# White House Seeks to Reform USDA Research

## *President's staff and Secretary Bergland push basic science and peer review "with teeth"*

At the behest of the President's science adviser, Frank Press, and the Secretary of Agriculture, Robert Bergland, the federal government began a new drive last summer to reexamine the way it manages agricultural research, with the twin goals of putting more emphasis on basic science and improving the general quality of work done at federally supported institutions. There is a pressing need for change, Department of Agriculture (USDA) officials say, because the traditional research establishment is not coming up with new discoveries rapidly enough to meet projected demands for food in the next few decades. Proposals discussed at the White House last summer are now being put into effect despite the fact that they have been resisted by powerful traditionalists such as Representative Jamie Whitten (D–Miss.).

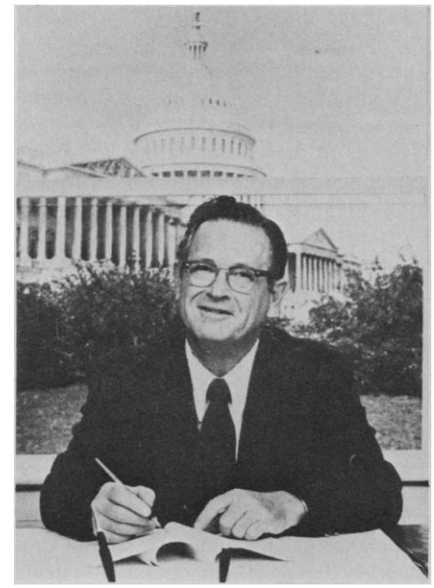
The groundwork for reform was laid out in the farm bill of 1977 (PL 95-113). It increased the authorization for agricultural research, established a competitive grants program to encourage basic science, and made USDA the lead agency for food and agricultural sciences.

Changes in the organizational charts began to take effect shortly after passage of the bill. In 1978, several independent research programs were gathered under a single office called the Science and Education Administration (SEA). The most important of these are the state-run Cooperative Research (CR) system (which received about one-fifth of its support—around $138 million—from the federal government last year), also known as the "formula-funded" program because monies are passed to the states according to a fixed equation; the Agricultural Research (AR) program (funded at around $386 million last year), an intramural program run by federal employees at government laboratories; special grants (totaling about $21 million), which are awarded by a variety of methods to researchers in state institutions; and competitive research grants ($15 million), which are open to any scientist and are awarded by peer panels selected by the USDA staff.

The competitive program caused particular trouble when it was launched in 1978, because it was seen at first as an attempt to sabotage the traditional system dominated by the land-grant colleges and supported by formula funding. Some Administration officials now say that they may have blundered when they began to implement the law, needlessly provoking the wrath of the state institutions (*Science*, 14 September). For the most part, this battle raged in obscurity because the public does not much care what happens to agricultural research funds. Despite the opposition, USDA and White House officials have resumed the push for reform, believing that farm productivity and the research that supports it will soon become topics of general concern.

The overriding problem of the American farm economy at the moment is the same one that has bedeviled farmers for most of the century: overproduction. Although individual fortunes rise and fall, farmers in the aggregate are generally so efficient that they continue to dump food surpluses on the market each year, keeping wholesale prices low and making their enterprise one of the riskiest in the country. Yet if studies embraced by the USDA are correct, this historic pattern may reverse itself in the next 10 years, just as the oil supply situation has, creating a sellers' market. There may be an element of wishful thinking in this prediction, but it is confirmed by judicious forecasts made not only by USDA, but by independent study groups at such institutions as the National Academy of Sciences, the Office of Technology Assessment, and the White House Office of Science and Technology Policy.

On 10 July, Frank Press met with Secretary Bergland to discuss steps that might be taken to strengthen the research arm of the department. He took with him a memo, written by staff aides Denis Prager and Gilbert Omenn, which is worth quoting in some detail, for it reveals how the Administration would like to proceed. It begins with praise for past accomplishments ("Agriculture largest U.S. industry . . . dramatic increases in animal and crop productivity despite declining acreage") but points out that some of the "toughest research problems" are "not being adequately addressed." Among these are environmental stress on plants and animals, cell and organ growth regulation, resistance to pests and diseases, behavior of animals and insects, artificial propagation of genetically desirable plant cells and animal embryos, and several others. External reviews have found that agricultural research is "not keeping pace with rapid advances in other fields," and that the USDA is "not uniformly applying rigorous standards of quality in intramural and extramural programs."



*Jamie Whitten, chairman of the House agricultural appropriations subcommittee, defender of formula-funded research.*

Some of the recommendations, which are understood to be "constrained by current political realities and personalities," are as follows. The first order of business is to increase the "clout" of the Science and Education Administration director, Anson Bertrand. That was done on 20 July; Bertrand now sits on the department's Program and Budget Review Board and, although he is not called an assistant secretary, he has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equivalent authority and reports directly to the secretary.

For the federally owned and operated research centers (AR), the memo recommends that more emphasis be put on long-range national problems, and that rigorous peer review be used to strengthen AR programs. Specifically, it suggests that all AR facilities undergo regular reviews at 5-year intervals, conducted by scientists from outside, and that "work judged to be least meritorious" be ended to help finance more innovative projects.

In the extramural area—including the state-run Cooperative Research program, special grants, and competitive grants—the memo stresses the need for peer review by outside scientists, a desire to phase out mediocre work, and a goal of putting "teeth" into the existing 5-year reviews of state agricultural research programs. It also recommends that more sabbaticals and leaves be given to encourage communication between agricultural researchers and other scientists in related fields.

Some of these suggestions are being implemented now; others may take years to accomplish. It will be particularly difficult to tinker with the special grants category, as Prager explained, because it is a "favorite of the congressional committees." Representative Whitten, chairman of the House Appropriations Committee and the subcommittee on agriculture, "simply does not believe in the competitive approach," Prager said. He thought it misleading to call special grants a peer-reviewed program, for this category includes awards specified by Congress, awards made by administrative decision at USDA, and others made by an informal process of peer review conducted by the director of the special grants office. Members of the review panels are chosen on an ad hoc basis by the USDA staff and may include USDA scientists, including those who, if they were not administering the grants, might be interested in applying for them. There are no standing committees of reviewers. The system is said to work efficiently, but is generally regarded as less rigorous than the one developed by the USDA for reviewing competitive grants. It is not clear why the department should maintain two peer review systems when one would do.

Politics plays at least as important a role as science in deciding how some of these funds are dispensed, as the fiscal 1980 budget reveals at a glance. (Keep in mind that the chairman of the relevant House subcommittee is from Mississippi; the Senate chairman, from Missouri.) The House appropriation bill this year includes special grants of $25,000 for "dried bean research in North Dakota," $250,000 for "soybean cyst nematode research in Missouri," $50,000 for "bean and beet research in Michigan," $150,000 for "acquaculture at Stoneville, Mississippi," and so on. In hearings before the House appropriations subcommittee last March, Representative J. Kenneth Robinson (R-Va.) revealed how he and perhaps some of his colleagues regard USDA's research operation. He pointed out to the department witness, Talcott Edminster, that "English boxwood is a landscaping plant of traditional and historic prominence in Virginia and many other states." The Virginia Polytechnic Institute (VPI) was looking into organisms associated with boxwood decline. "Would it not be appropriate to earmark a modest measure of support" for this line of research at VPI and elsewhere? Robinson asked. Edminster declined, saying there were well over 1000 species of woody trees and shrubs classified as landscape plants, and the USDA could not worry about them all.

No substantial changes are planned for the competitive grants program, according to SEA director Bertrand. However, he says that for administrative reasons, it will soon lose its independent status and be moved into the office that manages the Cooperative Research (CR) program jointly with the state schools.

Although Bertrand says the move is being made in order to concentrate the management of all extramural grants in one office, some of the defenders of the competitive program are worried that the shift may weaken its integrity. State research directors, who have long dominated the policies of CR, may not be interested in helping this orphan program grow and thrive. Prager has expressed this concern, as has Lawrence Bogorad, a professor of plant sciences at Harvard University and a member of the USDA's Joint Council on Food and Agricultural Sciences. S. H. Wittwer, director of the Michigan State University agricultural experiment station, says he regrets that the competitive grants program will be moved "one step further away from the secretary," but this may have no significance, "as long as it's properly administered." He had hoped that the program would seem important enough to USDA that it would be kept in an independent office.

Changes in the cooperative program will be handled with great care, in part because the state participants in this federation have not fully recovered from the

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## Tories Prefer Nukes

Britain's Secretary of State for Energy, David Howell, told an audience in Washington, D.C., on 2 October that the new Conservative government has no qualms about developing nuclear power as a source of energy and plans to expand the nuclear program inherited from the Labor government. Speaking at a luncheon given by the Women's Economic Roundtable, Howell said his reaction to the accident at Three Mile Island was a feeling of reassurance: "It showed that when some stupid errors were made, and the system was put under great stress, safety was still maintained."

Howell was in town for informal meetings with American energy officials and was not prepared to reveal the details of the government's new energy policy. These will be spelled out in a white paper due for delivery in a month or two. He did indicate, however, that construction of nuclear plants—including fast breeder reactors—will be the first priority. Britain now derives 13 percent of its electricity from nuclear power. Plants under construction will increase that figure to 20 percent by the early 1980's. And the conservatives would like to move even faster. As part of that program, the government is expected to propose the construction of a pressurized water reactor under license from an American firm.

Howell does not plan to launch a new energy conservation program, he said, because "this is an area where the state must not attempt to mastermind idealistic schemes. We do far better to rely on the commonsense incentive to save energy." The high price of OPEC oil, he argued, is an adequate incentive. Britain will not increase its investment in synthetic fuel factories, Howell said, because the economics are not right. Furthermore, the new government intends to reduce its involvement in oil operations in the North Sea both by administrative action and by selling off shares of the national oil company.

Howell declined to criticize America's energy policy, other than to say, "All Europeans wonder at what stage your love affair with the gigantic car will pall." He suggested that it is difficult to take American conservation proposals seriously as long as the


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insult of Carter's 1979 budget, which proposed a net reduction in formula funding. USDA officials are reluctant to do anything that might cause further offense, for they seem to think the states might withdraw from the federation. Nevertheless, Bertrand does plan to have the department look more critically at the way states conduct research. He has created an evaluation and impact office, directed by J. Michael Brazzel, an economist, whose sole task will be to study the impact of USDA programs and suggest ways to improve the management of research. Brazzel hopes to hire 10 to 12 professional analysts, but at the moment he has no staff. It is not yet clear how much clout the department will give his office.

Although the agricultural experiment stations do conduct internal reviews of individual projects, Prager says, they are generally not the kind that would "pass muster" at the National Institutes of Health or the National Science Foundation. "They are still pretty much carried out by the people at the stations. It is highly unusual, if not unheard of, to bring in an outsider. The reviews are usually done by the same people who get the grants." The 5-year program reviews have similar problems. As a rule, the chief research official chooses the time of the review, the subject, and the reviewers. The USDA's role has been to offer advice when requested and occasionally to send its own employees to sit on panels. No effort is made to see that their advice is followed.

Some universities and experiment stations have an excellent record in soliciting and using outside criticism, Prager says, but many do not: "they are very mixed in quality." There is no equivalent of a national accrediting body for the agricultural schools, and thus no universal procedure for setting standards.

As a group, the state research institutions have shown little enthusiasm for outside reviews until now, so it is no surprise that the federal government should offer to become an active critic on their behalf. Undoubtedly some state officials will see this as an example of Washington's inclination to meddle in others' affairs. But given the spotty record of self-criticism in the past, this kind of meddling could be very helpful.

—ELIOT MARSHALL

# Productivity Problems Trouble Economy

## *Everybody talks about the lag in the growth of productivity, but nobody seems to know enough to do much about it*

A lag in the growth of productivity has been diagnosed as the new American disease. In the past 10 years the average yearly rate of increase of productivity in the United States was half that of the previous two decades, and in the past year or so the rate has been virtually zero. Flagging productivity has become the most popular shorthand explanation of why the United States is increasingly vulnerable to inflationary pressures at home and to foreign competition in world markets.

Concern about sagging productivity was a major stimulus to the recent Domestic Policy Review of Industrial Innovation (*Science,* 27 July). And politicians and policy makers are giving the problem priority status in hearings and studies. Prospects for a simple solution, however, are not very promising. Economists studying the problem see it as a complex phenomenon with multiple causes. And if blame is to be allotted, the culprits are likely to be found in an economic hall of mirrors where, once again, the enemy is us.

During a period of inflation, the pressure for wage increases is strong and other costs of production go up. Without a rise in productivity, business can meet higher costs only by cutting profits or raising prices. All of this exacerbates inflation and puts heavy pressure on the dollar.

Although economists who study innovation and its relation to productivity are cautious about categorical explanations, it is possible to point to several contributing factors.

America's relatively high productivity rate in the years after World War II owed much to the movement of agricultural workers to other sectors of the economy, especially service industries. Agricultural workers are now such a small part of the work force that this trend can no longer be a significant source of gain in productivity. Also, the relatively high education level of the U.S. work force is no longer viewed as advantageous over other countries. And the labor force has become increasingly inexperienced because of an influx of women, young people, and part-timers, who are thought to be less productive than older male workers.

Some economists assign major blame for the slump in productivity to a shift to a "service" economy. The service sector includes wholesale and retail trade, finance, insurance, real estate, the professions, business, repair services, and general government. The percentage of the labor force in the service sector rose from about 50 percent to 60 percent between 1950 and 1970. In general, productivity has risen more slowly in this sector than in industry, which includes manufacturing, mining, construction, communications, public utilities, and certain government-financed enterprises.

Victor R. Fuchs, of Stanford University and the National Bureau of Economic Research, is one of a number of economists who, nevertheless, discount the notion that the slowdown in productivity is largely attributable to growth in the service sector. In a contribution to a recent book on economic growth,* Fuchs referred to analyses of sectoral differentials to make his point. In particular, he emphasized the decline in productivity in the economy as a whole and the importance of the growth of the work force. In seeking to explain the decline in annual productivity growth from an average of about 3 percent in the 1960's to 1.5 or 1 percent in the 1970's, he suggested that the growth of the service industry accounts for about 0.1 percent of the decline and the influx of women into the labor force for a similar portion.

*V. R. Fuchs, in *Economic Growth or Stagnation: the Future of the U. S. Economy*, J. Backman, Ed. (Bobbs-Merrill, Indianapolis, Ind., in press).


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