

Penn State research feeds a hungry world

UNIVERSITY PARK — "The No. 1 motivating force for future agricultural research will come from a hungry world," says Samuel H. Smith, dean of Penn State's College of Agriculture.

Smith says that how and where this research is accomplished will depend on many factors, including public and private funding, climate, and faculties, staff, and administration of land-grant institutions throughout the United States.

The Agricultural Experiment Station is an important part of the system of public research organizations serving agricultural science, he notes. This system includes some 16,000 scientists nationwide and consists of 54 agricultural experiment stations and the research agencies of the USDA.

"In the U.S. there is no other significant training ground for a sizable proportion of the world's agricultural scientists," says Smith. This training is crucial to the future of industry, commerce, government and educational institutions.

Research, Extension and teaching go hand-in-hand and reinforce each other in the process. The benefits are multiple and radiate outward when a young creative student is given the opportunity to train under a gifted researcher, Smith states.

The land-grant system, of which Penn State is a part, has a proven track record and along with the USDA has carried out 95 percent of all the publicly supported agricultural research done in America during the past century.

However, Smith says that past successes are no guarantee for the future. There has been a continual erosion of base line funding support for agricultural research. Federal funds for scientific instruments and facilities have fallen by more than 50 percent in real terms even as the costs of equipment and laboratory renovation have been rising much faster than the cost of living.

"We have also noted in recent years a dramatic shift in our research funding sources," adds Smith. Agriculture traditional sources of federally funded "formula" programs have tended to remain static while monies for competitive grants in specific areas of research have increased.

A ten-year comparison of research funding sources for Penn State's Agricultural Experiment Station clearly show a shift to special funds such as contracts, grants and agreements both public and private. The increase in this type of funding during the period of 1971-81 was almost 50 percent—from \$1,335,000 to \$2,000,000.

During the same period, U.S. appropriations increased a modest 7 percent. The University support dropped almost 9 percent. This decrease reflects reduced support (in real dollars) from the state government.

What are the areas of emphasis in Penn State agricultural research program?

"Nearly one-third of our scientists' time in our Experiment Station is devoted to seeking ways to produce and adequate supply to farm and forest products and to reducing real production costs," says Smith. This allocation has not changed much in the past eight to ten years.

Twenty-two percent of our scientist's time is devoted to the protection of forests, crops, and livestock from insects, diseases, and other hazards.

Penn State will be maintaining this emphasis on agricultural production and protection of crops, forests, and animals. Any substantial increase in these areas, however, will probably have to come from external funding.

Two areas where Smith sees a potential for increased emphasis are in projects designed to improve marketing efficiency and in developing new and improved products.

In 1980, Penn State devoted 127 scientific man year equivalents to agricultural research. In this same year, New York State had 316 man years of effort and New Jersey had 99 man years.

When this manpower input is translated into dollars of product from agriculture and ag-related industries per scientist year, Pennsylvania shows \$59,700,000 of product per scientist; New Jersey has \$36 million of product per scientist; and New York has \$21.6 million of product per scientist man years.

Since organized research has been underway in the College of Agriculture for about 100 years,

Penn State has had an opportunity to explore many areas of promise.

"Ours is a task of steadily and frequently slowly developing the knowledge needed to make incremental gains. Although this is not dramatic and traditionally does not receive the media headlines, our research is effective," explains Smith.

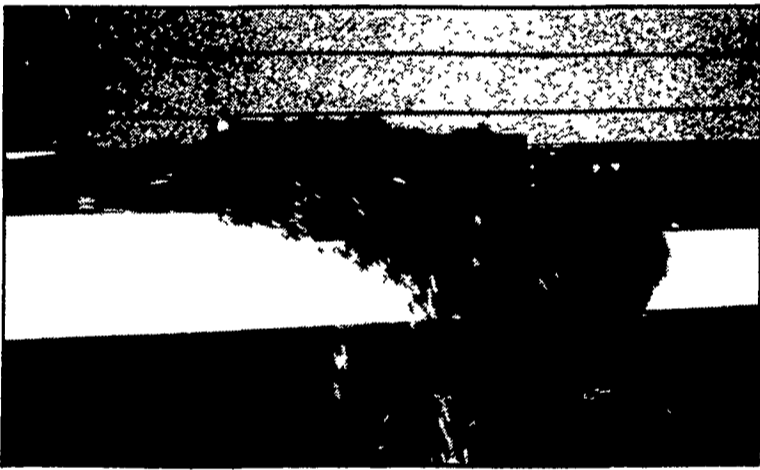
The most spectacular "breakthrough" for the land-grant systems was probably that of corn hybridization in the late 1930s. This had a tremendous effect on corn yield...but less dramatic findings have had a much larger effect.

Since 1970, it is estimated that increases in production five times that due to corn hybridization have resulted from application of the "pedestrian" research that produced small incremental gains.

Research is a long and tedious business and the promise of great returns may be agonizingly slow to pay off. Dairy Breeding Scientist John Almqvist, who is receiving

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