Other papers in the chapter show that (i) systematic application of fertilizers hardly affects the enzymatic activity in the soil if the optimal level of fertilization is not exceeded; (ii) enzymatic activity in mine soils increases with application of mineral fertilizer and after 10 yr, the carbon to nitrogen ratio of the humus horizon reaches the optimum level for arable soils in the area; (iii) application of liquid manure to soils under certain conditions increases the appearance of phenols, which, when oxidized, release quinone-type compounds, endangering the natural soil environment; (iv) nitrogen dioxide losses are highest at about 80% of the water holding capacity of the soil; and (v) nitrogen fertilization of grasslands decreases atmospheric additions from 1 to 2 kg/ha to 0.5 to 1.0 kg/ha.

Chapter 2 concentrates on the effect of pesticides on soil organisms. In the lead article, K. H. Domsch discusses adsorption of pesticides, biodegradation rates, and some aspects of ecotoxicology. Other papers examine the effects of repeated applications of herbicides, insecticides, and pollutants in the soil. Microbiological degradation of petroleum and petroleum products is also examined.

Chapter 3 examines the role of soil organisms in the decomposition and synthesis of organic matter. Environmentalists will be interested in the processes involved because of the impact of modern farming upon those processes, whereas agronomists will be more interested in the levels of organic matter needed to maintain soil tilth at an optimum level for crop production.

Biological nitrogen fixation discussed in Chapter 4 may be of more interest with the rise in energy costs. The first paper examines the relationships among fluctuations in nitrogenase activity, H₂ evolution, and respiratory losses of CO₂ from nodules of peas during their growth. Measurements of carbon energy costs for symbiotic nitrogen fixation range from about 4 to 12 g carbon per g nitrogen. Apparently, the nitrogen-fixing ability of strains of nodular bacteria may be measured rapidly enough to select the most efficient ones for use in inoculation.

In the fifth chapter is a discussion by I. M. Szabo of soil microorganisms as components of the soil ecosystem and papers by other authors on the dynamics of the microbial populations, current trends in the soil microorganism coenoses, and some specific examples from different soil types in Cuba, Hungary, and Russia. The long-term effect of irrigation upon microbes, role of silicate bacteria in releasing potassium and silica from biotite and orthoclase, weathering of limestone by organisms, and changes in a polder soil community after earthworm inoculation are also discussed.

The role of soil organisms in soil forming processes is the sixth of the general subject areas. Most of these papers deal with soil development in minespoil, industrially disturbed loess, and power station wastes. Reformation of minespoil and effect of soil conditions on some enzymatic activities of soil conditions were also investigated.

The two-volume set is most useful for keeping abreast of soil biology research taking place in Eastern Europe. American soil biologists will want a personal copy. Other soil scientists and environmentalists will find it helpful enough to want a library copy available.

---

**Pollution Control for Agriculture (Second Edition)**

*Edited by R. C. Loehr, Academic Press Inc., Orlando, FL 32887. $44.00. 1984.*

The author addresses pollution control for wastes that originate in agricultural production and processing as well as urban wastes disposed of in the rural environment. The book is written for scientists and engineers to give an understanding of the trends in agriculture as related to environmental issues and the principles for designing appropriate waste systems.

The author makes good use of diagrams and graphs to portray the concepts being discussed. Summaries of data are presented and the author has done a thorough literature review. There is an excellent bibliography at the end of each chapter. The “keyword” index at the end of the book is helpful in locating topics of interest.

An important feature of the book is the inclusion of different waste characteristics, e.g., livestock, fruit and vegetable processing, meat packing plants, milk processing, and fish processing. For many readers these tables on waste characteristics will justify the purchase of the book.

The author devotes five chapters to the treatment of waste materials starting with the fundamentals of biological treatment. There is a thorough discussion of aerobic treatment, lagoon treatment, and anaerobic treatment for biogas production.

The utilization of agricultural residues includes feeding livestock, aquaculture, algae production, energy production, and land application. The principles of land treatment are discussed for organic wastes, manures, and sludges. Also the treatment of dilute wastewater by soil infiltration and overland flow are presented. There is one chapter on physical and chemical treatment of agricultural wastes.

The chapter on the principles of nitrogen control is an excellent summary on the mechanisms of nitrogen transformations in biological treatment systems and in soil. This chapter is an important contribution because nitrogen is frequently the environmentally limiting factor of many wastes when applied to land. Nonpoint source control and best management practices are discussed in another chapter.

The intent of the author is to provide the reader with the basic information needed to assess problems associated with agricultural wastes and potential solutions. The book should meet a textbook need for upper level undergraduate and graduate level courses on pollution control for agriculture.

---

**AUTHOR AND SUBJECT INDEX**


Abele, W. V., 501
Adams, J. C., 261
Agbilm, N. K., 411
Anderson, R. L., 111, 456, 517
Angle, J. S., 224
Arnold, L. E., 47
Augspurger, M. K., 169
Baas, C. F., III, 509
Baker, D. E., 341
Barrett, M. R., 111, 456
Bartlett, K. B., 40
Basta, N. T., 450
Benoit, L. F., 55
Berg, W. A., 354
Bergstrud, F. G., 32, 36
Berry, C. R., 415
Bhatnagar, V. K., 246
Bingham, F. T., 72
Birmingham, B. C., 100
Bitton, G., 66, 69
Bloom, P. R., 489
Bole, J. B., 119
Booth, J. W., 501
Booty, W. G., 158
Bosart, J. M., 69
Bouchard, D. C., 181, 229
Bowerman, B. T., 265, 270
Boyd, S. A., 337
Boylan, R. A., 66, 69
Bray, B. J., 114
Brown, D. F., 521
Brown, D. S., 195
Brown, K. W., 349, 592
Bruce, R. R., 433
Brunner, W., 324
Burns, J. C., 9, 14, 22
Bush, P. B., 585
Byers, G. E., 69
Callahan, C. A., 569
Cessna, A. J., 203
Clapp, C. E., 95
Coale, F. J., 157
Colman, B., 100
Combs, G., 195
Cona, J. F., 191
Cox, S. K., 169
Crowder, B. M., 428
Cummings, G. A., 9, 14, 22
Dahlman, R. C., 1
Davis, E. C., 561
DeBusk, W. F., 459
Delaine, R. D., 164
Depinto, J. V., 457
DePuit, E. J., 575
Deuel, E. L., Jr., 349
DeWalle, D. R., 234
Dochinger, L. S., 274

Published October, 1985