

Edward E. Clayton, 1895-1974

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Edward Eastman Clayton, retired U.S. Department of Agriculture tobacco pathologist, died December 12, 1974, in Tallahassee, Florida. Son of Darius and Ella Clayton, he was born March 10, 1895, in Upper Sandusky, Ohio. He attended public schools in Upper Sandusky and Chicago, Illinois. A B.S. degree was received from Ohio State

University in 1916, and an M.S. degree in plant physiology from the University of Chicago in 1917. Service in the U.S. Navy, from September 15, 1918, to February 8, 1919, interrupted further education at the University of Wisconsin where he received a Ph.D. degree in plant pathology in 1920. He and Ortencia Watkins were married that same year.

Professional employment began in 1920 as Extension Plant Pathologist for Ohio State University. In 1922, he was appointed a Research Pathologist by the New York Agricultural Experiment Station and stationed at Riverhead, Long Island. There he did research on potato and crucifer seed treatments, blackleg and black rot of crucifers, cauliflower and cucumber diseases, and on the relation of soil moisture and temperature to *Fusarium* wilt of tomato. His hot-water treatment of crucifers for blackleg disease indicated his ability and directness in getting at the heart of problems. On several occasions he remarked that this treatment was one of his most satisfying research accomplishments. In September 1929, he went to the University of London to do plant pathology research, and returned to Long Island in March, 1930.

On April 1, 1931, Dr. Clayton was appointed a Senior Plant Pathologist with the U.S. Department of Agriculture at Arlington Farms, Virginia, and later at Beltsville, Maryland. He helped develop the cooperative Federal-State research program in tobacco pathology and genetics, which developed the basis for control of several important tobacco diseases. He correctly judged that resistance was the most effective control measure to combat the devastating tobacco diseases, but adequate resistance was not available. He correctly perceived that such resistance could come only through introduction of foreign germplasm into domestic cultivars. Success depended upon (i) overcoming the reluctance of many to accept new kinds of tobacco differing from those upon which the industry had been built, (ii) collecting and successfully utilizing new germplasm, and (iii) obtaining administrative and financial support for an extensive breeding and cultivar development program.

Gradually support was obtained. In the mid-1930's, he worked with plant explorers to collect tobacco seed from many places, especially in Central and South America where *Nicotiana tabacum* is thought to have originated. In addition, he realized the value of maintaining seed stocks of the *Nicotiana* species and exotic cultivars so that

this germplasm reservoir periodically could be searched for valuable genes to be utilized in tobacco improvement. Thus, the USDA collection of approximately 1,000 tobacco introductions was established.

He perfected inoculation techniques, identified sources of resistance, and developed the methodology for interspecific transfer of disease resistance and for breaking linkages with undesirable characteristics. Genes for resistance to blue mold and black root rot were transferred from *N. debneyii* Domin. and for resistance to wildfire from *N. longiflora* Cav. to tobacco (*N. tabacum* L.) breeding lines that were used to develop cultivars resistant to the diseases. Root knot nematode and bacterial wilt resistance from tobacco introductions were transferred to commercial cultivars that saved planters of flue-cured tobacco from economic failure. His discovery of chemical control measures kept the destructive blue-mold disease in check. As a result of his inspiring leadership in tobacco pathology and breeding research, multiple disease-resistant cultivars were released that now save farmers all over the world millions of dollars annually from losses due to destructive diseases. Among his more than 75 publications, classic papers describe the wildfire toxin, taxonomy of the causal organism of blue mold, several interspecific transfers of disease resistance, and interspecific cytoplasmic male sterility.

For his notable contributions to tobacco pathology, he received the USDA Superior Service Award in 1952, and the Cigar Manufacturers' Association Outstanding Service Award in 1953. He was awarded the honorary D.Sc. degree from North Carolina State University in 1955. Volume V of Tobacco Science was dedicated to him in 1961, and he was elected a fellow of The American Phytopathological Society in 1970.

Dr. Clayton was a member of the American Legion, AAAS, Botanical Society of America, American Genetic Association, Agronomy Society, Sigma Xi, and the Washington Academy of Sciences. He was one of the founders of the Potomac Division of APS, and vice president, president, and councilor of that Division in 1945, 1946, and 1947, respectively. In 1952, he presented an invitational paper at the Symposium on Disease Resistance at the annual APS meeting. Dr. Clayton was a member of the Tobacco Workers' Conference and took an active part in discussing a broad range of tobacco research problems. Within that group he helped organize the Tobacco Disease Council. In 1958, Dr. Clayton published in the *Agronomy Journal* a review of genetics and breeding progress in tobacco during the previous 50 years.

He retired from the USDA at the end of 1954, and became Director of a new research program established by the American Sumatra Tobacco Company in Tallahassee, Florida. Mrs. Clayton, who had operated a successful vegetable seed business established when they resided on Long Island, designed and supervised construction of the research facilities in Tallahassee. These facilities were ready when Edward took up his new duties on January 1, 1955. The family residence was in the

headhouse adjacent to the greenhouses, convenient for 7-days-a-week surveillance of the breeding and disease research program being established.

He concentrated upon the development of F_1 hybrids that were high-yielding, of good quality, and that provided adequate field resistance to such destructive diseases as blue mold. Beginning in 1958, the first of a series of blue-mold-resistant hybrids was released which helped to stabilize the Southern cigar wrapper industry at that time. Also, this blue-mold resistance helped save the tobacco industry in Europe from destruction in the early 1960's when blue mold reached epidemic proportions on the continent.

Following his retirement from the American Sumatra Company in 1966, he remained active in tobacco improvement through the Florida Tobacco Hybrid Seed Company, established by him and several tobacco farmers. He was affiliated with this hybrid seed company until his death.

Sound judgement, a keen intellect, and perseverance contributed to Dr. Clayton's success. Problems were carefully analyzed and objectives outlined. Trivial matters were not allowed to interrupt the vigor, zeal, and determination with which he pursued solution of the problems. Although a strong leader with firm convictions and high standards, his enthusiasm, dedication, fairness, and understanding for others endeared him to all who worked with him in tobacco research.

After his second retirement, and in spite of failing health and approaching blindness, Clayton managed to publish in Tobacco Science during 1967 to 1969 a comprehensive series of papers on his studies pertaining to breeding for blue mold and black root rot resistance. This was accomplished with the valuable assistance of Mrs. Clayton who acted as his eyes in this important endeavor. He is survived by Mrs. Clayton, whose home address is: P.O. Box 1514, Tallahassee, Florida 32302.