Research and Extension Expenditures Rising

by Gregory M. Perry

Research expenditures at the state agricultural experiment stations, forestry schools, 1890 land grant colleges, colleges of veterinary medicine, and related institutions increased from $1.063 billion in 1982 to $2.225 billion in 1997 — a 31 percent increase in real dollars. Funding comes from many sources, but can be organized into seven major categories: (1) USDA formula funds, (2) USDA grants (including NRI, special grants and cooperative agreements), (3) Other USDA funds, (4) Other federal funds, (5) State appropriations, (6) Industry grants and (7) Other. In 1997, state appropriations represented nearly half of total research expenditures, federal sources contributed another one-third, with industry and other sources contributing the rest (Figure 1).

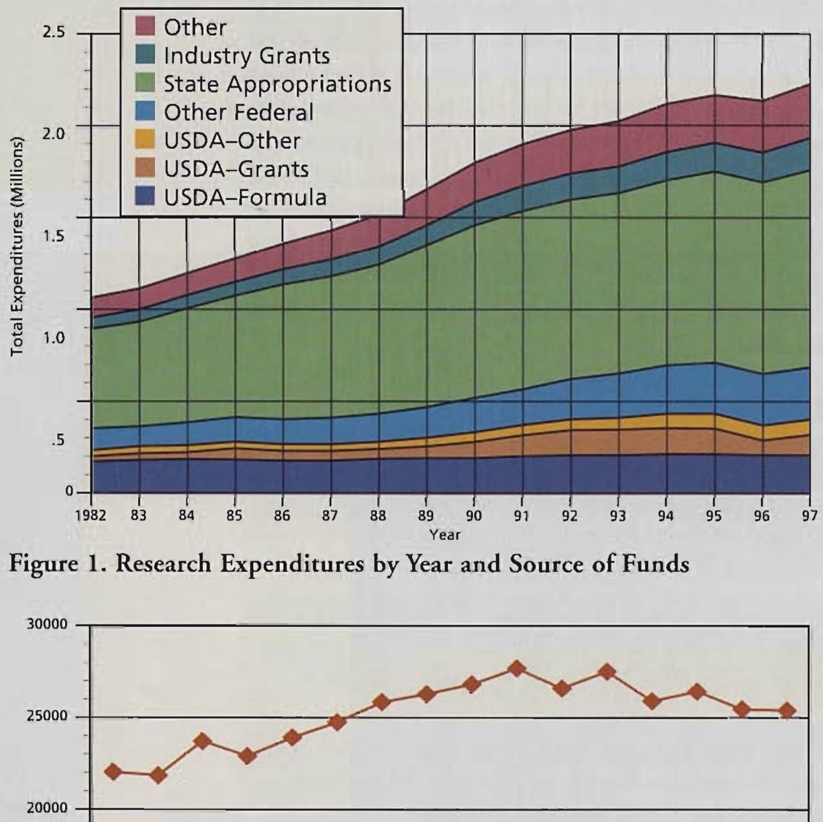


Figure 1. Research Expenditures by Year and Source of Funds

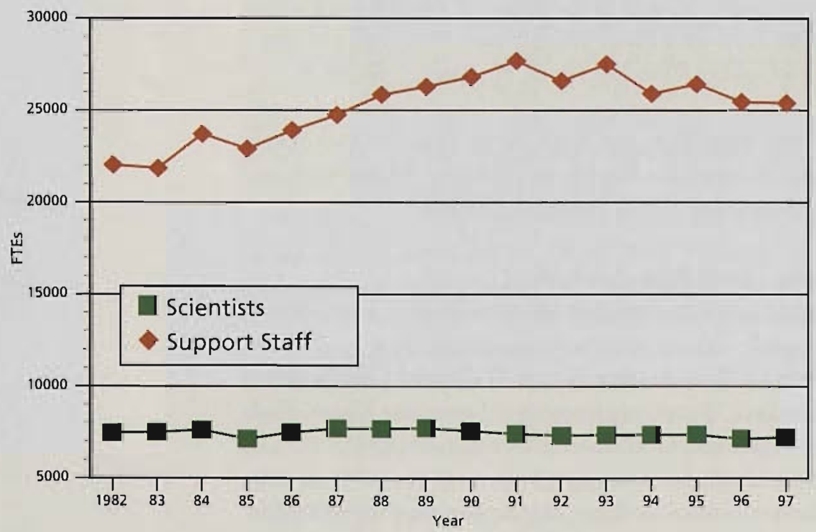


Figure 2. Total Number of Scientist and Support Staff FTEs by Year

The percentage of funding from each sources changed substantially from 1982 to 1997. Federal formula funds declined nearly 25 percent in real dollars during the period. In 1982, formula funds represented nearly 50 percent of all federal monies. By 1997 this had fallen to 30 percent. State funding is the major non-formula source of hard monies for agriculture and natural resource research. This source grew by 23 percent over the same 15 year period. Because state appropriations are substantially more than formula funds, real growth in hard funds was 13 percent from 1982 to 1997. The long-term financial commitment required for tenure track faculty suggest that most formula and state appropriations are used for salaries. Even with modest growth in hard funding, the number of scientist years spent in research declined by 3 percent during the 15 year period (Figure 2).

The major areas of real growth in research funding were USDA grants (up 164 percent), Industry (up 81 percent) and other sources (up 71 percent). Grants typically provide short-term funding used to pay for equipment, supplies, graduate and post-doctoral students. Consistent with this growth in funding, the number of support staff involved in agriculture and natural resource research increased 15 percent from 1982 to 1997. The shift suggests that faculty roles have changed with more emphasis on grant-writing, organization of projects and staff supervision. This shift probably has resulted in greater productivity for the existing faculty, with more effort spent on activities uniquely suited to their training and talents.

Research funding grew about 29 percent in the Northeastern, Southern and Western regions of the United States. Growth in the North Central region was close to 38 percent in real terms. The 1890 Schools experienced an 11 percent real decline in research funding primarily as a result of reductions in USDA formula funds, which represent over 90 percent of their funding sources.

Extension Expenditures

Information about federal and state expenditures on extension programs is difficult to obtain, and the data are reported in more aggregate form. Figure 3 shows data for 1982-1995 (the last year data were available). Reports sent to CSREES by the state extension programs show total extension expenditures increasing from $849 million in 1982 to $1472 million in 1995 — a 5.0 percent increase compared to a 33 percent increase in research expendi-

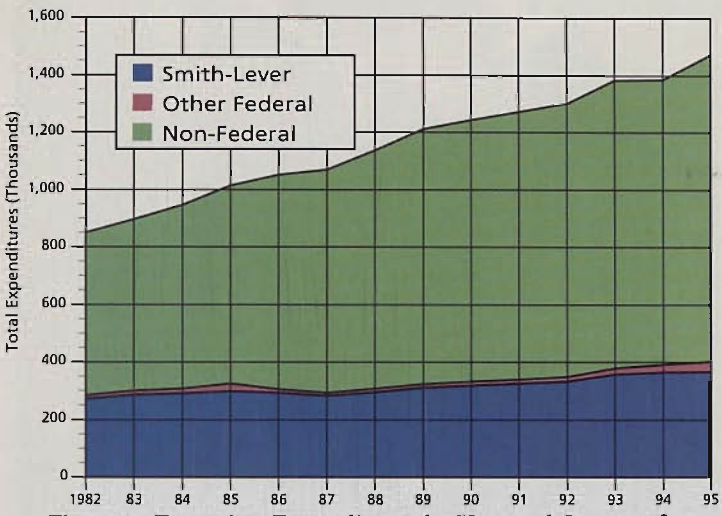


Figure 3. Extension Expenditures by Year and Source of Funds

tures during the same period. About one-third of research and extension funding in 1995 came from federal sources, but over 90 percent of the federal extension funds were formula based. Federal formula funds for extension did not change in real terms from 1982-1995. Extension program funding did not experience a real reduction in federal dollars, but extension did not experience the real increases in total funding that occurred for research. This difference can be traced to soft funding support, which has become much more important to research but seems to play a minor role in extension funding.

Funding Differences by Program Area

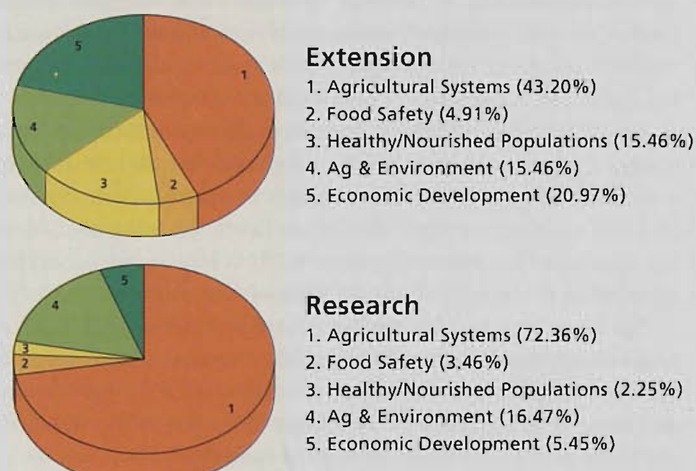
In 1996 a National Synthesis Conference was held to identify future directions for research and extension programs at Land Grant Universities. Participants identified five major program goals. (1) An agricultural system that is highly competitive in the global economy, (2) A safe and secure food and fiber system, (3) Healthy, well-nourished populations, (4) Greater harmony between agriculture and the environment, and (5) Economic development and quality of life for citizens and communities. Figure 4 illustrates the proportion of research and extension dollars being spent in each of these five areas. It is striking to note that 72 percent of all research expenditures are allocated to the traditional role of agricultural research programs: helping farmers increase production and farm profits. Although this is down from 75 percent in 1982 and probably lags actual allocation of resources, it still suggests that universities are reluctant to shift resources away from traditional areas. Although extension also allocates the largest share of its resources to this first goal, expenditures are much more evenly distributed across all five goals. In particular, extension devotes a much larger proportion of its resources to Economic Development and Healthy, Well-Nourished Populations.

Implications

Agriculture and natural resource research is becoming more dependent on grant funds. Increasing grant support will shift efforts toward current issues, particularly those that have immediate economic payoffs. Will this shift be beneficial as Land Grant Universities continue to carry out the mission outlined in the Morrill Act? Can the 1890 Universities reorient their research programs to make them more attractive to providers of soft funding? Perhaps the hazards that come with the shift toward grant-based research will ultimately be beneficial, because the competition for grants will force researchers to be more responsive to important research issues. Should extension also move towards this model?

The comparison between research and extension funding by major subject area raises interesting questions. Is it socially optimal for universities to dedicate so much of their scarce resource dollars to one area, even one as important as improving the competitiveness of agriculture? And is the mix between research and extension expenditures optimal for helping farmers become more competitive? Is enough research being conducted in the areas of Healthy, Nourished Populations and Economic Development to support extension programs in these areas? ■

Figure 4. Breakdown of Extension and Research Expenditures by Goal Area, 1997



The editor anticipates a second "Graphically Speaking" article from Gregory M. Perry in a subsequent issue. The second article will be devoted to an analysis of research expenditures by scientific field.