

John Charles Walker, 1893–1994

John Charles (J. C.) Walker's contributions to the growth of plant pathology remain unmatched today. In 1910, Walker had planned to enter medical school. However, his observation of the devastating cabbage diseases near his home in Wisconsin redirected his goals, and he began studying vegetable diseases as an undergraduate at the University of Wisconsin. That change resulted in a phenomenal 52-year career in biological research and teaching, ending with his retirement on June 30, 1964.

Walker's most remarkable achievements were his successes in breeding vegetable crops for disease resistance. His first studies were on onions, and in 1914 he received the Science Club Medal for the most outstanding baccalaureate thesis in science. Walker then worked on a new disease, cabbage blackleg, that was affecting "yellows"-resistant plants.

He soon showed the causal agent to be seedborne and that seeds produced in the Pacific Northwest were disease-free.

Walker's research

interest was so intense that he continued working on his honeymoon. While in

Marion, Virginia, in 1920 with his

bride, Edna Dixon Walker, he

selected a single yellows-resistant cabbage plant, from which he

developed a superior

cultivar, Marion

Market. The long-uncontrolled clubroot of

cabbage was soon

constrained

when Walker

and associates



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transferred natural resistance from curly kale to cabbage. In his year of retirement, 1964, he released a cabbage cultivar, Globelle, that is resistant to tipburn. Walker's near-magic touch also provided disease resistance in beans, cucumbers, and peas.

Although Walker's development of resistant cultivars were hallmark accomplishments, his enormous energy and insight brought new understanding to the physiology of plant disease and related host resistance. For example, the biochemical nature of host resistance was first demonstrated by him as an outgrowth of his doctoral thesis on onion smudge. He and his associates isolated certain phenolic compounds from pigmented onion varieties and proved that they were responsible for smudge resistance. Walker also demonstrated the role of host nutrition, temperature, and certain enzymes in disease development. He proved that black spot of beet was caused by a boron deficiency and that artificial heat could be used to cure and control diseases of onions in storage.

Of equal significance were Walker's contributions to education. Few books attained the prominence in their field as did his *Plant Pathology* and *Diseases of Vegetable Crops*. He and associates authored over 400 research articles. His inquisitive mind was always at work, whether he was auditing advanced graduate courses, conducting vegetable-disease surveys, or visiting growers' fields. His role in graduate education was summed up by a former student upon Walker's retirement: "You sent word to me some while back that you had signed the 75th Ph.D. thesis—mine was your first."

Walker's contributions to our storehouse of biological knowledge, including the development and extension of many of the fundamental principles and concepts in plant pathology and biology, have been widely acclaimed. He was president of APS in 1943 and elected to the National Academy of Sciences in 1945. In 1960, he received an honorary doctor of science degree from the University of Göttingen, Germany. Upon his 90th birthday, he was honored by hundreds of friends and former graduate students at the APS annual meeting (Ames, Iowa, 1983), and he was similarly recognized on his 100th birthday.

Prepared by Ken Barker