



Agronomic and environmental implications of organic farming systems

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Abstract

Organic farming systems are diverse and occur throughout the world. They are linked by common objectives of economic, environmental, and social sustainability. In many countries, organic farming now has a clear legislative basis and certification schemes for production and processing.

A range of structural features and tactical management approaches are combined within whole farm systems. Organic livestock systems are land-based. Species-specific animal husbandry, housing, and nutrition interact with breed selection and stockmanship, and animal welfare standards are generally higher than comparable conventional systems. Production per animal is maintained or increased, but farm output may be reduced due to lower stocking rates. The design of a diverse crop rotation is the key to crop nutrition, weed, pest and disease control. In Europe, yields of arable crops are 60–80% of those in comparable conventional systems. In developing countries, organic farming practices increase crop yields with minimum external inputs. Lower variable costs and premium prices mean that organic farming systems are profitable. Energy consumption and pollution are generally reduced in organic farming systems. They have larger and more diverse flora, insect, and bird populations, caused by changes in both habitat structure and field management.

The development of organic farming systems and markets illustrates that this is a valid alternative approach to intensification. With greater political will and investment in research, more of this potential could be realized. This should help not only to further organic agriculture but also inform and improve the sustainability of other forms of agriculture.