

## Introduction to the Workshop

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The organic movement has progressed from a small band of idealists to a national and international force with strong political influence. This topic has continued to engender passion and fervor and is constantly in the news. In the past, some of the proponents of the organic movement have scorned science and technology, considering them to be the cause of our problems rather than the cure. As a result, science and the organic movement have had an adversarial relationship. Today, the very word "organic" has a visceral effect on the one side, comparable perhaps to the word "chemical" on the other. Nevertheless, there seems little doubt that the organic movement, in the guise of its various synonyms—sustainable agriculture, the green movement, organic farming, the environmental movement—will be a determinate force in horticulture in the 1990s.

This workshop examines the roots of the organic and environmental movements and investigates their scientific, antiscientific, and emotional basis with emphasis on horticulture. We see that the organic movement is "no alien implant" but may be considered the reappearance, in contemporary guise, of a long tradition. We hope this workshop will alter our way of thinking about the problem so that horticultural science and the organic movement can fulfill their mission to improve the well-being of humankind.

The first paper, "The Early Roots of the Organic Movement" by Ronald F. Korcak, reviews the origins of our understanding of plant nutrition and, specifically, the changing perceptions of the role of organic matter (humus) in the soil. The science of plant nutrition is based on the demonstration that plants absorb inorganic salts from the soil and CO<sub>2</sub> from the air and metabolically transform them into complex organic materials. Green plants are self-nourishing (autotrophic) with respect to organic compounds. This is demonstrated by the fact that plants grown with nutrient solutions are identical to plants grown in soil. Despite the fact that plants normally do not absorb organic molecules into their roots, soils and inorganic nutrient solutions are not equivalent substrates, because soil is a living, dynamic system. Plant nutritionists and agriculturists do not belittle or underestimate the importance of organic matter

or soil organisms to plant nutrition in soil systems. It is also fair to say that in the real world this fact has been ignored in many agricultural systems where short-term responses to inorganic fertilizers have been emphasized with little attention given to other consequences of these practices. The typical grower considers the choice of replacement of essential elements to soil systems, as a consequence of crop withdrawal or natural deficiency, to be a purely economic decision. The organic movement, on the other hand, considers synthetic chemicals or fertilizers to be not only poisonous but also ritually unclean; their application is considered a symbolic act tantamount to sin. The emotional dispute over nutrient source, i.e., the distinction between organic vs. nonorganic source for fertilizer materials, is a difference akin to distinctions of religious dietary laws and prohibitions. Consequently, the dispute between the proponents of organic agriculture and agricultural science resembles a conflict of opposing values—more a religious dispute than a scientific controversy.

"Sir Albert Howard and The Indore Process," by David Ft. Hershey, introduces the genesis of the modern organic movement through the career of a scientifically trained agriculturist who was an iconoclast to the agricultural establishment of his time. Howard is best known for his advocacy of a composting system for the recycling of plant refuse and organic waste materials to improve soil properties. His advocacy of a questionable hypothesis that there is a direct connection between soil health and plant health led to ridicule by the scientific community. However, his agricultural philosophy was popularized by J.I. Rodale, an unconventional publisher and promoter who single-handedly attacked the medical and agricultural establishment while establishing a successful magazine empire. Rodale, ferociously opposed to agricultural dependence on fertilizers and pesticides, as well as the conventional medical establishment, was convinced that nutrition held the key to health, and although many of his ideas in this area were weird, his emphasis on nutrition and exercise was prescient. The career of this apostle of nonconformity is reviewed by William C. Kelly in "Rodale Press and Organic Gardening."

Caula A. Beyl, in "Rachel Carson, *Silent Spring*, and the Environmental Movement," presents the background for one of the most influential books of the 20th century, a work that brought the environmental hazards inherent in pesticides to public consciousness. The events leading to public concern over DDT, as well as the response to the thalidomide disaster, mark the beginnings of the environmental movement, a defining event in our culture. The environmental movement, conceived in fear and born in crisis, struck a responsive chord in the United States during the late 1960s. The movement has proved to be a force to be recognized. The buzzwords "organic" and "natural," shamefully exploited by the consumer-oriented food and cosmetic industries, replaced the epithets "science" and "technology." The clamor over pollution made agricultural technologists painfully aware of the long-range implications of their actions. Despite a concerted attack by the agribusiness complex and early widespread disinterest by the academic community, the issue refused to go away, especially when the achievements of agricultural science kept food supplies in surplus and prices of agricultural commodities depressed.

The effect of the organic movement on contemporary agriculture is underscored in Silvio Sansavini and Joerg Wollesen's "The Organic Farming Movement in Europe," a survey demonstrating the extent of agricultural change in direct response to the movement. Formerly, the organic concept found a willing advocate in the homegardener but had little or no effect on commercial agriculture. This is no longer the case in Europe. Part of the response may be passed off as a simple reaction to a discovered market niche, but the scope of the organized responses reflects a fundamental change in attitude in growers and consumers, an awareness of the possibility of a more ecological approach to agriculture. Miklos Faust, in the final article "Organic Gardening and Ecosystem Alteration," makes the point that the problem at issue is the interrelationship of biological systems and that an ecological approach must provide the solution to the problem of sustained agricultural productivity.

