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ROBERT BRUCE FRIDLEY

1934–2006

Elected in 1985

"For his managerial ability and research toward the mechanization of tree harvests."

BY BRUCE R. HARTSOUGH, JOHN R. GOSS, AND WILLIAM J. CHANCELLOR

ROBERT FRIDLEY, Professor of Biological and Agricultural Engineering, Emeritus, University of California (UC), Davis, passed away at his home on March 19, 2006.

Born in Burns, Oregon, on June 6, 1934, Bob was raised in farming and lumbering communities in Oregon, Washington, and California, where his family was involved with farming and ranching on a part-time basis. To support his college education, he worked with livestock and in a fruit-packing shed and lumber mill, experiences that provided a strong foundation for his stellar career in engineering research focused on solving problems associated with biological systems.

Bob entered Sierra College in Auburn, California, in 1952 and graduated with an A.A. degree in 1954. He then entered the B.S. program in agricultural engineering at UC Davis. In 1955, he married Jean Griggs of Nevada City, California, and, just a year later, in 1956, he graduated with a degree in mechanical engineering (issued by the College of Engineering, UC Berkeley). He was then offered a position at UC Davis as an assistant specialist in the Department of Agricultural Engineering. After he completed his M.S. in agricultural engineering in 1960, he was appointed assistant professor in 1961 and rapidly advanced to professor in 1969. He received his Ph.D. from Michigan State University in 1973 and became chair of the Department of Agricultural Engineering at UC Davis in 1974.

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With Paul Adrian (a U.S. Department of Agriculture agricultural engineer stationed at UC Davis), Bob initiated studies of mechanized harvesting of tree fruits and nuts. Although some mechanical harvesting had been done prior to this time, Bob identified the parameters that influence tree response to vibration and provided a basis for the rational design of shakers. He then studied the response of fruit to impact and determined the best design for collecting surfaces to minimize bruising. This work led to several patents and advanced mechanization in California, nationally, and around the world. Bob also collaborated with several other individuals at UC Davis, most notably Dr. Larry Claypool, a postharvest physiologist in the Department of Pomology, and James Mehlschau, a development engineer in the Department of Agricultural Engineering.

Bob's accomplishments included the development of the inertial tree shaker, the integrated shake-catch harvester, shaker clamps that minimize damage to tree bark, and criteria for the design of fruit-catching surfaces to minimize the bruising of fruit during harvesting and handling. Most tree-fruit harvesters today are designed based on principles developed by Bob, and most growers who produce fruit to be mechanically harvested follow the guidelines for tree shape and pruning that were identified during his research. In 1983, Bob co-authored, with Michael O'Brien, UC Davis, and Burton Cargill, Michigan State University, *Principles and Practices for Harvesting Fruits and Vegetables* (AVI Publishing Company, 1983).

Bob was known as much for his leadership and ability to foresee the future as for his creativity, problem solving, and productivity. In 1977, he left the university and put all of those capabilities to good use in pursuing his interest in forest engineering research with the Weyerhaeuser Company. He began as manager of silvicultural research and development (R&D) and advanced through multiple positions to manager of diversified technology R&D. In the latter role, he was responsible for all research related to silviculture, agriculture, and aquaculture. Bob's team at Weyerhaeuser developed technology for reforestation and methods of raising and releasing juvenile salmon for ocean ranching.

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During his eight years in industry, Bob maintained close ties with UC Davis and provided many opportunities for internships, summer jobs, and permanent positions for UC Davis students. He returned to UC Davis in 1985 as director of the Aquaculture and Fisheries Program, which he expanded and strengthened.

In 1989, he headed the National Research Council Marine Board Committee on the Assessment of Technology and Opportunities for Marine Aquaculture in the United States; the results of this committee study were published in *Marine Aquaculture, Opportunities for Growth* (National Academy Press, 1989).

While directing the Aquaculture and Fisheries Program at UC Davis, Bob also chaired the UC Davis Project 2000 Strategic Planning Steering Committee for the College of Agricultural and Environmental Sciences. In recognition of his organizational skills and ability to bring together people with diverse backgrounds and interests to achieve meaningful results, the college appointed him executive associate dean in 1989. He retired in 1994 but remained a special assistant to the dean through 2000.

Bob was recognized nationally and internationally for his achievements. In 1966, he was co-recipient of the Charles G. Woodbury Award of the American Society for Horticultural Science, and in 1988 he was awarded a Doctor Honoris Causa by the Universidad Politecnica de Madrid. He was also a much sought-after consultant; he participated in research programs in Canada, China, Denmark, Finland, Germany, Honduras, Hungary, Italy, the Netherlands, Norway, the Philippines, Puerto Rico, Spain, Sweden, Thailand, the United Kingdom, and the former USSR.

The American Society of Agricultural Engineers (ASAE) bestowed numerous honors on Bob: five Outstanding Paper Awards (1966, 1968, 1969, 1976, and 1986), Outstanding Young Researcher Award for Engineering Achievement (1972), Pacific Coast Region Engineer of the Year (1974), Engineering Concept of the Year Award (1976), ASAE Fellow (1978), and three Presidential Distinguished Service Awards (the latest in 1988). He served as president of the ASAE Foundation (1993 to 1996) and president of ASAE (1997 to 1998).

In 1985, Bob was elected to the National Academy of Engi-

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neering "for his managerial ability and research toward the mechanization of tree harvests," becoming the fourth faculty member from UC Davis to be so honored. From 2000 to 2002, he served on the National Research Council Board on Agriculture and Natural Resources. The UC Davis Cal Aggie Alumni Association awarded him a Citation for Excellence Award (1990), and the College of Agricultural and Environmental Sciences honored him with an Award of Distinction (2005).

Bob was also a devoted family man and was able to balance his professional success with success at home. He and his wife of over 50 years were true partners in life. Together, they (quite literally) built their first home and raised three sons who eventually followed in their father's engineering footsteps. While the engineering community will remember Bob's many professional accomplishments, his family will remember "Papa Bob" with stories of backpacking and fishing trips, golf, and singing "Sneaky Snake" and other Tom T. Hall songs for his grandchildren. In his retirement, Bob and Jean enjoyed traveling the world, visiting family, and enjoying sunsets over Lake Tahoe together.

Bob is survived by his wife, Jean, three sons, James, Michael, and Kenneth (all of whom are in engineering positions), and eight grandchildren. Bob seemed to thrive on seemingly unresolvable problems, nearly impossible-to-achieve objectives, and high-responsibility positions. Bob Fridley never expressed any doubts that these difficult objectives could be achieved.

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