



FiBL Press Release

Science publishes its first European paper on organic agriculture

(Frick, 30.5.2002) Organic agriculture is finally making its presence felt in the worldwide scientific community. For the last 24 years the DOK trial has compared conventional agricultural practice with organic agriculture; its findings will be presented at the end of May in the renowned scientific journal *Science*. The experiment yields impressive statistics which demonstrate that organic agriculture is kinder to the environment, more efficient and more sustainable.

The latest issue of *Science* dated 31.5.2002 contains the summary of an experimental comparison of farming systems which has been carried out in Therwil near Basel in Switzerland for the last 24 years. This trial, which compares three systems of agricultural production biodynamic, organic and conventional (or integrated) farming is known as the DOK trial (an acronym derived from the German designations *biologisch-dynamisch*, *organisch-biologisch* and *konventionell*). Nowhere in the world has such a long-term study been conducted. Publication of the findings in this authoritative scientific journal signifies a definitive breakthrough for organic farming research. This is the first time that the journal *Science* has carried a European paper on organic farming research. The results of the experiment will have highly significant political, scientific and economic implications for conservation of the agricultural production base and natural biodiversity.

The DOK trial demonstrates that organic crop production is amazingly efficient. Although expenditure on fertilizers and energy was 50% lower and pesticide use was 97% lower, yields of organic crops over a 21-year period were only 20% lower on average.

The DOK trial is also informative on the issue of soil fertility, which is clearly encouraged by organic husbandry. Double the numbers of soil microorganisms, earthworms and ground beetles are found in the study's organic plots. Organic production systems rely in part on organic soil activity to achieve considerable yields using lower inputs of non-renewable resources while maintaining higher soil fertility and better soil structure.

The organic plots not only exhibited higher soil-organism activity, but also a greater diversity of microorganism, weed and ground beetle species. Hence organic farming helps to maintain high levels of biodiversity despite agricultural use of the land. The active, diverse communities of microorganisms ensured efficient use of organic sources of carbon in the soil. It is particularly interesting that the evidence points to a definite correlation between efficient above-ground production (energy input per unit of yield) and efficient production in the soil (soil respiration per unit of microbial biomass). When subjected to intensive interventions via fertilizers and pesticides, the microorganisms evidently become stressed and make heavier demands on resources for their own survival.

The DOK trial is being conducted in Switzerland by the Research Institute of Organic Agriculture (FiBL) in Frick and the Swiss Federal Research Station for Agroecology and Agriculture (FAL) in Zürich-Reckenholz. It will be continued for at least the next four years and probably longer still.

Reference

Maeder P., Fließbach A., Dubois D., Gunst L., Fried P., Niggli U. (2002) Soil Fertility and Biodiversity in Organic Farming. *Science* 296, 1694-1697

The following people will gladly provide further information

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More information

is available via the FiBL homepage at www.fibl.ch and <http://www.fibl.ch/buehne/aktuell/pm/pm-2002-science/index.htm>