio-

technology, and decreased funding, particularly at the State Agricultural Experiment Stations. Plant improvement is a long-term process and is expensive in terms of scientist years, land needs, and germplasm storage. The increase in commercial programs of breeding and variety development has reduced the need for similar public breeding programs, while increasing the need for training of plant breeders to support that private industry.

Traditionally, the agricultural experiment stations have encouraged open exchange of germplasm and information. However, as private firms try to protect their products and the state experiment stations try to find a means of returning money from completed releases to support continued research, we are faced with new issues that have not yet been resolved. Through the U.S. Patent Office we have Plant Patents for asexually propagated plants and Plant Utility Patents used for a variety of intellectual properties including plant parts, processes, genes, and physical traits that may or may not be specifically identified with a given gene. Through the U.S. Dept. of Agriculture, we have Plant Variety Protection for seed-propagated plants. In addition, we also have proprietary rights to cultivars, royalties, research or tag fees for particular releases, trade secrets, and trademarks for point of origin and branding (which is really the same thing as trademarking).

Not surprisingly, different parts of the germplasm business favor different pieces of the protection apparatus. Biotechnology companies favor Plant Utility Patents, private seed companies use Plant Patents, trademarks, and proprietary rights, and universities generally favor the traditional Plant Patents, although royalties and tag fees are popular as a means of returning some of the costs of research. Understandably, land grant universities show less support for trade secret protection since they are funded by public funds.

Free vs. restricted exchange of germplasm becomes a major issue. Plant patents have been around long enough so that we have some basis for judging their impact; but what of trademarks, proprietary rights, and the use of utility patents to protect intellectual property? And what effect will these restrictions have on publicly funded research? Use of these restrictions and their impact on the

development of horticultural crops are the subjects of this symposium, and several topics on these subjects will be explored in depth. New policy and practice guidelines are needed at all levels of publicly supported germplasm programs and for the interface between

public and private concerns. Symposia such as this one can help develop new, mutually agreed-upon rules for use among cooperator.