



## Responding to the Challenges

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California agriculture and its related industries are immensely important to the state's economy, accounting for 9-10% of the state's employment and GDP. This \$65 billion sector, heavily dependent on the availability of natural resources, also requires a steady stream of research-based information and new and improved technologies to thrive and remain competitive. The Division has been, and will continue to be, a primary source of this information and technology.

However, the environment in which California produces its food and fiber and uses its natural resources has changed dramatically and will continue to evolve. Three such changes — population and economic growth, the “greening” of the state, and the globalization of agriculture — create new and increasingly complex research and extension program challenges and opportunities.

- With the state's population projected to rise to 36.5 million by the year 2000, the implications for agriculture are obvious — greater economic pressure on natural resources; heightened conflict at the rural-urban fringe; increasing dominance of urban population with little understanding of agriculture.

- Californians will continue to place high social value on environmental quality with environmental regulation and policies becoming more pervasive and stringent. Agricultural production will have to occur under circumstances that reflect its interdependence in the use of natural resources with other users and take explicitly into account the environmental effects of agricultural production.

- The globalization of agriculture offers both opportunity and challenge for California. California producers will have to operate in an increasingly competitive global market. With trade and economic liberalization (e.g. NAFTA) and international mobility of production factors, the impacts of globalization may be dramatic.

California agriculture, to remain competitive while operating in an environmentally friendly manner, will be even more dependent on the continuous flow of productivity-enhancing technologies and improved management systems. Therein lies the major challenge to agricultural research and extension: the development, adaptation and application of new research-based knowledge. We must have holistic, interdisciplinary systems frameworks within which many science and education components can be fitted.

Areas where we should increase or expand our research and extension efforts are:

- Plant and animal biology. While costly and risky, there is great potential for payoffs in the development of agriculturally related biotechnologies.

- The interaction among natural science phenomena under circumstances of varying agricultural production regimes.

- The development of more environmentally friendly management regimes to control a broad array of pests to which California crops are vulnerable.

- Public policy, planning and educational processes. Cooperative Extension should play a much expanded role in topics such as land-use planning and coordinated local/regional planning related to growth.

Other high priority research and extension needs include disposal of waste generated by agricultural production, the PM-10 air pollution problem, issues pertaining to food safety, and the health and safety of farm workers, to mention a few.

A traditional response to these challenges and opportunities would be to say, “Give us more money and great results will emerge!” Clearly more money would help after the state funding debacle of the past several years.

However, in my judgment, we would be deluding ourselves in assuming a likelihood of any substantial real increases in public funding for agricultural research and extension in years to come. I believe this will apply “across the board” to state, federal and county funding. I hope to be proven incorrect in this forecast. But the most likely scenario is for near-term cuts in federal support through USDA for both research and extension, static or declining support at the state level, and gradually withering support for Cooperative Extension from county governments hamstrung by Prop. 13 and unfunded mandates.

I believe the private sector must ultimately be prepared to shoulder a larger portion of our applied research and extension program costs. The \$11 million we receive from commodity groups in the form of contracts and grants are important sources of support, but they account for only a small fraction of our total applied research and extension costs and a minuscule portion of gross agricultural sales in California.

Broadening our agenda is in the long-term interest of California agriculture; there is no escaping the changes shaping agriculture. And the evolutionary changes I have suggested are in the best long-term traditions of the Division and the University, to create and extend knowledge through research and to lead in the process of change in society by the power of knowledge and ideas.