

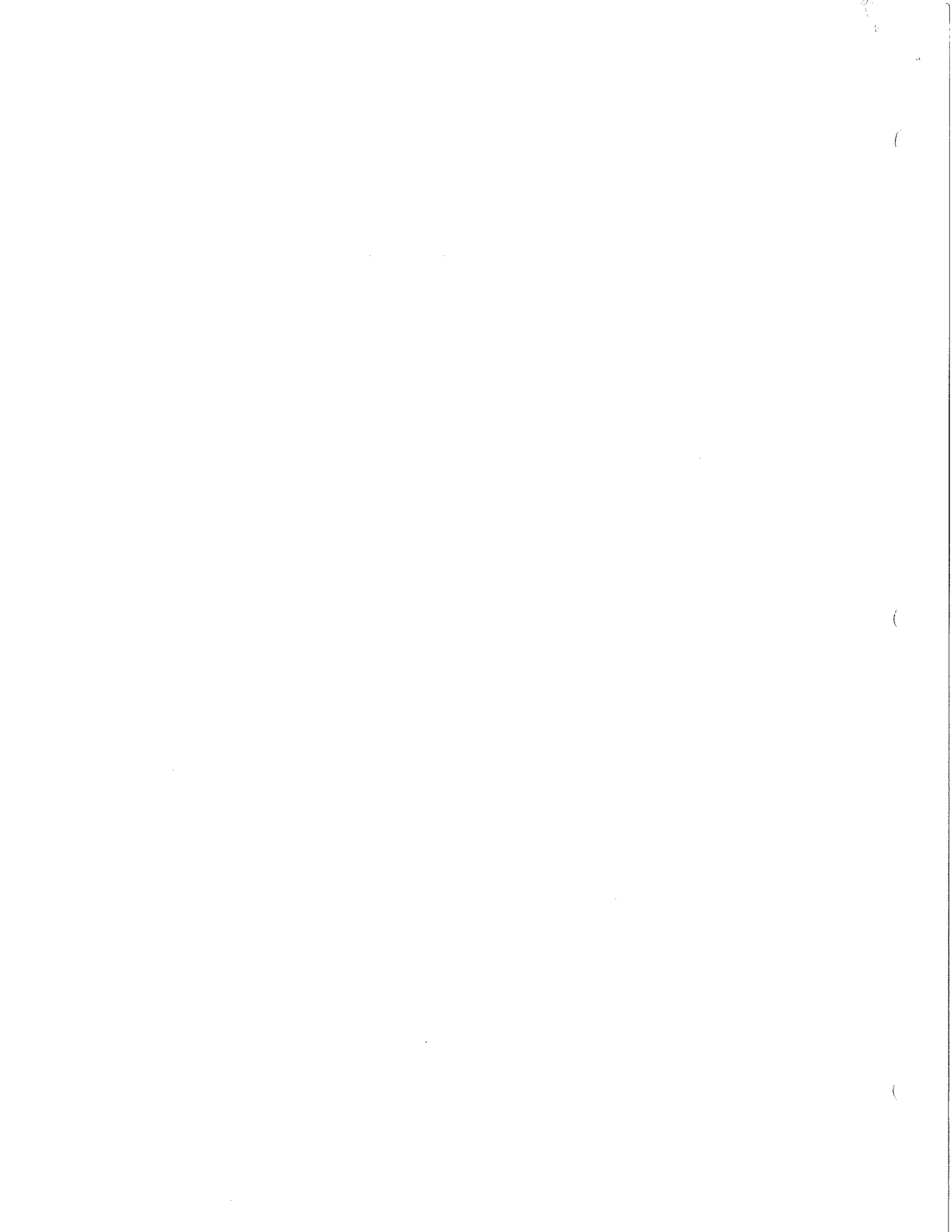
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**Maintaining California's Competitive
Technological Advantage in Viticulture**

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**Report to the Annual Meeting of the
California Association of Winegrape Growers**

February 26, 1993



Political policy and public perceptions are forcing unprecedented change upon the agricultural industries of the state of California. Agriculture will be facing an intensely competitive national and international marketplace as we enter the next century. How can the winegrape industry not simply remain competitive but increase its competitive advantage? The answer is not to focus on what your competition is doing nor be content with merely being competitive, but to provide the best product that you can. Best in terms of quality, nutritional content and safety, all with a minimal impact on the environment, while simultaneously maintaining a low cost of production. The great wines and wine styles of Europe were created and inspired by a desire to produce the best possible product in that region, not by a desire to be competitive in the market place. A critical component of a strong, competitive industry is a strong research base, one that does not just respond to new trends and technologies but directs the future, providing leadership for the industry internationally.

Agricultural industries have historically received federal and state support of research activities conducted by major universities across the country. The federal land grant mission appears to be being abandoned as a policy, with agriculture now expected to support the full cost of research. Is public support of the land grant mission a bad idea? No, because in reality the public, and not agriculture, gains the most from public investment in research in agriculture. The true benefits of agricultural research are only rarely achieved in the short term. For example, Andy Walker, a plant geneticist in the Department of Viticulture and Enology has estimated a 10 to 15 year time frame from the initial breeding of a new rootstock to commercial use. This research is critical to the long term survival and health of the grape industry, but results in "future generation" economic gain. Short term benefits are required for "same generation"

economic gain. By "same generation economic gain," I mean providing an economic benefit to growers during their life span as growers, while "future generation economic gain" provides economic benefits to growers of the future. Growers today are reaping the benefits of investments in research made years ago on such things as clonal evaluations, malolactic and yeast strain characterizations and we are paying the price for research not continued. After the introduction of AxR, our rootstock breeding program lay dormant for 25 years, forcing us to rely on imported information on rootstock performance.

When farming operations were largely family run and passed on from generation to generation, which generation benefited from the research was not important. In today's world, support of research no longer necessarily means securing a financial future for your own descendants, but for your industry. Do growers of today benefit from securing a future for their industry? Not necessarily. Who does benefit? Society and the public, which is why public funding of long term or basic agricultural research made sense and was instituted as national policy in the first place. The public gains directly by having a secure food supply fostering urbanization, and indirectly by having a guaranteed industry to provide jobs and revenue. The public also gains from having a safe, cost-effective food supply. Economic analyses indicates that 80 percent of the cost benefit of agricultural research is realized by the consuming public and only 20 percent by agricultural businesses.

There is an additional benefit to the public of public support of agricultural research, and that is in directing the nature of that research independent of short term, profit-driven goals. Increasing agriculture productivity so that food supplies remain adequate for the population, low in cost, and minimizing the impact of agriculture on the environment, benefit the consumer more

directly than the producer — although everyone does benefit. Maintaining a strong agricultural industry under the purview of your own government allows the public to dictate the safety of the product they will be consuming. Imagine a scenario whereby California agriculture was forced out of business and we were at the mercy of foreign producers — just think about the challenges of trying to institute legislation minimizing chemical use in a foreign country for food exported to California. In the absence of a strong agricultural industry within California, we would be completely at the mercy of foreign producers. Instead of OPEC we would have AGPEC.

Since society and the public derive the greatest benefit from agricultural research, public support of that research is still sound and still makes good sense. However, times are changing and government support of agricultural research is rapidly declining. We could simply stop doing agricultural research and watch our industries become non-competitive and eventually disappear. Or, we can take a proactive, albeit for many growers altruistic, approach of strong industry support of research with the full knowledge that future, not current, generation growers may reap the larger benefits of that research. Funding for short term problem solving research is also disappearing and needs to be maintained to assure current generation health and competitiveness of the industry. The ability of the University to respond quickly to the urethane problem prevented that issue from being economically costly to the wine industry.

Many people have asked me to explain the logic and rationale behind these forces of change. I can't, and I don't think there is any. It seems like we are taking a sledge hammer to something that not only isn't broken, but is working well. In fact, I would be delighted to give my undivided attention to anyone who could explain it to me. If I were an elected state official, the last thing I would want to do is walk away from a partnership as successful, efficient and

effective at supporting the public interest as this one. I do not want to imply that this partnership is problem free, as we all know it isn't, but no active dynamic partnership is ever problem free. Every constituency of this state, regardless of socioeconomic standing or chosen life style benefits directly from the quality, safety, variety, affordability and availability of our current food supply. This is not some happy accident, but a consequence of our existing government-industry-university partnership. If the government entity drops out of this equation, will the remaining two partners serve the public as well? I would like to think so, but I do not see the same ethic of public service at the world's greatest private universities that exists at the world's greatest public ones. I am confident, however, that we can manage the change ahead of us to assure that the agricultural industries of this state and the University of California are stronger than ever.

Attention to the public interest has always been a strong component of the mission of the Department of Viticulture and Enology, and we are reluctant to give it up. We have created a novel kind of support group for the department that has the aim of increased and continued involvement of consumers and the greater public in our activities. The response to this group, which does not yet have a name or a strong sense of purpose beyond our conviction that it needs to exist, has been remarkable. People are calling us to ask for invitations to join. We hope this group will assure that we continue to maintain public awareness and accountability.

Other states and countries are investing heavily in winegrape research. The Australian wine industry raises close to three million dollars to support an industry one-eighth the size of California's. The French government, European community, and wine industry are investing the equivalent of six million dollars in genetic engineering of grapevines. Some growers have said, "let them pay for it and we will use the technology when it becomes available." Unfortunately,

the rootstock the French have had the most, and so far only, success with transforming is sensitive to phylloxera biotype B. These recombinant rootstocks will be useless in California, and maybe in France as well. Several states, Indiana, Washington, Oregon, New York, Michigan and Missouri, have instituted excise taxes on wine sales (largely California wines), and the funds generated are applied to research and development of their own wine industries. In essence, California producers are being taxed to support rival industries but are not generating their own funds to maintain their own research and technology transfer needs.

Other agricultural industries in California invest more heavily in research than does the grape industry (Figure 1), and other states are investing more heavily than we are in agriculture in general (Figure 2). In addition, there is a paucity of federal funds in support of research on grapevines. Grapes are the ninth largest agricultural commodity in the U.S. (Table 1), but no federal funding is being spent on the genetic development of grapevines (Table 2) in contrast to other commodities. It is clear by all criteria that the investment in grape research in California and the U.S. is minimal.

These arguments for the critical need of the grape industry to support research have all been made before and were eloquently stated to this same group last year by Rich Smith. What has happened in a year? Many of you generously supported the American Vineyard Foundation, for which we are grateful. The Department of Viticulture and Enology, and our own Industry Advisory Council, has been actively thinking about and discussing our situation and possible solutions. Not just how we can find the financial resources to maintain current levels of research and cooperative extension support, but how can we better meet the needs of the grape industries of California? How can we give the California grape industry even more of a competitive

advantage than it enjoys right now? Is it possible to develop a better working partnership between the University of California and the grape and wine industries of California? Can we take advantage of the fact that change is being thrust upon us to improve, not merely sustain, our working relationship?

With the current budgetary structure of the state of California, the University of California is moving towards privatization. If privatization is indeed inevitable, then the agricultural industries will need to co-privatize research activities along with the University of California. If the agricultural industries were to privatize research independent of the University, costs would be prohibitive. Each commodity would need every discipline represented and maintained. For example, each group would need a cadre of entomologists and plant pathologists. Under the current University system, entomology faculty and research teams can be mobilized to address whatever the current pest crisis is, for whatever industry or industries are affected, allowing a multidisciplinary, coordinated approach. This is not only logical and efficient, but also cost-effective.

So, even though the current relationship between the University of California and our agricultural industries is working extremely well, is a win-win-win situation for the producers, consumers, and University, and not really in need of change — change we must because of forces beyond our collective control. The grape and wine industries of California can provide needed leadership in guiding that change. We have the knowledge of partnership that has come from working together for over a century. We also have the wisdom that has come from not working together on occasion during that same century. What direction do we need to go to maintain our competitive advantage? We must be multidisciplinary and flexible. Flexible

enough to respond to the ever changing needs of the industry in terms of the numbers and types of academic and support positions, particularly in cooperative extension. We need to bring all of the disciplines needed by the industry under one umbrella, not just the sciences currently comprising the department, but other critical areas must be represented, such as economics and management. And, yes, the industry will need to generate more, and stable, funds for research and support services.

I have formed a task force of University and industry members. We are currently examining existing models and structures of cooperative arrangements to see if we can design a better system for determining and meeting the research needs of the industry, assuring strong cooperation and communication, and you will see more details about our ideas in the near future. I want to conclude with a challenge — a challenge to the grape industry to create a new win-win scenario and a stronger partnership with the University of California, with increased investment by the industry, with the full acknowledgement that the public and not the private sector has the most to gain from that partnership.

TABLE 1

Top 20 U.S. Crops by Value of Annual Production (Averaged over 1989-1991, x \$1,000)				
1.	Corn	18,050,553	11. Apples	1,423,228
2.	Soybeans	11,012,199	12. Sorghum	1,285,201
3.	Hay	10,484,918	13. Peanuts	1,259,915
4.	Wheat	6,842,532	14. Rice	1,115,786
5.	Cotton	5,324,154	15. Barley	962,106
6.	Tobacco	2,711,945	16. Lettuce	890,328
7.	Potatoes	2,414,428	17. Mushrooms	652,052
8.	Tomatoes	1,762,320	18. Dry Beans	599,655
9.	GRAPES	1,755,029	19. Strawberries	593,226
10.	Oranges	1,665,326	20. Almonds	539,798

Sources: Crop Values 1991 Summary and Noncitrus Fruits and Nuts 1991 Summary. Agricultural Statistics Board. National Agricultural Statistics Service, United States Department of Agriculture (1992).

TABLE 2
SPECIES, NUMBER OF GRANTS, AND FUNDING LEVEL

Species	Number of Grants	Grant Amount	Percentage of Grant Total
Corn	21	\$ 2,642,000	25
Tomato	13	2,387,000	23
Bean	4	270,000	3
Cotton	2	260,000	2
Soybean	3	306,000	3
Wheat	2	176,000	2
Sorghum	1	210,000	2
Barley	1	120,000	1
Alfalfa	3	437,151	4
Pea	2	325,000	3
Cabbage	1	180,000	2
Potato	1	180,000	2
Rice	1	60,000	1
Pepper	1	260,000	2
Brassica	4	318,374	3
Lettuce	1	265,000	3
Poplar	2	250,000	2
Flax	1	150,000	1
Cuphea	1	210,000	2
Carrot	1	118,000	1
Tobacco	2	275,000	3
Pine	3	260,000	2
Chlaymodomonas	1	185,000	2
Arabidopsis	7	885,000	8
Cyanophora	1	150,000	1
Total	76	\$10,489,525	104

Note: The total number of grants is 76. The total dollar amount is \$10,498,525. The difference between the total values is due to more than one species reported per grant. Average per grant is \$138,020.

Source: S. McCarthy, 1992, Plant Genome Research Grant Program — First Annual Report, Probe 2:4-5.

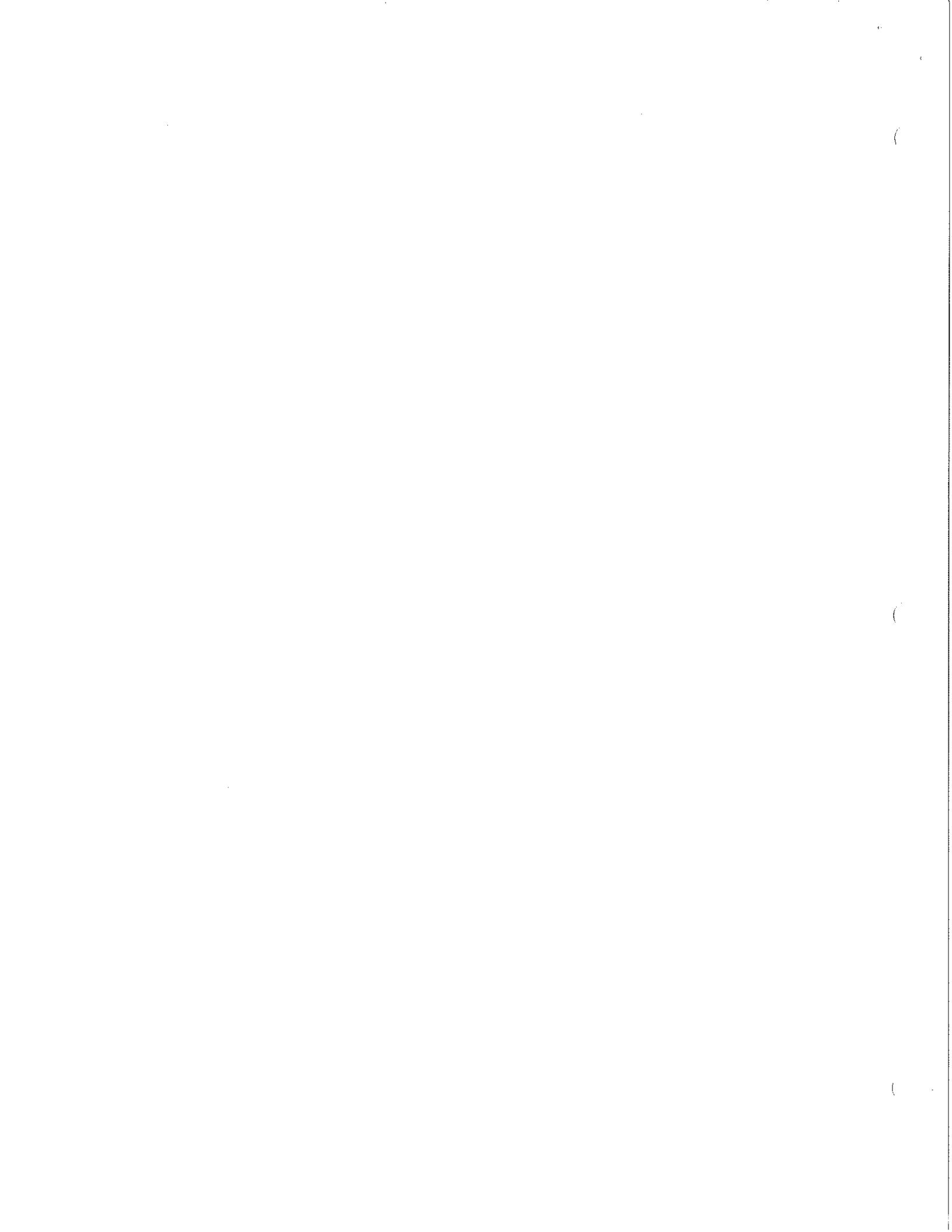
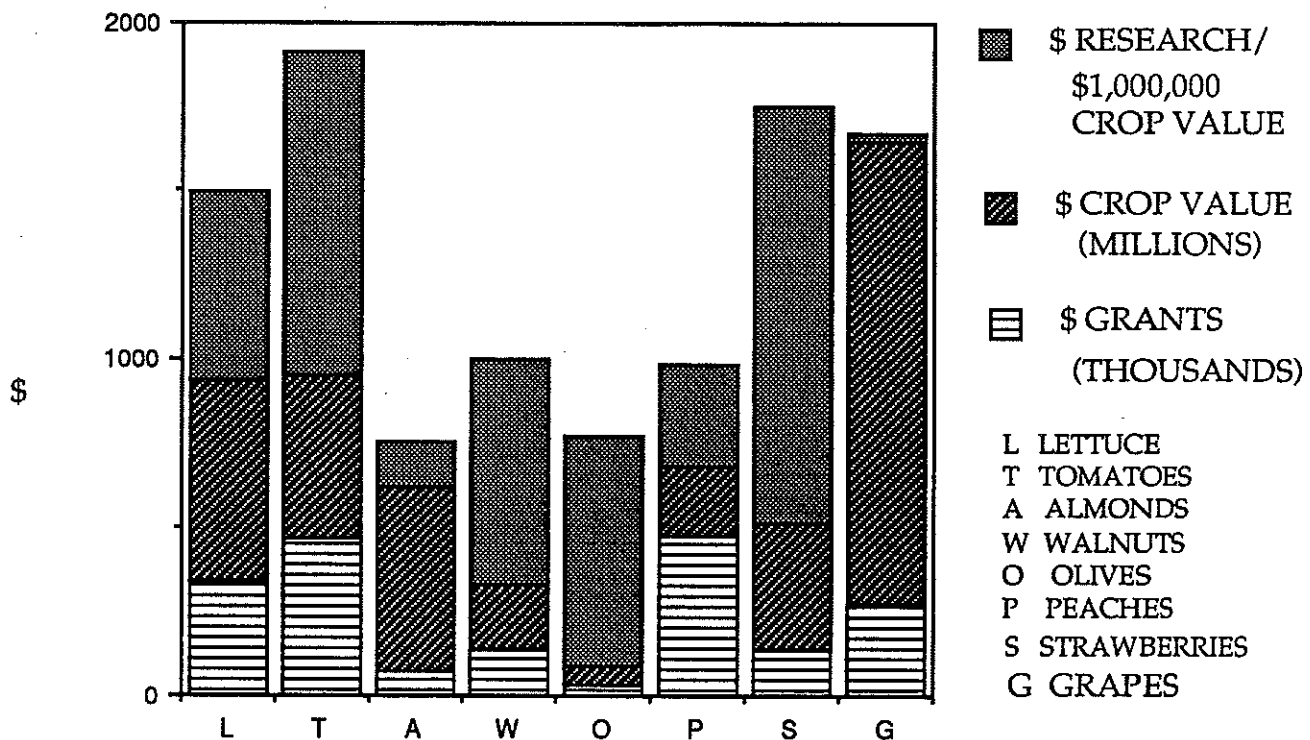


FIGURE 1

INVESTMENT IN RESEARCH BY CALIFORNIA COMMODITY

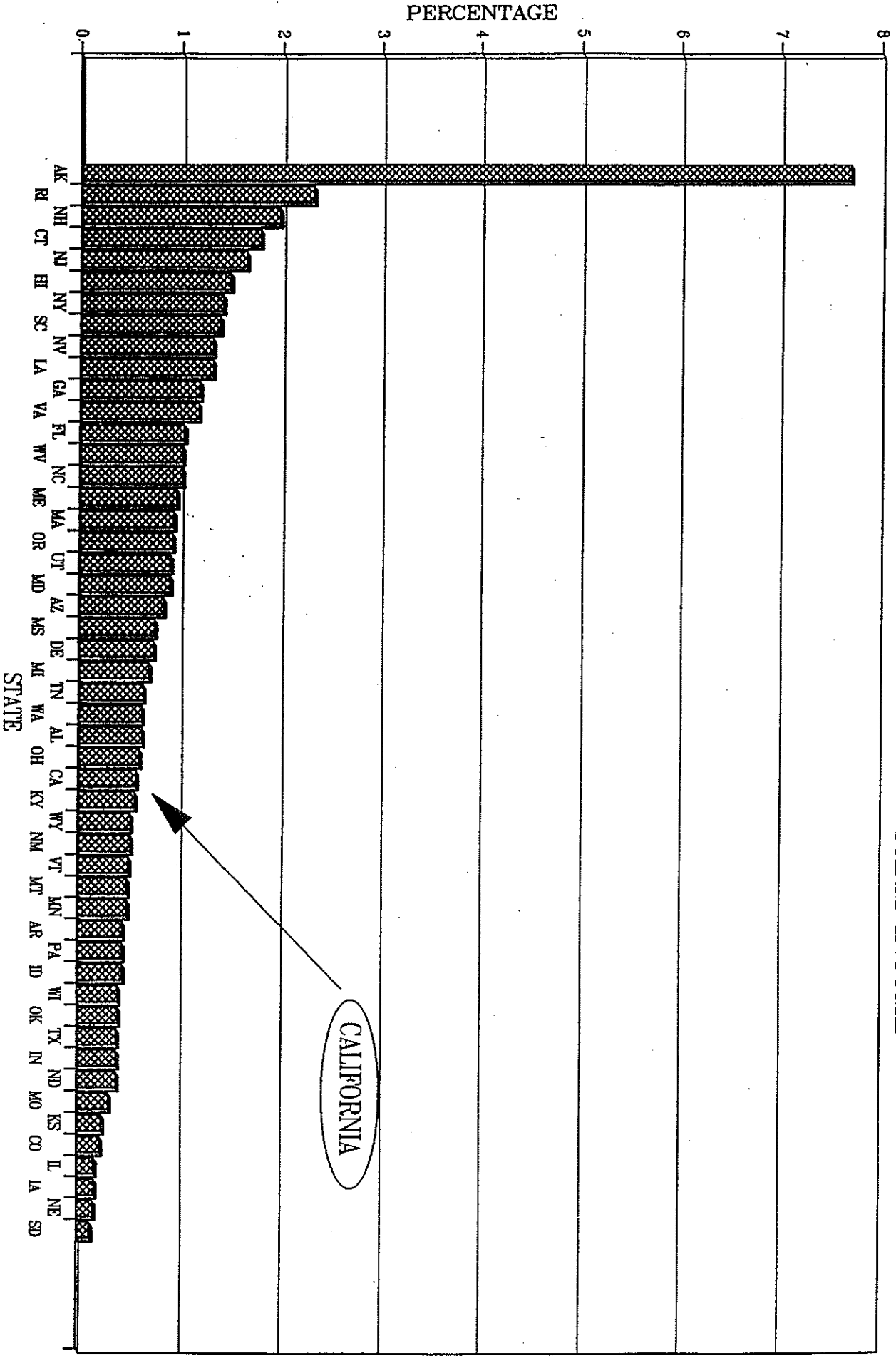
GROUPS AS A FUNCTION OF CROP VALUE





1987 STATE APPROPRIATIONS TO RESEARCH AS A PERCENTAGE OF TOTAL FARM INCOME

FIGURE 2



SOURCE: National Research Council, Board on Agriculture, National Academy Press, 1989.

