Plant Science After Fifty Years

On July 1, 1951, organized plant science in the federal government will celebrate its fiftieth anniversary. Although various units dealing with plant science were already in existence in the Department of Agriculture, creation of the Bureau of Plant Industry brought them together on July 1, 1901.

In these fifty years the foundations have been laid for much of our present-day plant science. One of the reasons that the contributions of the Bureau have been so significant and far-reaching has been its cooperative relationships with the state agricultural experiment stations. In the space available we can mention only a few of the high lights.

When the Bureau was created, one of its employees was already making history by deliberately growing cotton plants in wilt-infested soil and selecting individual plants that showed resistance. This was one of the first scientific applications of the principle of survival of the fittest, a principle now widely used in all crop-improvement work.

Other work already in progress when the Bureau was born dealt with bacterial diseases of plants. The discovery that many plant diseases were caused by bacteria was made in Illinois, but Department scientists were among the first to grasp the significance of this discovery and develop practical means for controlling some of these little-understood diseases.

The original concept of hybrid corn came from outside the Bureau, which contributed to the developmental stage and served as coordinator and clearing-house for the many state and federal workers. There is no doubt that hybrid corn came into wide use much earlier because of this teamwork among scientists.

The success of hybrid corn stimulated plant breeders to seek hybrid vigor in other crops. Progress was slow at first, but in recent years the discovery of male sterility in onions, sorghums, tobacco, sugar beets, and many other crop plants has opened the way for additional gains. Success with onions has been striking.

The influence of photoperiod on plants was discovered by two Bureau workers in 1920. The discovery that some plants require long days for flowering and fruiting, whereas others require short days, has many practical applications in present-day agriculture. For example, varieties of plants that bloom at different times can now—by controlling their exposure to light—be made to bloom at a time convenient to plant breeders.

Thirty years ago curly top on sugar beets and mosaic on sugar cane threatened to wipe out these crops. Plant breeders developed varieties resistant to these virus diseases that not only restored production but increased yields and sugar content.

In more recent years Bureau workers have played leading roles in the study of plant-growth regulators. Besides its many contributions to fundamental science, this work led to our present widespread use of chemical weed-killers and preharvest sprays to prevent premature drop of apples and other fruits.

Another development of recent years has been induced polyploidy in plants. Interspecific and intergeneric crosses are now an accepted method of crop improvement, enabling scientists to utilize hardiness and disease resistance of many wild species.

One of the activities for which the Bureau has become known throughout the world is plant introduction. Begun for the purpose of adding desirable new plants to American agriculture, this activity has grown into a highly specialized search for desirable characters, such as hardiness and disease resistance, that plant breeders can use in developing superior new varieties.

Plant science must be closely integrated with research on soils and work in agricultural engineering to be most useful to farmers. This was recognized by the merger of these activities to form the present Bureau of Plant Industry, Soils, and Agricultural Engineering.

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