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The breadth of a faculty member's intellectual impact upon his graduate students' careers is rarely documented, but herein is a list of publications to allow such a retrospective. It was presented to Henry D. Bowen as a retirement gift.

# The Theses, Papers and Publications of Henry D. Bowen and His Students – 1952 – 1991



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**Theses, Papers and Publications  
of  
HENRY D. BOWEN  
and  
His Graduate Students: 1952 – 1991**

North Carolina State University  
Department of Biological and Agricultural Engineering  
Raleigh, North Carolina

January 1992

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# The Theses, Papers and Publications of Henry D. Bowen and His Students: 1952 – 1991

## Foreword

This compilation was prepared as a tribute to Henry D. Bowen when he was conferred emeritus status in the Department of Biological and Agricultural Engineering at North Carolina State University. Obviously, the mailing addresses, e-mail addresses, titles and indeed the lists of publications have not been updated or made complete. Nor has the incompleteness or absence of publications for some been corrected.

Nevertheless, this record at the time of his retirement does provide a basis for reviewing the role of an individual professor in preparing twenty five graduate students for productive careers. His students spread his influences across the nation, especially in the southeast, and the world. Bowen's creative influence deeply affected the topics that his graduate students deemed worthy of pursuit in their own careers. These research threads include topics that had intrigued Henry in his own research—but also many other themes as well.

Henry Bowen urged his students to study broadly, but also deeply—in mathematics, physics and chemistry as well as in the basic and applied areas of biology and agriculture and the life sciences. His enthusiasm for life and for engineering was contagious. His ingenious and creative approach to experimentation was reflected in his course in the professional method that deeply enriched the careers of his students. He had an instinct for sensing the heart of an unsolved problem and then determining a path that would lead to a deeper understanding that led to an engineering solution.

Henry Bowen's mentoring makes clear the fundamental role and benefit that judicious selection and hiring of faculty members plays in shaping the future quality of a university department. Hopefully, this compilation will not only be of interest to his many students, but also to university administrators who shape the university to serve future generations of students and society.

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an early student of Henry Bowen  
July 2010

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## *Preface*

Thanks to the graduate students who studied with Henry Bowen for supplying the following information and special thanks to Crowell Bowers for providing certain information needed to produce this compilation.

Chronological and alphabetical listings of the papers co-authored by H. D. Bowen are included in this compilation. In addition, a composite listing of all the theses supervised by H.D. Bowen at North Carolina State University is included.

The alphabetical listing of former students includes mailing addresses, as of January 1992 (and may not be current if no publications are listed), phone, fax and e-mail numbers, the theses produced under the direction of H. D. Bowen, and their papers and publications through January 1992 in chronological order. Except as noted, the order of the co-authors corresponds to the order listed on the published papers. Format consistency was maintained only for the author, date, and title ordering.

Please send any corrections or additions to J. Robert Cooke, 214 Riley-Robb Hall, Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY 14853.

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### *Graduate theses supervised by Henry D. Bowen* (in chronological order by date of degree conferral)

- Ralph Kenneth Matthes, Jr., M.S. Thesis: Water Vapor Transfer in the Soil by Thermal Gradients and Its Control. May 1961. (See Ph.D. listing below.)
- Preston Eugene Sasser, M.S. Thesis: Water Vapor and Heat Transfer in a Seed-Soil System. May 1961. (See Ph.D. listing below.)
- Zachary Adolphus Henry, Ph.D. Dissertation: Charge Capacity of the Cotton Fiber and Resultant Forces in an Electric Field. January 1962 (or November 1961).
- Thomas Harold Garner, Ph.D. Dissertation: A Mechanical Analysis of Cotton Seedling Emergence. June 1964.
- Sidney Edward Law, M.S. Thesis: Electrostatic Precipitation of Dusts and Sprays for Agricultural Applications. June 1964. (See Ph.D. listing below.)
- Preston E. Sasser, Ph.D. Dissertation: Effects of Force Fields on Small Particle Deposition. June 1964.
- James Robert Cooke, M.S. Thesis: Particle Size Distribution Studies with an Electrical Sensing Zone Instrument. January 1965 (See Ph.D. listing below.)
- Charlie Grover Coble, M.S. Thesis: Physical Factors Affecting Oxygen Stress of Germinating Cotton Seeds. May 1965. (See Ph.D. listing below.)
- Allen Ray Overman, Ph.D. Dissertation: Net Molecular Transfer in a Capillary with Diffusion and Laminar Flow. May 1965.
- Rex Lee Clark, M.S. Thesis: Measurement of Soil Moisture Content by Light Reflectance. August 1965.
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- David Harris Vaughan, M.S. Thesis: Thermocouple Sensing of Soil Temperature from a Moving Vehicle. July 1972. (See Ph.D. listing below.)
- Mansoor Behroozi-Lar, Ph.D. Dissertation: Simulation of Transient Heat Transfer in a Soil System. December 1973.
- Moustafa K. Karmous, M.S. Thesis: Tool design on the Energy Consumption of Wood Cutting. December 1973.
- David Harris Vaughan, Ph.D. Dissertation: A Simulation of Cotton Radicle Growth During Emergence. December 1974.
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Predicting Bulk Density Profiles of Sandy Soils Using Cone Penetration Resistance. 1984. Ph.D. Dissertation.

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## *Theses*

Physical factors affecting oxygen stress of germinating cotton seeds. M.S. Thesis. 1965.

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Particle Size Distribution Studies with an Electrical Sensing Zone Instrument. M.S. Thesis. 1964.

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### *Thesis*

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### *Patents*

#3,156,079 "Corn Header Attachment" issued November 10, 1964 to J. K. Park and B. K. Webb.

#3,635,004 "Orchard Machine" issued January 18, 1972 to B. K. Webb and C. E. Hood. This development has also been patented in Canada (#943,347 issued March 12, 1974) and Great Britain (#1,297,216 issued April 19, 1971).

#3,896,612 "Fruit Harvester" issued July 29, 1975 to C. M. McHugh, B. K. Webb and C. E. Hood.

#3,895,589 "Seed Planting Apparatus" issued July 22, 1975 to T. H. Garner and B. K. Webb.

#4,159,745 "Crop Uprooting and Soil Working Apparatus" issued July 3, 1979 to C. E. Hood, B. K. Webb and Y. Alper.

#4,170,100 "Tree Shaker" issued October 9, 1979 to B. K. Webb, Y. Alper and C. E. Hood.

#4,171,723 "Crop Uprooting and Soil Cultivating Apparatus and Method for Use of Same" issued October 23, 1979 to C. E. Hood, B. K. Webb and Y. Alper.





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