

**Prof. Dr. Melvin S. Finstein**

born 1931 in Cambridge, Massachusetts; died 2012

Prof. Finstein was a pioneer in the research about the mechanisms of forced aeration of compost piles. He developed the technology of temperature feedback by forced aeration. Next to that he did a large range of research about the microorganisms involved in the composting process.

Education:

- Massachusetts: High School High & Latin
- A.A.S. degree: Long Island Agricultural and Technical Institute, 1953
- u.s.Army: 1954 - 1956
- B.s. degree: Cornell University, 1959
- M.S. degree: Cornell University, 1961; (Thesis : Competition for nutrients between soilbacteria and *Fusarium oxysporum*)
- Ph.D. degree : University of California, Berkeley, 1964 (Dissertation : Molybdenum and the physiology of *Nitrobacter*)
- 1964-1967: Assistant Professor, Rutgers University, Cook College, Department of Environmental Sciences
- 1967-1970: Associate Professor, Rutgers University, Cook College Department of Environmental Sciences
- 1972-present: Professor, Rutgers University, Cook College, Department of Environmental Sciences

Member:

Sigma Xi

Water Pollution Control Federation American Society for Microbiology International Solid Waste Association Society for Industrial Microbiology

Selected Activities:

- Served on International Standards Organization committee. Contributed to methodology for nitrifying bacteria and Salmonellae.
- Served on American Society for Microbiology Committee for curriculum development - microbiology course in 1 year M.S. Engineering Programs.
- Instructor UNESCO/UNEP/WHO course in Environmental Microbiology, University of the Philippines .
- Organized Symposium for American Society for Microbiology "Environmental Control: Rational Management of Microbial Ecosystems".

Reviewer for:

- Journal of Water Pollution Control Federation Applied and Environmental Microbiology
- Canadian Journal of Microbiology
- Waste Management & Research
- National Science Foundations. Environmental Protection Agency U.S. Department of Agriculture and other journals and agencies.
- Appointed to National Research Council Committee (National Academy of Sciences) to give seminars in Tunisia on Management of Urban Waste {1984}.
- Invited speaker at conference on composting organized by the European Economic Community, Oxford(1984).
- Successfully redesigned a failed wastewater sludge composting facility (1985).
- Invited contributor to the chapters on composting in a book published by the German Chemical Society (1986), and others as listed.
- Invited speaker at conferences on composting in Greece, Germany, Israel (1989).
- Special advisor on composting to the Wastewater Reclamation District of Greater Chicago {1990}.
- Special advisor on composting to Ocean County, New Jersey (1991-present)
- Special advisor on composting to Morris County, New Jersey (1992-1993).

Teaching:

Undergraduate and graduate courses in: Pollution Microbiology, Lecture; Pollution Microbiology, Laboratory; Solid Waste Management, Lecture.

Research and Review Papers (partial listing)

Cowan, R.M. , J.A. Joshi, P.F. Strom and M.S. Finstein. 1997. Biological Processes - for Air Trace Contaminant Control in ALS.27th Intl. Conf. Environ. sys ., SAE Technical Paper Series 972552.

Joshi, J.A., J.A. Hogan, R.M. Cowan, P.F. Strom and M.S. Finstein. 1997. Biological Removal of Ammonia in Biofilters . 90th Ann. Meeting, AWMA, Toronto, Canada.NJAES Doc. # H-07131-01-97.

Finstein, M. S. 1993. What You Need to Know About the Science and Technology of Composting to Write an Effective Request for Proposal (RFP) . *Composting Frontiers*, Summer 1993, p. 9- 16.

Finstein, M. S. 1993. Guide to Matching Composting Technology to Circumstances . *Composting Frontiers*, Winter 1993, p.9-14,p.19.

Finstein, M.S. and J.A. Hogan. 1993. Integration of Composting Process Microbiology, Facility Structure, and Decision-making. In, *Science and Engineering of Composting: Design, Environmental, Microbiological and Utilization Aspects* (editors : H.A.J. Hoitink and H.M. Keener), p.1-23. Renaissance Publications, Worthington, Ohio.

Finstein, M. S. 1993. Review of -- Microbes and Man (John Postgate. Cambridge University Press). *Soil Science* 155:360- 361.

Finstein, M. S. 1992. Composting in the Context of Municipal Solid Waste Management. In, *Environmental Microbiology* (editor, R. Mitchell), p. 355-374, Wiley-Liss, New York.

Hogan, J.A. and M.S. Finstein.1991. Composting of Solid Waste During Extended Human Travel and Habitation in Space. *Waste Management Research*: 453-463.

Finstein, M. S., J.V. Hunter and J.A. Hogan. 1990. Treatment of Industrial Organic Solid Wastes Through Composting. Final Report BICM-9. *Hazardous Substance Management Research Center*, New Jersey Institute of Technology, Newark.

Finstein, M.S., P.F. Strom, F.C. Miller and J.A. Hogan. 1990. Elements of a Request for Proposal (RFP) for Sludge Municipal Waste: Scientific and Technical Elements Publication EI36, Rutgers Cooperative Extension, Cook College, Rutgers University, New Brunswick, New Jersey.

Finstein, M. S. 1990. Review of -- Facing America's Trash: What Next for Municipal Solid Waste (United States Congress,"Office of Technology Assessment) . *ASM News* 56:163-164.

Finstein, M.S. and J.A. Hogan. 1990. Letter -- Alaskan Oil Spill. *ASM News* 56:62.

Finstein, M.S. 1989. Review of -- Biology of Anaerobic Microorganisms . *Quarterly Review of Biology* 64:495-496.

Finstein, M.S. 1989. Activities on Composting as a Waste Treatment Technology at the Department of Environmental Science, Rutgers University. *Waste Management Research* 2:291-294.

Finstein, M.S. 1989. Composting Solid Waste: Costly Mismanagement of a Microbial Ecosystem. *ASM News* 55:599-602.

Hogan, J.A. , G.R. Toffoli, F.C. Miller, J.V. Hunter, J.V. and M.S. Finstein. 1989. Composting Physical Model

Demonstration: Mass Balance of Hydrocarbons and PCBs. In, *Intern. Conf. Physiochem. Biol. Detoxification Hazardous Wastes* (editor, Y. Wu) . Technomic, Lancaster, PA and Basel.

Hogan, J.A., Miller, F.C. and M.S Finstein. 1989. Physical Modeling of the Composting Ecosystem. *Applied and Environmental Microbiology* 55:1082-1092.

Finstein, M.S., F.C. Miller, J.A. Hogan and P.F. Strom.1988. EPA Guidance - Authors'Response. *Biocycle* 29(2)60-61.

Finstein, M.S., F.C. Miller, J.A. Hogan and P.F. Strom. 1987. Analysis of EPA Guidance on Composting Sludge.Part I. Biological Heat Generation and Temperature.*Biocycle* (1):20-26.

Finstein, M.S., F.C. Miller, J.A. Hogan and P.F. Strom. 1987. Analysis of EPA Guidance on Composting Sludge. Part II. Biological Process Control. *Biocycle* 28(2):42-47.

Finstein, M. S., F.C. Miller, J.A. Hogan and P.F. Strom. 1987. Analysis of EPA Guidance on Composting Sludge . Part III. oxygen, Moisture, Odor, Pathogens. *Biocycle*(3):38-44.

Finstein, M.S. , F.C. Miller, J.A. Hogan and P.F. Strom. 1987. Analysis of EPA Guidance on Composting Sludge. Part IV. Facility Design and Operation. *BioCycle* 28(4) :56- 61.

Finstein, M. S., F.C. Miller and P.F. Strom. Treatment Composting as a Controlled System. *Biotechnology*, Vol. 8: Microbial Degradations (Schonborn) , p.363-398, VCH Verlagsgesellschaft Chemical Society), Weinheim, Germany1986.

Finstein, M.S., F.C. Miller and P.F. Strom.1986. Monitoring and Evaluating Composting Process Performance.J. Water Pollut. Control Fed. 58:272-278.

Finstein, M.S. and F.C. Miller. 1985. Principles of Composting Leading to Maximization of Decomposition Rate, Odor Control and Cost Effectiveness. In, *Composting of Agricultural and Other Wastes* (editor, J.K.R. Gasser), p. 13- 26, Elsevier Appl. Science, London and New York.

Miller, F.C. and M.S. Finstein. 1985. Economic and Technical Analysis of Drying Sludge Through Composting and Air Drying.In, *Proc. 17th Mid-Atlantic Conf. Indust. Waste Treatment* (editor, I.J. Kugelman) , p.509-522, Technomic, Lancaster, PA and Basel.

Miller, F.C. and M.S. Finstein. 1985. Materials Balance in the Composting of Sewage Sludge as Affected by Process Control Strategy. *J. Water Pollut. Control Fed.* 57:122-127.

Finstein, M.S., MacGregor, S.T., Miller, F.C. and Psarianos, K.M. 1985. The Rutgers Strategy for Composting: Process Design and Control. EPA/600/2-85/059, MERL-CI-21 46.(U.S. Dept. Commerce, National Technical Information Service, Springfield, VA 22161, Accession No. PB85 207538/AS.)

Strom, P.F. and M.S. Finstein. 1985. Leaf Composting Manual for New Jersey Municipalities. Department of Environmental Science, Rutgers University/New Jersey Department of Environmental Protection, Trenton.

Psarianos, K.M., S.T. MacGregor, F.C. Miller, and M.S. Finstein. 1983. Design of Composting Ventilation System for Uniform Air Distribution. *BioCycle* z.1 (2) : 27-31.

Miller, F.C., S.T. MacGregor, K.M. Psarianos and M.S. Finstein. 1983. A Composting Processing Failure:

Diagnosis and Remedy. In, Proc.15th Mid-Atlantic Conf. Indust. Waste Treatment, p.463-471, Ann Arbor, Science

Finstein, M.S. 1983. Economic Motive for Managing the Composting Ecosystem. *Bio/Technology* 1:341-342.

Finstein, M.S., F.C. Miller, P.F. Strom, S.T. MacGregor and K.M. Psarianos. 1983. Management of the Composting Microbial Ecosystem for Waste Treatment. *Bio/Technology*:347-353.

Finstein, M.S. F.C. Miller and P.F. Strom, 1983. Evaluation of Composting Process Performance. In, *Composting Solid Waste and Slurries* (editor, E.I. Stentiford), p.23-34, The Univ. of Leeds, England.

Strom, P.F., F.C. Miller and M.S. Finstein. 1983. Problem of Scale in Composting Research. In, *Composting Solid Waste and Slurries* (editor, E.I. Stentiford), p. 35-41, The Univ. of Leeds, England.

Miller, F.C. and M.S. Finstein. 1983. Equipment for Control and Monitoring of High Rate Composting. In, Intern. Symp. Biol. Reclamation Land Utilization Urban Wastes (edotors, F. Zucconi, M. de Bertoldi, E.S. Cappola), p.551-560 .University of Naples.

Miller, F.C. , S.T. MacGregor, K.M. Psarianos, J. Cirello and M.S. Finstein. 1982. Direction of Ventilation in Composting Sewage Sludge. *J. Water Pollut. Control Fed.* 54:111-113.

Finstein, M.S., F.C. Miller, S.T. MacGregor and K.M. Psarianos . 1982. Rational Design and Control of Composting Facilities. In, *Proc. National Conf. Energy Conservation: Retrofit of Municipal Wastewater Treatment Facilities*, p.19- 25, June 15-23, 1981, Los Angeles, CA. Sponsored by: U.S. Department of Energy. ANL/CNSV- TM-95. U.S. Dept. Commerce National Technical Information Service, Springfield, VA. 22161 .)

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Finstein, M.S., F.C. Miller, S.T. MacGregor and K.M. Psarianos. 1982. Composting Sludge: A Means of Linking Decomposition and Dewatering. In, *Proc. 6th Mid-America Conf. Environ. Engineering Design*, p. 112-119, Kansas City, MO., University Missouri-Columbia.

Finstein, M.S., and F.C. Miller. 1982. Distinction Between Composting (the Process) and Compost (the Product) . Letter - *BioCycle*(6):54.

MacGregor, S.T., F.C. Miller, K.M. Psarianos and M.S. Finstein. 1981. Composting Process Control Based on Interaction Between Microbial Heat Output and Temperature. *Appl. Environ. Microbiol.* 41:1321-1330.

Finstein, M.S., Karen Wei-Lin and G. Fishler. 1981. Sludge Composting and Utilization: Review of the Literature on Temperature Inactivation of Viruses, *Ascaris lumbricoides* eggs, and *Aspergillus fumigatus* . Final report to USEPA, NJDEP, CCMUA.

Hunter, J.V., M.S. Finstein, D.J. Suler and R.R. Bobal. 1981. Sludge Composting and Utilization: Fate of Concentrated Industrial Waste During Laboratory Scale Composting of Sewage Sludge. Final report to USEPA, NJDEP, CCMUA.

Finstein, M.S., J. Cirello, S.T. MacGregor, F.C. Miller, D.J. Suler and P.F. Strom. 1980. Discussion of "Engineering Principles of Sludge Composting" (by R.T. Haug. 1979. *J. Water Pollut. Control Fed.* 51--:2189-2206.) . *Water Pollut. Control Fed.* 52:2037-2040.

Finstein, M.S. 1980. Composting Microbial Ecosystem: Implications for Process Design and Control. *Compost Sei.* 21 (4):25-36.

Finstein, M.S., M.L. Morris, J. Cirello, D.J. Suler and P.F. Strom. 1980. Microbial Ecosystems Responsible for Anaerobic Digestion and Composting. *J. Water Pollut. Control Fed.* 52:2675-2685.

Strom, P.F., M.L. Morris and M.S. Finstein. 1980. Leaf Composting through Appropriate, Low-Level, Technology. *Compost Sei.* (6):44-48.

Finstein, M.S., J. Cirello, S.T. MacGregor, F.C. Miller and K.M. Psarianos . 1980. Sludge Composting and Utilization: Rational Approach to Process Control. Final report to USEPA NJDEP, CCMUA. (U.S. Dept. Commerce, National Technical Information Service, Springfield, VA. 22161, Accession No. PB82-136243.)

Cirello, J., R.A. Rappaport, P.F. Strom, V.A. Matulewich, M.L. Morris, s. Goetz and M.S. Finstein. 1979. The question of Nitrification in the Passaic River, N.J. : Analysis of Historical Data and Experimental Investigation. *Water Research* 13:525-537.

Finstein, M.S. and M.L. Morris. 1979. Anaerobic Digestion and Composting: Microbiological Alternatives for Sewage Sludge Treatment. *ASM News* 45:44-48.

Matulewich, V.A. and M.S. Finstein. 1978. Distribution of Autotrophic Nitrifying Bacteria in a Polluted River (the Passaic). *Appl. Environ. Microbiol.* 32:67-71.

Finstein, M.S., P.F. Strom and V.A. Matulewich. 1978. Discussion of "Significance of Nitrification in Stream Analysis-Effects on the oxygen Balance" (by R.J. Courchaine. 1968. *J. Water Pollut. Control Fed.* 40:835-847.) *J. Water Pollut. Control Fed.* 50:2055-2057.

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Finstein, M.S. and V.A. Matulewich. 1977. Nitrification Potential of River Environments . Final Report A-049-NJ. Water Resources Research Institute, Rutgers University, New Brunswick, New Jersey.

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Matulewich, V.A., P.F. Strom and M.S. Finstein. 1975. Length of Incubation for Enumerating Nitrifying Bacteria Present in Various Environments. *Appl. Microbiol.* 29:265-268.

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- Finstein, M.S. 1968. Enumeration of Autotrophic Ammonium-Oxidizing Bacteria in Marine Waters by a Direct Method. *Appl. Microbiol.* 16:1646-1649.
- Finstein, M.S. 1967. Nitrogen and Phosphorous Removal from Combined Sewage Components by Microbial Activity. *Appl. Microbiol.* 14:679-684.
- Finstein, M.S. and H. Heukelekian. 1967. Gross Dimensions of Activated Sludge Flocs with Reference to Bulking. *J. Water Pollut. Control Fed.* 39:33-40.
- Finstein, M.S. and J.V. Hunter. 1967. Hydrolysis of Condensed Phosphates During Aerobic Biological Treatment. *Water Research* 1:247-254.
- Finstein, M.S. 1967. Growth and Flocculation in a *Zoogloea* Culture. *Appl. Microbiol.* 15:962-963.
- Finstein, M.S. and c.c. Delwiche, 1965. Molybdenum as a Micronutrient for *Nitrobacter*. *J. Bacteriol.* 89:123-128.
- Delwiche, c.c. and M.S. Finstein. 1965. Carbon and Energy Sources for the Nitrifying Autotroph *Nitrobacter*. *J. Bacteriol.* 90:102-107.
- Finstein, M.S. and H. Heukelekian. 1965. Filamentous Microorganisms and the Bulking of Activated Sludge. Proc. 20th Purdue Industrial Waste Conf. p. 175-181.
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