



Jean de Schellhaert

JAN VAN SCHILFGAARDE

1929–2008

Elected in 1989

*“For distinguished contributions to
agricultural drainage concepts, theory, and design.”*

BY MARVIN E. JENSON, ERNEST T. SMERDON,
AND WILLIAM E. SPLINTER

JAN VAN SCHILFGAARDE, foremost researcher and research administrator in agricultural water management, was born on February 7, 1929, in The Hague, the Netherlands, and died on March 25, 2008, after a long illness, at the age of 79. He was elected a member of NAE in 1989.

Jan’s father, who was nearly blind from the age of seven from juvenile cataracts, was a psychologist, philosopher, and translator of books from 28 languages. His mother was the first woman in the Netherlands to receive a law degree, but she married and never practiced law. Thus Jan was from a well-educated family. When he was nine, World War II began. Although the first war years were not too difficult, food and fuel later became scarce, and the schools were closed for last two years of the war. However, the demanding and very intelligent students in Jan’s class decided to teach themselves, with only occasional help from teachers. After the war, the teachers passed them all with high marks.

In the postwar years, opportunities to pursue an advanced education in Europe were greatly diminished, so Jan’s father, working through a university professor friend in Ann Arbor, arranged for a scholarship for Jan at Hope College in Holland, Michigan. A year later, his father’s friend recommended that he transfer to Iowa State College in Ames, where he knew the retired president and where Jan would be able to pursue math and technical subjects.

Having been born in the Netherlands, a nation that depends on good water management for its very existence, it is not surprising that Jan's studies in agricultural engineering were focused on water management. He earned his bachelor's degree in 1949 and his master's in 1950. In 1951, he married Roberta Hansen, and subsequently they had three children, Paul, Mark, and Craig, all of whom have distinguished themselves in their studies and careers.

Jan subsequently established a strong relationship with a world-renowned soil physicist, Don Kirkham, under whom he pursued a Ph.D. specializing in drainage engineering and water-flow theory. Jan received his Ph.D. in agricultural engineering and soil physics in 1954. With Kirkham and Richard Frevert, a professor of agricultural engineering, he published a comprehensive synthesis of drainage theory (Agricultural Experiment Station Research Bulletin 436) in the mid-1950s; that work was later integrated into the 1957 monograph published by the American Society of Agronomy. Jan was a distinguished student at Iowa State and was elected to several honorary societies—Sigma Xi (research), Phi Kappa Phi (scholarship), Pi Mu Epsilon (mathematics), and Gamma Sigma Delta (agriculture).

With Ph.D. in hand, Jan joined the faculty at North Carolina State University (NCSU) with a joint appointment as assistant professor of agricultural engineering and research engineer with the Agricultural Research Service (ARS) of the U.S. Department of Agriculture (USDA), becoming a full professor over time. He taught and conducted research in soil- and water-conservation engineering, as well as research on drainage, irrigation, and hydrology. His signal contributions to drainage theory led to improved drainage-system designs based on transient criteria and rainfall-generated probabilities. His research covered virtually all aspects of subsurface drainage, and he pioneered using a thermocouple psychrometer method for determining the water potential of intact plants. Ultimately, he combined climatic data, statistics, and drainage theory with the results of controlled environmental chambers and outdoor lysimeters to develop methods of predicting crop response.

After 10 years at NCSU, he joined ARS full time in Beltsville, Maryland, as chief water-management engineer for soil and water conservation. At ARS, he not only fulfilled his responsibilities for program leadership and management, but also made important contributions to the technical literature. He ultimately moved up the administrative ladder and became associate director and then director of the USDA Soil and Water Research Program, where he was responsible for overseeing research scientists and engineers in some 80 locations across the country.

With the backing of his superiors, Jan promoted fundamental research directed toward solving practical problems. During visits, in meetings, and in correspondence, he showed a keen interest in the direction and details of research by individual engineers and scientists working on specific problems. He always believed that research managers should serve engineers and scientists, not the other way around. Operating at the interface between science and government policy, he never hesitated to express his opinions about specific issues and to promote novel approaches in irrigation agriculture.

In the 1972 reorganization of ARS, Jan became director of the U.S. Salinity Laboratory in Riverside, California, where his work was focused on irrigation-water management for controlling salinity in the soil, and he was in a good position to explore the environmental and institutional aspects of irrigation-based agriculture.

During this time, he also became involved with interagency teams working on policy and technical issues included in the Colorado River Basin Salinity Control Act of 1974. He was an active participant in discussions about options for reducing the salt load in the Lower Colorado River, as required in agreements with Mexico. Although reducing salt by upstream changes in irrigation water management had been proposed, to the dismay of Jan and others, the government opted to build a desalination plant at the Mexican border, which, however, has never had to be used. Jan also chaired a committee established by the National Research Council (NRC) to assist the U.S. Department of the Interior and the state of California in developing a

comprehensive research program on irrigation-induced water-quality problems.

After 12 years, Jan was asked to become director of the Mountain States Area of the USDA ARS, which had extensive research facilities in six western states. He was responsible for managing research in a wide range of disciplines related to agriculture, including water management and hydrology. In 1987, he became director of the newly formed Northern Plains Area, which included eight states and had a research budget roughly twice that of the Mountain States Area. In 1991, Jan was asked to return to ARS Headquarters in Beltsville as associate deputy administrator for natural resources and systems, with the responsibility of coordinating all ARS research in these areas.

Over time, Jan made a gradual shift from strictly personal research, with attention to technical detail, to administrative and management activities, and even to natural-resource policy. As his interest in international resource-management grew, he became more involved in interactions between social and physical sciences to address the urgent need for conservation. Jan became increasingly involved as a volunteer on boards and committees of the National Research Council (NRC) and other groups.

In 1979, Jan was appointed a member of the Presidential Commission for Opportunities to Increase Agricultural Production in Egypt, which submitted a report in 1980. He was a member of the NRC Board on Agriculture from 1984 to 1990; chair of the NRC Committee on Irrigation-Induced Water Quality Problems from 1985 to 1990; chair of the National Academy of Sciences World Food and Nutrition Study, Panel 4 (Resources for Agriculture) from 1975 to 1977; chair of the U.S.-USSR Bilateral Science Exchange Team on Movement of Water, Gas, Salts, and Heat in Soils, for which he traveled to the USSR in 1972, 1974, and 1976; a member of the NRC Committee on Biology and Medicine in Space, which advised NASA on priorities for biological research on the Space Shuttle from 1972 to 1974; and a participant in the Brownell Task Force appointed by President Nixon in 1972 to find a "permanent and

equitable solution” to the controversy with Mexico over allocations of Colorado River water. He traveled to many countries pursuing his interest in water management and in increasing food production.

Jan was editor in chief of *Agricultural Water Management*, an international journal published by Elsevier Science Publishers in Amsterdam, 1988 to 1991; was active in many professional societies; and was a fellow or member of eight national and international science or engineering societies. For his scientific and managerial accomplishments, Jan received many awards and honors. He was a fellow of three professional societies—American Society of Agronomy (1969), Soil Science Society of America (1969), and American Society of Agricultural Engineers (ASAE) (1972). His many honors include several technical awards from ASABE (formerly ASAE) and the American Society of Civil Engineers (ASCE), including the ASCE Walter L. Huber Civil Engineering Research Prize in 1970, the ASAE John Deere Gold Medal Award in 1977, the ASCE Royce Tipton Award in 1986, and in 1991, he received an ARS Senior Executive Service Presidential award; he was invited to present the Abel Wolman Distinguished Lecture in Washington, D.C., by the NRC Water Science and Technology Board (1992). That same year, he was made a Distinguished Member of ASCE.

Jan retired from USDA in November 1997. In March of the following year, he and Roberta moved back to Fort Collins, Colorado, where they lived until his death. Also in March 1998, he and Roberta were special guests at the 7th International Drainage Symposium in Florida, in recognition of Jan’s role in all six of the previous symposia.

Jan is survived by his wife, Roberta, his three sons, seven grandchildren, four younger brothers, and a very special cousin, two years older, whose Indonesian mother died in childbirth, and who was brought to live with Jan’s parents after Jan was born. A sister preceded him in death. Though he was often away from home, Jan was a loving and attentive father, and he encouraged Roberta in her numerous volunteer endeavors. His meticulous math instruction was a great boon for his sons but often was the cause of a huge sigh before help was asked. As

the second son said to the third one time after a huge sigh, "I guess you'll have to go to Dad." Huge sighs from both boys. "I know . . . it takes forever, but you sure know what you're doing when you're finished." The hugely benefited sons are known to have used the same technique with their sighing children. Son Paul developed multiple sclerosis in college, having to leave a month before graduation for treatment, but later graduated from home and developed a business as an accountant. Wheelchair bound for 34 years, he and his wife have two grown children. Mark is a theoretical physicist, teaching at Arizona State University. He and his wife have three children. Craig is currently an engineering director in the missile systems group of Northrop Grumman Corporation.

Roberta recalls that a short time after retirement in Fort Collins, Colorado, a grandson, Ari, came to live with them, and they sent him to a private high school in Boulder, 45 miles away. Jan was usually the one who drove Ari to school each day, retrieving him in the afternoon until he could drive himself, and the maturing boy became very grateful to his grandfather. After graduating from college, Ari was granted a ten-month Fullbright Fellowship to teach English as a second language in a Muslim girls' boarding school in Indonesia, and when Jan died, Ari made the three-day trip to Fort Collins from Indonesia for the funeral. He now works for an environmental company in Seattle.

