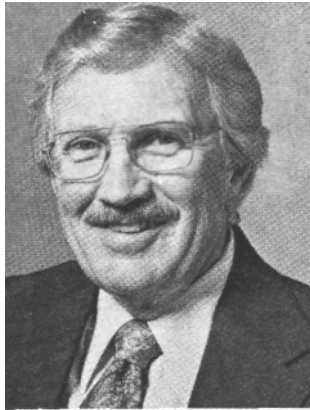


Whither Agricultural Research?

J. B. Kendrick, Jr.

Vice President—Agriculture and *University Services, University of California Systemwide Administration, Berkeley, California.*



As principal speaker, Dr. Kendrick made this presentation at the annual meeting of the California Avocado Society, September 29, 1979, at Santa Barbara, California.

In examining the question, "whither agricultural research?", it is useful to reflect briefly on the history of agricultural research development in the United States. How did it get started, or more importantly, why did it start and then develop as it has during the past century? We owe an eternal debt of gratitude to a group of political and academic leaders who lived during the middle of the 19th century. Because of their wisdom, foresight, judgment, and action, they set the United States on a course which recognized agriculture as a significant element in the United States' economic, political, and social structure.

Congress enacted and President Lincoln signed the Morrill Act in 1862 which established the Land-Grant College system. That act recognized the importance of educating young people in agriculture and mechanic arts.

That same year the U.S. Department of Agriculture was created which gave further evidence of a national commitment to the importance of agriculture. A third important action of Congress occurred in the 1860's with passage of the Homestead Act. This was, of course, a great stimulus to our early agricultural development. Twenty-five years after establishing the Morrill Act, Congress enacted the Hatch Act in 1887, which recognized the need for a dispersed system of agricultural research organizations to support the national commitment to the development of a sound agricultural economy and viable rural communities.

Twenty-seven years were then to elapse before the triumvirate of teaching, research, and extension was to be consummated by Congressional action in 1914 to establish an extension system under the authority of the Smith-Lever Act. The genius of this sequence of events is that teaching, research, and extension of knowledge into practice were linked together within the same administrated unit to provide support to a developing agricultural system in the United States.

What were the circumstances which suggested to our leaders that agriculture needed these special considerations and supportive programs? For one, we were developing new territories west of the Mississippi River, our country was large, transportation and communication were slow and difficult. Farmers lived in relative isolation from each other, and from urban centers. For another, farmers faced a wide variety of problems associated with unfamiliar environments and soils, new pests, new diseases, and poorly performing varieties and animal stocks. They had no place to go to secure help in solving these problems. Individually farmers were too dispersed, too poor, and their farming interests were too diverse to organize and support their own research and information dispensing systems as was possible in the concentrated industries located in the urban centers of our nation.

Public funding for research, teaching, and extension was the answer because it was conceived to be a need not only for the farmer-operator, but also in the best interest of our nation as a whole as it strived to achieve true independence. There is no question that public investment in agricultural teaching, research, and extension has paid handsome dividends to our country. Attempts to quantify the yields on this public investment in research alone show that the value of returns range from 12 to over 100 percent. No other public expenditures can approach this remarkable return. To claim that all the credit for this envious achievement is due to this public commitment is to ignore irresponsibly the contributions made by the determination and ingenuity of our farming community and the abundant natural resource base of our land and our favorable climates. The fact which we can justifiably view with satisfaction and pride is that by combining these factors in working toward a common goal, we have become the most productive agricultural nation in the world. We have supplied ourselves with food at the lowest cost per capita amongst all countries while at the same time we have stimulated a worldwide commerce in agricultural products which returns to this country a major share of our foreign exchange activity.

So much for history. Society does not let us rest on our laurels. We are proud of our heritage, but new problems threaten our affluence and comfortable existence. New questions are being raised which need answers. Has not our once struggling, infant agriculture reached a state of maturity and firm establishment where public assistance is no longer required in the manner and amount we have given it in the past? Our agriculture has nearly achieved parity with the rest of our industrialized society and is capable of supporting many of its own needs and answers achieved through research and technological innovation. Poor communication, inadequate transportation, educational deficiencies, and rural poverty are no longer primary characteristics associated with our agricultural communities. Is it not time to *redirect* public assistance to other major societal concerns, such as health care, national security, unemployment, crime prevention, environmental deterioration, urban-blight, mass transit systems, air

pollution, diminishing supplies of natural resources, the rapidly escalating costs of energy and a concomitant reduction of its readily available supply, uncontrolled inflation of our monetary system, and rising expectations of an increasing number of ethnic minorities? View these concerns in the context of a public which is beginning to resist *seriously* (and understandably) increases in public expenditures.

The public, speaking through their elected representatives in state and federal legislative bodies, are asking public agencies to make choices between items on the agenda of things to do. They want to know what things are essential, what things are desirable but not essential, and what things are obsolete or nonproductive? They are questioning whether publically-supported activities are really beneficial to the public-at-large or are they fashioned to the benefit of a narrow segment of society which is seen as capable of supporting itself?

This is the environment that I and my colleagues who administer publicly supported agricultural research programs find ourselves in today.

In California, the passage of Proposition 13 by an overwhelming majority of the voters and the impending adoption of its companion, the Gann Initiative, bring sharply into focus for those of us in the University of California the need to examine critically what we do in our programs, and measure our accomplishments and goals against a set of priorities identified by the public, or at least justified on the basis of broad public need and interest. A further complication for us is the projected decline in the numbers of college students during the next decade and a half. This means there will be a careful examination of **all** programs and activities of the University of California, to measure their value in preserving the quality and character of the University of California consistent with expressed public needs.

Aside from these external factors forcing us to examine critically our future course of action in publicly-supported agricultural research, there is another compelling reason for doing so. Following World War II we added many new people to our Experiment Station and Extension staffs. We allocated those positions and their support to problems of agriculture which were deemed to be most important at that time. I was among *that* new class of University faculty. Well, more than thirty years have passed and my "class" will be "graduating" during this coming decade. Since there are quite a few of us, there is an opportunity to restructure our faculty and staff in a way so that the anticipated problems of agriculture can be addressed effectively.

So we find both national and local efforts being devoted to identifying the most critical agricultural research needs during the next three decades. The decisions reached about how my class is replaced will set a course of activity in publicly-supported agricultural research for a period not likely to end until near the year 2020. I hope you can appreciate and understand the importance of this emerging era of decision making with respect to the future of agricultural research.

There is a component of agricultural research and extension activity that is supported by private funds and about which I have said very little as yet. (By private funds, I am referring to non-general tax funds.) It is not neglect on my part for leaving the subject unmentioned until now. It is, rather, the necessity of laying before you the circumstances and influences which will prevail during our planning process and

decision making affecting the future of agricultural research. When problems of the future are identified, questions will follow about which of the problems are appropriately addressed by the publicly supported programs, and which are more appropriately handled by private research organizations or privately generated monies. I have no hesitancy in predicting that more and more of the solutions to agricultural problems and the service needs of the future, which are perceived to benefit primarily the user of the information, will be met through privately funded activities.

There are two ways in which private funds are used to support these needs. One way which is very costly, but in some ways more efficient from industry's point of view, is to build and support research and extension organizations totally controlled by the proprietary interests. Our large industrial companies have long participated in this way and we now find some of our large agricultural enterprises following the same practice. Your own avocado industry has engaged in this kind of program particularly in dealing with your needs in product development. The other way is to channel private funds into public agencies to support specific needs of the various privately operated enterprises. There is nothing sinful about this arrangement and it is to be encouraged.

It is often more cost effective than supporting an entire research organization, and furthermore such funding arrangements are usually mutually beneficial to both the public and private groups. The change in the arrangement for the future for which we need to prepare and to understand, is that these will probably assume a more contractual arrangement than they have in the past. In more direct language than I've used up to now it will mean an increased cost because contracts carry an obligation to support a portion of the overhead costs of the institutions doing the work.

What then are the future agricultural problems which are fully in the province of public responsibility?

In my judgment, they fall in the category of the basic research needs to gain a better understanding of the growth and reproduction activities of plants and animals. They include studies which cut across individual disciplines such as integrated pest management, water efficiency utilization in agriculture, development of new sources of energy supplies, utilization and disposal of our agricultural wastes, soil reclamation, erosion control, obtaining greater efficiencies in the use of our natural resources while simultaneously avoiding unnecessary depletion of their supply or deterioration of their qualities, improving the nutritional quality of our foods, gaining a better understanding of nutritional requirements and their relationship to human as well as animal health, improving our labor-management practices, and continuing to improve the economic stability and desirable features of our rural communities.

I believe these problems are just as important to the future well being of our agriculture as were some of the more specific problems which faced agriculture during the first half of the twentieth century. They are, however, *more* complex and difficult to solve, because they involve many more professional disciplines and are influenced by societal and political values which have changed and continue to change. There is plenty for the publicly supported research institutions to do, of critical importance to the public interest. Our challenge is to achieve an understanding among the public, and those of you in agriculture, of the importance of these problems in relation to all of the other societal

demands for public assistance.

A final word to you of the California Avocado Society is offered in sincere and humble appreciation for the past support, both moral and monetary, which you have given us in the University of California. We have had a long and I believe generally beneficial relationship. We have seen your industry grow in importance, and hopefully we have been of assistance in that growth. I want that relationship to continue and for you to share that desire. Today I hope you have gained some increased understanding of the pressure points affecting the future of agricultural research at publicly supported institutions and can appreciate our need for your support.

Whither agricultural research? — will to an important degree be up to you. Thank you for inviting me to share these thoughts with you. You have been a fine audience.