

William H. (Hub) Allaway

April 12, 1916 — May 2, 1995

William H. (Hub) Allaway was born in Homer, Nebraska, and died in Lexington, Virginia. He received a B.S. degree in Agriculture from the University of Nebraska in 1938.

He received an M.Sc. degree in 1939 and a Ph.D. degree in 1945, both in Soils from Iowa State University. He was an Assistant Professor of Soils at the University of Nebraska from 1943-45, an Assistant Professor of Soils at Iowa State University from 1945-47, an Associate Professor of Soils and of Chemistry at Iowa State University from 1947-49, and a Professor of Soils at Iowa State University from 1949-50.

In 1950, Hub joined the U.S. Department of Agriculture (USDA) and worked in Beltsville, Maryland, and Washington, D.C. He was responsible for national programs on interpretation and use of soil surveys and for certain phases of soil management research. In 1954, he moved into administrative work for the Agricultural Research Service (ARS) of the USDA, where he served as Head of the Soil-Plant Relationships Section and as Assistant Director of the Soil and Water Conservation Research Division.

He came to Ithaca in 1961 as Director of the U.S. Plant, Soil and Nutrition Laboratory, which is located on the Cornell University campus. He also held a courtesy appointment as Professor of Soils in the Department of Soil, Crop and Atmospheric Sciences. After his retirement from the ARS-USDA in 1976, he taught at Cornell and did research in Agricultural Extension. During this time, he served as a Senior Lecturer in the Department of Soil, Crop and Atmospheric Sciences from 1976-83 and as a Visiting Fellow for the same Department from 1983-88.

Hub's impact as a research leader and Director of the U.S. Plant, Soil and Nutrition Laboratory, is evidenced by the statement by Dr. Robert W. Holley in *Science* magazine on April 27, 1973: "...the Director of my lab, W.H. Allaway, thought my work was important and gave me the support to do it full time. But for Allaway I would not have finished the structure [of the nucleic acid] before someone else did, and I would not have gotten the Nobel prize."

In addition, Hub encouraged initiation of a number of new programs during his tenure as Laboratory Director, including work on grass tetany, magnesium metabolism in plants and animals, zinc absorption by plants, zinc in animal reproduction, absorption of other trace metals by plants and animals, plant requirements for chromium and vanadium, value of plants as dietary sources of trace minerals, control mechanisms in plants, improvement of nutritional quality of soy protein, and absorption of cadmium by plants and availability of cadmium from plants to animals. Many of the Laboratory scientists made notable advances in these fields. Hub's research leadership at

Ithaca has directly affected both the quality and quantity of food sources, and he played a major role in informing the general public on the relation of soil quality to food quality.

At the start of Hub's research on selenium (Se) at the Nutrition Lab, it was already known that very small amounts of dietary Se could correct certain diseases of livestock and that higher levels of dietary Se could be toxic. Through his own research, with a small group of associates, he developed a method for measuring the very low concentrations of Se in biological materials that were associated with Se deficiency. Then they prepared a map of the U.S. showing the areas where crops were likely to contain less Se than is required in animal diets. This map has been very widely used by feed manufacturers, veterinarians, medical epidemiologists, and public health officials. Hub also led the group that established the nutritional value of Se in forages and grains, and showed that animals on a Se-adequate diet could accumulate body reserves of Se that would protect them for as long as one year on Se-deficient diets. When the American Feed Manufacturers applied for permission to supplement animal diets with Se, their application was to a large extent based upon the work of Hub and his associates. The environmental impact statement, issued by the Food and Drug Administration in approving this application, was based almost entirely on the research of Hub and his collaborators. The addition of Se to animal rations is now very widely used in the U.S. and is clearly responsible for increases in the total production and nutritional value of foods of animal origin.

Hub and his associates established that Se was universally present in human blood and that the blood levels showed a relationship to local levels of Se in foods. Hub's work on Se distribution among the U.S. population provides additional evidence of the importance of Se in crops in the U.S. for human health problems. In September of 1979, Hub participated in a week-long workshop he helped organize that was directed toward examination of the role of Se in human health. The workshop was sponsored by the World Health Organization.

Hub's work in informing the general public on the relationship between soil quality and human nutrition is evidenced by the large number of citations to his Agr. Inf. Bulletin 378 — "The Effect of Soils and Fertilizers on Human and Animal Nutrition." These citations include popular magazines, newspapers, textbooks and court hearings on food quality. Almost sixteen thousand copies of this bulletin were distributed. A predecessor to this bulletin (also authored by Hub) was translated into Spanish by AID for use in their Latin American programs. Hub was the author of approximately 100 publications.

In honor of his research, he received the Soil Science Research Award of the Soil Science Society of America in 1971. In the same year, he also received an Honorary Doctor of Science degree from the University of Nebraska (his

undergraduate alma mater). In 1976, he was made an Honorary Member of the American Society of Agronomy, an honor reserved for very distinguished individuals. He was made a Fellow of the American Society of Agronomy in 1958.

In 1985 and 1986, Hub served as a member of a committee of the National Research Council of the National Academy of Science. That committee prepared recommendations for the U.S. Department of Interior and the State of California, on how to deal with the Se toxicity problems in the Kesterson Reservoir in California. Similar environmental problems are now developing elsewhere, and the advice of that committee may help in solving these problems also.

Hub is survived by his daughters, Susan LaRue and Nancy Lindsley; and his son, William H. Allaway, Jr. His wife, Mildred Holland Allaway, died on September 2, 1995.

David L. Grunes