Curriculum Vitae

Thomas B. Whitaker, Ph.D.

Agricultural Engineer (Retired)

U.S. Department of Agriculture, Agricultural Research Service
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Professor Emeritus

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

Fellow, American Society of Agricultural Engineers
Fellow, American Peanut Research and Education Society

Education

B.S. (Agricultural Engineering), NC State University	1962
M.S. (Agricultural Engineering), NC State University	1964
Ph.D. (Agricultural Engineering), Ohio State University	1967

Professional Experience

Agricultural Engineer, Agricultural Research Service, U.S. Dept. of Agriculture, Raleigh, NC, June 1967 to February 2009. Dr. Whitaker retired from USDA/ARS on February 3, 2009 after 42 years with the Market Quality and Handling Research Unit, Agricultural Research Service, USDA.

Dr. Whitaker held academic ranks of Assistant Professor (USDA), Associate Professor (USDA), and Professor (USDA) from June 1967 to February 2009, currently holds the position of Professor Emeritus, Biological and Agricultural Engineering Department, North Carolina State University, Raleigh, NC, 27695-7625.

Responsibilities: Develop methods to evaluate the performance of mycotoxin sampling plans for agricultural commodities. Methods include (1) the measurement of variability associated with sampling, sample preparation, and analysis, (2) determination of the distribution among replicated sample test results, and (3) development of statistical models to predict the performance of mycotoxin sampling plans. Assist domestic and

international producers, processors, manufacturers, exporters, importers, regulatory agencies, and research institutions to design and evaluate mycotoxin-sampling plans for control programs. Methods developed to evaluate the performance of mycotoxin sampling plans have been extended to evaluate the performance of sampling plans used to detect genetically modified seed in grain, TCK spores in wheat, pesticide on seed, protein allergens in food products, and toxic compounds in fruit.

Notable accomplishments: Dr. Whitaker's research career with ARS has spanned 42 years. He has authored or co-authored approximately 125 refereed publications, which include 14 book chapters and government publications, and have made over 110 presentations at national and international scientific meetings and workshops. His research efforts, directed toward the development of methods to evaluate the performance and the design of mycotoxin sampling plans for agricultural commodities, have established Dr. Whitaker as a recognized expert and world leader in his field. Dr. Whitaker's research program has been recognized by the Food Engineering Division of the American society of Agricultural Engineers (ASAE) as one of the six outstanding research achievements of the 20th Century and he received the Harvey W. Wiley Award from Association of Official Analytical Chemists (AOAC) for achievements in research. Internationally, the incumbent has been invited to participate as a member of (1) US/European Technical Committee sponsored by the American Peanut Council, which led to a USDA/EC Origin Certification Program to test U.S. export peanuts for aflatoxin and certify that they met EC aflatoxin regulations, (2) U.S. delegations associated with two FAO/WHO CODEX Committees, which led to the development of harmonized aflatoxin sampling plans for peanuts and several treenuts, (3) two Expert Consultation sponsored by the FAO/WHO and (4) an USDA/ARS TCK Task Force team to help to open China market for US wheat. The methods developed to evaluate the performance of mycotoxin sampling plans have been accepted and used by USDA, FDA, the US peanut and grain industries, and internationally by FAO/WHO, IAEA, and regulatory agencies and food manufacturers in the various countries such as The Netherlands, EC, and Brazil. Numerous awards from USDA, the peanut industry, and professional societies have recognized Dr. Whitaker's research accomplishments. As a result of his research programs, other scientists are now aware of the nature of mycotoxin testing errors and other researchers worldwide are duplicating his research methods.

Graduate Research Assistant, Agric. Eng. Dept., Ohio State Univ. 1964-1967

Responsibilities: Developed mathematical models, using moisture diffusion theory, to predict the moisture content at any point in a spherical body. The mathematical model will help establish design requirements for agricultural drying systems on a rational basis.

Ph.D. thesis: Theoretical and experimental studies of diffusion in spherical bodies with a variable diffusion coefficient.

Graduate Research Assistant, Biol. and Agric. Eng. Dept., NC State Univ. 1962-1964

Responsibilities: Designed experimental studies and analyzed respiration data that demonstrated that oxygen can't diffuse into peanut kernels at a sufficient rate to support the high respiration rates that occur during high temperature curing. As a result, respiration changes from aerobic to anaerobic and produces off-flavor compounds in curing peanuts.

M.S. thesis: The effect of curing on respiration and off-flavor in peanuts.

Professional Honors

- American Peanut Council's Lifetime Achievement Award, for contributions to the Peanut Industry, 2010

- Secretary of Agriculture Group Honors Award for Excellence, for developing an industry wide aflatoxin sampling program for California almonds that helped to maintain the $1 billion European Union export market, USDA/ARS, 2008

- College of Agriculture and Life Sciences Outstanding Alumnus Award for achievements and dedication to the Biological and Agricultural Engineering Department, 2008

- Merit Award, USDA/ARS, 2007, 2006, 2005, 2001, 1999, 1992, 1988, and 1982

- Coyt T. Wilson Distinguished Service Award, American Peanut Research and Education Society, 2005

- Harvey W. Wiley Award, Association of Official Analytical Chemists, 2003

- American Peanut Research and Education Award, American Peanut Council, 2002

- Invited by FAO/WHO to be a member of Joint Expert Committee on Food Additive (JECFA) to determine human risks to five mycotoxins in food products, Food and Agriculture Organization, World Health Organization, United Nations, 2000

- Secretary of Agriculture Group Honors Award for Excellence, for expanding the US wheat export market to China, Brazil, Mexico, and India, USDA/ARS, 2000

- Outstanding Research Achievement of the 20th Century, American Society of Agricultural Engineers, 2000

- Invited to be a Guest Editor, Journal of the Association of Official Analytical Chemists, International, 2000

- Inducted into Gamma Sigma Delta, NC State University Chapter, 1999

- Dow AgroSciences Award for Excellence in Research, American Peanut Research and Education Society, 1998

- Appointed to CAST Task Force Team for Mycotoxin Publication, American Society of Agricultural Engineers, 1997

- Certificate of Merit for Research Accomplishments, Gamma Sigma Delta, NC State University Chapter, 1997

- Elected Fellow, American Peanut Research and Education Society, 1996

- Elected Fellow, American Society of Biological and Agricultural Engineers, 1995

- Appointed Associate Referee for Sampling, Association of Official Analytical Chemists, International, 1995

- Invited to FAO/WHO Expert Consultation on Sampling Corn and Peanuts for Aflatoxin, Food and Agriculture Organization, United Nations, 1993

- Bailey Award, American Peanut Research and Education Society, 1992

- Golden Peanut Research Award, American Peanut Council, 1980

- Bailey Award, American Peanut Research and Education Society, 1976

- Paper Award, American Society of Agricultural Engineers, 1974

Professional Societies

- American Society of Agricultural Engineers (ASAE)
- Association of Official Analytical Chemists, International (AOAC)
- American Peanut Research and Education Society (APRES)
- Council for Agricultural Science and Technology (CAST)
- Gamma Sigma Delta
- Sigma Xi
- American Chemical Society (ACS)

Refereed Publications Last 5 years (22 of 125)

1. Whitaker, T.B., Trucksess, M.W., Giesbrecht, F.G., Slate, A.B., and Thomas, F.S. 2004. Evaluation of sampling plans to detect Cry9C protein in corn flour and meal. J. Assoc. Off. Analytical Chem., Int., 87:950-960.

2. Trucksess, M.W., Whitaker, T.B., Slate, A.B., Williams, K.M., Brewer, V.A., Whittaker, P., and Heeres, J.T. 2004. Variation of analytical results for peanuts in energy bars and milk chocolate. J. Assoc. Off. Analytical Chem., Int., 87:943-949.

3. Vargas, E.A., Whitaker, T.B., Santos, E.A., Slate, A.B., Lima, F.B., Franca, R.C.A. 2004. Testing green coffee for ochratoxin A, Part I: estimation of variance components, J. Assoc. Off. Analytical Chem., Int., 87:884-891.

4. Whitaker, T.B. 2004. Sampling for Mycotoxins, IN: Mycotoxins in Foods: Detection and Control, Eds: N. Magan and M. Olsen, Woodhead Publishing Limited, Cambridge, England, pp.69-87 (Book Chapter).

5. Adams, J. and Whitaker, T.B. 2004. Peanuts, aflatoxin, and the U.S. origin certification program, IN: Meeting the Mycotoxin Menace, Eds: D. Barug, H. van Egmond, R. Lopez-Garcia, T. van Osenbruggen, and A. Visconti, Wageningen Academic Publishers, Den Haag, The Netherlands, pp183-196 (Proceedings of the Second World Mycotoxin Forum, Feb. 2003).

6. Whitaker, T.B., Dorner, J.W., Giesbrecht, F.G., and Slate, A.B. 2004. Variability among aflatoxin test results on runner peanuts harvested from small field plots, Peanut Science, 31:59-63.

7. Whitaker, T.B. 2005. Sampling feeds for mycotoxin analysis, IN: The Mycotoxin Blue Book, Ed: D. Diaz, Nottingham University Press, Nottingham, United Kingdom, pp. 1-23 (Book Chapter).

8. Whitaker, T.B., Williams, K.M., Trucksess, M.W., and Slate, A.B. 2005. Immunochemical analytical methods for the determination of peanut proteins in foods, J. Assoc. Official Analytical Chem., Int., 88:161-174.

9. Whitaker, T.B. and Johansson, A.S. 2005. Sampling uncertainties for the detection of chemical agents in complex food matrices. Journal of Food Protection, 68:1306-1313.

10. Vargas, E.A., Whitaker, T.B., Santos, E.A., Slate, A.B., Lima, F.B., and Franca, R.C.A. 2005. Testing green coffee for ochratoxin A, Part II: observed distribution of ochratoxin A test results, J. Assoc. Official Analytical Chem., 88:780-787.

11. Whitaker, T.B. 2006. Sampling foods for mycotoxins. Journal Food Additives and Contaminates, 23:50-61.

12. Vargas, E.A., Whitaker, T.B., Santos, E.A., Slate, A.B., Lima, F.B., and Franca, C.A. 2006. Design of sampling plans to detect ochratoxin A in green coffee, J. Food Additives and Contaminates, 23:62-72.

13. Johansson, A.J., Whitaker, T.B., Hagler, W.M., Bowman, D.T., Slate, A.B., and Payne, G. 2005, Predicting aflatoxin and fumonisin in shelled corn lots using poor quality grade components, J. Assoc. Official Analytical Chem., Int., 89:433-440.

14. Whitaker, T.B., Slate, A.B., Jacobs, M., Hurley, J.M., Adams, J.G., and Giesbrecht, F.G. 2005, Sampling almonds for aflatoxin, Part I: Estimation of uncertainty associated with sampling, sample preparation, and analysis, J. Assoc. Official Analytical Chem., Int., 89:1027-1034.

15. Ozay, G., Seyhan, F., Yilmaz, A. Whitaker, T.B., and Slate, A.B. 2005. Sampling hazelnuts for aflatoxin, Part I: Estimation of uncertainty associated with sampling, sample preparation, and analysis, J. Assoc. Official Analytical Chem., Int., 89:1004-1011.

16. Park, D.L., Whitaker, T.B., Simonson, J., Morris, H.F., Durr, B., and Njapau, H. 2007. Determining the variability associated with testing shelled corn for aflatoxin using different analytical procedures in Louisiana in 1998, J. Assoc. of Official Analytical Chem., Int., 90:1036-1041.

17. Whitaker, T.B., M. B. Doko, B. M. Maestroni, A. B. Slate, B. F. Ogunbanwo, 2007. Evaluating the performance of sampling plans to detect fumonisin B_1 in maize lots marketed in Nigeria. J. Assoc. of Official Analytical Chem., Int., 90:1050-1059.

18. Whitaker, T.B., Saltsman, J.J., Ware, G.M., and Slate, A. B. 2007. Evaluating the performance of sampling plans to detect hypoglycin-A in ackee fruit shipments imported into the United States. J. AOAC, Int., 90:1060-1072.

19. Greene, J.L., Whitaker, T.B., Hendrix, K.W., and Sanders. T.H. 2007. Fruity fermented off-flavor distribution in samples from large peanut lots. Journal Sensory Studies, 22:453-461.

20. T.B. Whitaker, A.B. Slate, and F.G. Giesbrecht, 2007. Designing sampling plans to detect foreign material in bulk lots of shelled peanut, Peanut Science, 34:126-134.

21. Peterson, G.L., Whitaker, T.B., Stefanski, R.J., Pedleckis, E.V., Phillips, J.G., Wu, J.S., and Martinez, W.H. 2009. A risk assessment model for importation of United States milling wheat containing *Tilletia Controversa,* Plant Disease, 93:560-573.

22. Trucksess MW, Whitaker TB, Weaver CM, Slate A, Giesbrecht FG, Rader JI, Betz JM. (2009) Sampling and analytical variability associated with the determination of total aflatoxins and ochratoxin A in powdered ginger sold as a dietary supplement in capsules. J Agric Food Chem, 57:321-325.

Research Presentations (by invitation)

Invited to make 110 presentations at regional, national, and international meetings and to author or coauthor 14 book chapters. The most significant invitations are listed below.

Invited to make 4 presentations to 3 International Union of Pure and Applied Chemistry (IUPAC) meetings, "Sampling granular foodstuffs for aflatoxin" and "Errors associated with sampling and sample preparation," Third Annual Mycotoxin Symposium, Paris, France, 1976;
Invited presentation, "The effects of methanol concentration and solvent/peanut ratio on the extraction of aflatoxin from raw peanuts," made to the A. D. Campbell Memorial Session of the Association of Official Analytical Chemists (AOAC), Washington, DC, 1982.

Invited by CAST to assist in 2 CAST Task Force Reports, #s 116 and 139 concerning mycotoxins: invited to write a chapter on sampling foods for mycotoxins, 1989; invited to be a member of CAST Task Force Team and help identify authors, review documentation, and publish CAST mycotoxin document, 2004.

Invited to make a presentation, "Problems associated with testing agricultural commodities for aflatoxin: Errors in sampling, sample preparation, and analysis," to an aflatoxin symposium sponsored by the National Program Staff, USDA-ARS for the US House Committee on Agriculture, Washington, DC, 1990.

Invited by Association of Official Analytical Chemists, International (AOAC) to assist with 2 Journal initiatives: to be a Guest Editor and solicit, review, and publish a collection of manuscripts on sampling foods for mycotoxins, 1999; to be the Associate Referee for Sampling to monitor and document in the AOAC journal all new research developments in sampling foods for mycotoxins, 1995.

Invited by FAO/WHO to be a member of 3 Expert Consultations. Expert consultation to develop aflatoxin sampling plans for peanuts and shelled corn, 1993; Member of Joint Expert Committee on Food Additive (JECFA) to determine human risks to five mycotoxins in food products, FAO/WHO, 2000; reappointed member JECFA in 2004.

Invited to make a series of nine lectures, "Detecting aflatoxin contaminated lots: sampling, sample preparation and analysis" to the VI Argentina Food Science and Technology Congress, Buenos Aires, Argentina, 1994.

Invited to make presentation, "Sampling agricultural commodities for mycotoxins," FDA/USDA Interagency Conference on Mycotoxins, Washington, DC, 1997.

Invited to testify before a US House Agricultural Subcommittee about the pros and cons associated with replacing the current visual method of inspecting farmers' stock peanuts for mold with a direct measure of aflatoxin, Dothan, AL, 1998.

Invited by FDA to give a 2-hour lecture concerning the sampling of agricultural commodities for aflatoxin to FDA field inspectors at an FDA workshop, Atlanta, GA, 1999.

"Sampling shelled corn for fumonisin," (Plenary Speaker) Sao Paulo, Brazil, 2000; "Sampling green coffee for ochratoxin A", Bethesda, MD, 2004.

Invited to present “Sampling shelled corn for fumonisin,” FDA Fumonisin Workshop, University of Maryland, 2000.

Invited to present “Sampling grain for GMO seed,” USDA/GIPSA Biotech Workshop, Kansas City, MO, 2000.

Invited by the First and Second World Mycotoxin Forums, 2001 and 2003 to make presentations: “Standardization of Sampling Plans: An Urgent Necessity” , plenary speaker), and “Peanuts, aflatoxin, and the origin certification program” , Noordwijk, The Netherlands, 2001 and 2003.

Invited by Wilda Martinez to be a member of an USDA/ARS TCK Task Force Team. As a member of international experts, helped to develop a TCK Pest Risk Assessment Model, 1997. Made 5 presentations over a 5-year period concerning the design and evaluation of sampling plans to detect TCK in export wheat to China. These presentations were made to Chinese government officials, Portland Oregon, 1997; USDA/FAS, USDA/GIPSA, USDA/ARS, and wheat industry representatives, Washington, DC, 1998; Chinese government officials, Beltsville, MD, 2001 and 2002.

Invited by the International Atomic Energy Agency of the UN to and deliver 6-hour lecture to Mycotoxin Training Workshop on “Sources of uncertainty when testing agricultural commodities for mycotoxins”, Vienna, Austria, 2002.

Invited by the FDA to be a member of a Food Advisory Committee to reviewed action plan developed by FDA to address the issue of acrylamide in foods, College Park, MD, 2002.

Invited by FDA and BARD to a Science and Technology Based Countermeasures to Foodborne Terrorism Conference to present “Sampling uncertainties for the estimation of chemical agents in complex food matrices”, Shepherdstown, WV, 2003.

Invited by Assoc. Off. Analytical Chem. Annual Meeting, to make keynote address at the Harvey W. Wiley Symposium as recipient of the 2003 Wiley Award, “Differences in uncertainty when sampling commodities for mycotoxins”, Atlanta, GA, 2003.

Invited by the European Commission, Directorate General for Food Safety to make two presentations “Sampling foods for mycotoxins” and “Sampling green coffee for ochratoxin A” to delegates from the 25 EU member states, Brussels, Belgium, 2004.

Invited by the Brazil Ministry of Agriculture to make 2 presentations “Sampling foods for mycotoxins” and “Sampling green coffee for ochratoxin A” at a Sampling Workshop, Bella Horizonte, Brazil, 2004.

Invited by the Dried Fruits Association of California to present “Errors associated with sampling treenuts for aflatoxin” at a DFA/European Commission Workshop on Aflatoxin Control, 2005.

Invited by American Chemical Society to make two presentations “Sampling treenuts for aflatoxin” at mycotoxin symposium in San Francisco, 2006.

Invited by the Hungarian Food Safety Office to deliver 2 days of lectures at a Mycotoxin Training Workshop on “Sampling and sample preparation procedures for the analysis of mycotoxin content of foods”, Budapest, Hungary, 2008.