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## Funding Public Agricultural Research

Wallace Huffman

*Iowa State University*, [whuffman@iastate.edu](mailto:whuffman@iastate.edu)

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## *Funding Public Agricultural Research*



*Wallace Huffman is professor of economics at Iowa State University and author of various publications on funding and the impacts of public agricultural research.*

The United States has developed a very successful R&D system for agriculture. It is a system of shared cost and performance. The federal government provides about 24 percent of all agricultural research funds, while state governments provide 16 percent and the private sector assumes the remaining 60 percent. In contrast, federal agencies actually perform about 15 percent of the research, compared to 31 percent carried out by state agencies and 54 percent conducted by private businesses. Thus, the federal government and private sector transfer, on net, funds to state institutions for performing agricultural research.

Public expenditures on R&D are justified by the existence of large social (collective) benefits relative to private (one individual or company) benefits. The U.S. Department of Agriculture (USDA), with its Agricultural Research Service and Economic Research Service,

performs most of the federal government's in-house agricultural research, and the State Agricultural Experiment Stations (SAES)—vet med schools conduct most state agricultural research. The in-house USDA research is all federally funded, and its justification hinges on conducting research that benefits the nation and requires specialized resources. The SAES—vet med schools have federal, state, and private funding for research. Both the federal and private components have been receiving considerable attention.

For federal funding of state-level agricultural research, a tension exists between "formula" and "competitive grant" funding. Formula funding of state agricultural research, where states share federal funds based on a legislated rule, originated in the politics needed to pass the original (1887) and amended Hatch Act legislation. However, to obtain formula funds, states must at least match the federal formula funds with other research funds. Thus, if a state accepts federal formula funds for SAES research, it agrees to spend at least twice the formula amount on agricultural research. This has been a strong inducement for states to help support agricultural research. The research agenda is set by SAES directors whose primary clientele reside in their respective states. With formula funding, the federal government has no real input into the choice of research projects undertaken by SAES scientists.

Although the USDA's competitive grant program started in 1977, it expanded significantly during the late 1980s and early 1990s. With this program, the research agenda is set at the national level. Scientists across a broad range of institutions compete for these funds. The proposals rated highest by a peer review panel are awarded the research funds. Significant research sources are invested in proposal prepara-

tion and evaluation, and these come from other resources, for example, "uncommitted" federal formula or state government research funds. Additional transactions costs are imposed when grant awards do not cover the resource cost of completing a "funded" project. Some state directors and research administrators favor and others disapprove of the direction set by federal competitive funds and the leveraging which these funds often require.

Clearly, federal formula and competitive grants programs contain dramatically different economic incentives for research at the state level. Research discoveries are uncertain and a diversity of incentives and approaches generally leads to better social outcomes. This is an argument for finding the proper balance of research topics and funding mechanisms and seems to require further examination of the issues.

Private sector investments in R&D are affected by the type and strength of intellectual property rights (IPRs) to innovations. The strengthening of IPRs to biological materials over the past twenty-six years stimulated the rapid growth of private R&D for agriculture. The private sector allocates about 10 percent of its R&D funds to SAES—vet med school research. It primarily supports R&D leading to marketable products and processes. Public performance of research with private sector funds raises conflicts of interest. Private firms want exclusive rights to innovations. The private interests may also redirect public resources to the pursuit of private interests and greatly change the composition of innovations produced. State and federal taxpayers may find these terms unsatisfactory. Hence, much is at stake as state institutions seek funding for and manage their agricultural research activity.

*Wallace Huffman*