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Good times and bad for agricultural research

Agricultural experiment stations across the country have just celebrated the 100th anniversary of the Hatch Act, the enabling federal legislation that created them. After relatively modest and humble beginnings, these experiment stations, along with the Agricultural Research Service of the U.S. Department of Agriculture, have grown in size and scope until, today, they are among the most comprehensive and successful organizations yet devised by any nation.

Despite its success, the agricultural research establishment is troubled. Some have suggested that it has lost its way and is not responsive to the needs of its clients. Farm surpluses and agricultural subsidies, coupled with the federal deficit, cause critics to suggest that further agricultural research may only aggravate problems.

In addition to these attacks, agricultural institutions face a host of other problems. Enrollments in agricultural curricula across the country are dropping dramatically, and many of the most productive agricultural scientists are now approaching retirement age. Universities are raiding agricultural faculties for positions and resources to bolster more favored disciplines. Attracting new recruits adequately grounded in basic science is increasingly difficult, since many of the best and brightest students are enticed into molecular biology, computer science, or business programs, often unaware that they can pursue their scientific or other interests in the agricultural sector.

Agricultural experiment stations are under fire for being unresponsive to state needs at a time when a large fraction of the money budgeted for agricultural research is tied up in salaries. Only by accepting funds from nonagricultural sponsors can a faculty member carry out any research at all. When increased funds are provided by the federal or state governments, the political process often results in the earmarking of those funds for the benefit of a very narrowly defined special group or topic. Meanwhile, start-up costs for newly hired scientists have risen to more than \$150,000; our laboratories are aging; equipment is obsolete or nonexistent; and our research farms are sorely underfunded.

We might ask, "What else is new?"

Even a casual review of the history of agricultural research in this country reveals that the relatively bounteous period of growth in the fifties and sixties was an anomaly. For most of its existence, the agricultural research establishment has had to live by its wits, always short of funds and facilities.

But never before have there been so many exciting scientific discoveries coming out of our laboratories. The revolution in biology rivals in significance that in physics in the early part of this century. The new discoveries in molecular biology and genetics, new concepts in neurobiology, developmental biology, ecology, and in fact, all across biology, will have enormous impact upon agriculture and agricultural research in the next few decades. Basic scientists who are now only interested in new knowledge are learning, often to their surprise, that the first applications of many of their discoveries will be in agriculture.

Agriculture is blamed for many environmental problems, but it is only one segment of a culpable society. It is important to note that agricultural scientists are at the forefront in studying toxic waste management, food safety, water quality, forest management, land use, and environmental policy and economics. These scientists are strategically positioned to diagnose and evaluate solutions to those problems, whether they involve scientific, economic, or political issues.

The recent decision of the National Academy of Sciences to elevate the status of agricultural science within its membership is an indication of a growing recognition of the importance of this field. The familiarity of all scientists with agriculture is of great potential benefit to the agricultural industry as it struggles with difficult economic and regulatory problems.

Despite the obvious difficulties, it is an exciting time to be an agricultural scientist. To take advantage of our opportunities, we must work more closely with our clients, we must improve our procedures for setting research priorities, we must reduce duplication of effort where it occurs, and we must be honest with ourselves and our sponsors about the costs of doing research. We will have to do a better job of explaining what we do and how we do it. We must also bring that same pragmatic research skepticism to the examination of how we manage and fund our research and extension organizations.

The administrators of our agricultural research institutions face challenges that would have daunted the most optimistic and confident of their predecessors. But the future prospects have never been more auspicious for the development of an even more effective agricultural research organization with far-reaching effects on everyone.