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## Meeting challenges of the 1990s in agriculture and natural resources

From some future vantage point, the 1980s may well be characterized as a decade of major transition for California agriculture—a decade in which agriculture ceased to be judged solely on the market value of production and began to be judged on the basis of multiple economic, ecological, and social criteria.

One of the important lessons of the 1980s derives from the economic performance of agriculture. At the beginning of the decade, global recession caused agricultural exports, prices, income, and asset values to plummet. Unstable, poorly designed national and international economic policies, not events “down on the farm,” were the primary causes of those difficulties. Likewise, recovery in the late eighties stemmed from forces well beyond the farm gate—more stable monetary policies and resumption of economic growth abroad.

These roller-coaster conditions reinforced the dependence of agriculture on national and international economic policies and events. Agricultural markets, capital, labor and management, research and development have become increasingly international in scope and operation. In turn, they are driven by the interaction of national economic policies. Maintaining competitiveness in this highly interdependent world will be an even greater challenge in the nineties.

Other indicators of future forces likely to affect agriculture also emerged in the eighties. Most prominent were the public values and goals voiced concerning the use of natural resources and quality of the natural environment.

The continuing struggle over water resources, compounded by recurring drought, underlined the critical role this resource will command in the future of California agriculture, and the entire state. Water “swaps” between agricultural and urban users and water markets for privately held rights, for example, took on new significance as harbingers of the future.

With population growth and the spillover from urban to rural areas, the future use of prime agricultural land commanded increasing attention, as is evident in “rights-to-farm” and “no growth” or “slow growth” ordinances and in increased state subventions to local governments to retain land in agricultural use.

Air pollution in prime agricultural production areas, particularly the San Joaquin Valley, posed ominous threats to agricultural productivity.

California is a populous, urban state. It will be even more so by the end of the nineties as the population approaches 32 to 33 million. Agriculture must adapt to and co-exist with this growth. One result will almost inevitably be higher costs for natural resources used by agriculture.

Reflecting growing concerns about the quality of the environment, the eighties witnessed a plethora of stringent command-and-control regulations affecting agriculture and natural resources. Most

prominent were those related to use of pesticides and other chemicals in agriculture, food safety, air and water quality. An expanded lexicon of laws and programs reflecting public concern came into common use—Proposition 65, sustainable agriculture, integrated pest management, biological control, environmental risk management, to name a few.

Occasional outbreaks of virulent pests and diseases and further evidence of pest resistance to chemicals were reminders of the biological vulnerability of “high-tech” agriculture and of the necessity to build and retain diversity in genetic stock. An accumulation of scientific evidence on acid rain, the “greenhouse effect,” and global warming demonstrated the interdependence of agriculture, natural resources, and environmental quality and the need for more unified science, research and public policy to address such issues on a global basis.

Clearly, the boundaries of agriculture’s interests have been extended by events of the eighties well beyond the farm. Gone is the time when agriculture could be characterized as a unique, isolated sector of the California economy. In the nineties agriculture will be seen as one of many uses for natural resources in an urban society. The effects of agriculture’s use of those natural resources on environmental quality and on the quality of life of the predominantly urban population will pose increasingly complex, controversial public policy issues. The results could have profound economic effects on the future development of agriculture.

Numerous adjustments and new perspectives will be needed if agriculture is to continue as a viable industry in the urban, globally interdependent society of the nineties. Public policies, many of which were formulated under vastly different circumstances and under premises of independence, not interdependence, need to be recast. Agricultural institutions themselves need to be guided by new strategies to take advantage of international markets and the new political calculus. Strategies based on agricultural fundamentalism or on the primacy of agriculture in the use of natural resources are likely to be less and less viable, possibly counterproductive, in the nineties.

As in recent decades, science and education will play crucial roles in shaping the future of agriculture and natural resources in the nineties. As stated recently by Assistant Secretary of Agriculture Charles E. Hess, “the single resource that U.S. farmers can draw upon to maintain their leading edge is science and technology.” The Division of Agriculture and Natural Resources, through its resident instruction, research, and extension components, is uniquely positioned to contribute to the development of agriculture and management of natural resources in the nineties. To do so will require additional public investment in research and education that will sustain broader, more holistic programs serving the interrelated interests of people in an urban society.