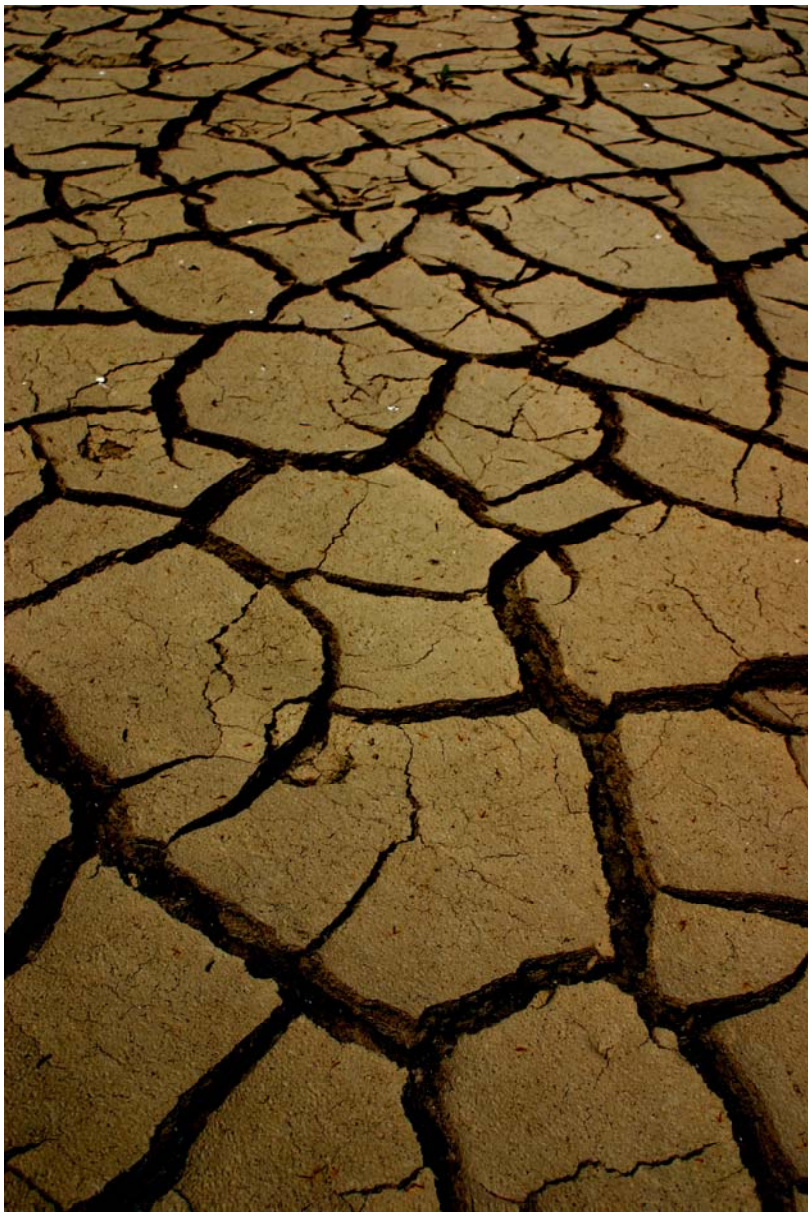
TECHNICAL PAPER

ORGANIC FARMING AND CLIMATE CHANGE



FiBL

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Monograph

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Study focusing on organic agriculture and mitigation and adaptation to predictable and unpredictable impacts of climate change - looks at the general contribution of agriculture to climate change; discusses the considerable potential of organic agriculture for reducing emissions of greenhouse gases, and its contribution to sequestration of CO2 in the soil; outlines weaknesses of organic agriculture in the context of climate change; discusses the inclusion of organic agriculture in voluntary CO2 emissions markets; includes bibliography, and a list of useful links (pp. 24-27).

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International Trade Centre (ITC)

The International Trade Centre (ITC) is the technical cooperation agency of the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO) for operational, enterprise-oriented aspects of trade development.

ITC supports the development of exports in organic and natural products from developing countries through technical assistance to trade support institutions, government bodies, the private sector and producer organization.

ITC works in six areas:

- Product and market development
- Development of trade support services
- Trade information
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- International purchasing and supply management
- Needs assessment, programme design for trade promotion

ITC's technical assistance concentrates on the three issues for which it believes the need for national capacity-building is most critical: helping businesses understand WTO rules; strengthening enterprise competitiveness; and developing new trade promotion strategies.

ITC supports the development of exports in organic and natural products from developing countries through technical assistance to trade support institutions, government bodies, the private sector and producer organization.

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Research Institute of Organic Agriculture FiBL

The Research Institute of Organic Agriculture FiBL, Frick (Switzerland), FiBL Germany and FiBL Austria are centres for research and consultancy on organic agriculture.

FiBL Frick was founded in 1973. The close links between different fields of research and the rapid transfer of knowledge from research to advisory work and agricultural practice are FiBL's strengths. FiBL Frick employs over 100 members of staff with a volume of project funding totalling some € 10 million in the year 2006.

FiBL Germany (Frankfurt, Witzenhausen) is a non-profit association registered in Frankfurt. Its work is financed by means of projects as well as donations from foundations and members. In 2005 the volume of project funding amounts to some € 1.2 million. Eleven permanent members of staff are employed in Frankfurt, supported by experts on a contract basis. Very close cooperation takes place with FiBL in Frick. FiBL Austria was founded in May 2004. Headquartered in Vienna, FiBL Austria is a service hub and interface between science and practice.

FiBL has long been committed to the international development of organic agriculture (International Federation of Organic Agriculture Movements IFOAM, International Organic Accreditation Service IOAS, International Society of Organic Agriculture Research ISOFAR etc.). FiBL has competencies in organic soil management, plant production, holistic animal health, animal ethology and organic animal breeding, in socioeconomics, in comprehensive analysis of the organic market and in organic food processing and production.

Alongside practical research, high priority is given to transferring knowledge into agricultural practice through advisory work, training courses and expert reports as well as various modern methods of documentation (magazines, data sheets, reference books and Internet).

Numerous FiBL projects in Eastern Europe, India, Latin America and Africa promote the development of organic research services as well as advisory and certification services.

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Foreword

Climate change is the defining challenge for human development and ecological well being in the 21st century.

The OECD and Stern Review project that if no action is taken, concentrations of greenhouse gases in the atmosphere could reach 2 ºC higher than their pre-industrial levels by 2035-2050. The consequences of a 2 ºC temperature rise are grave for potentially millions of people through death, injury and dislocation from flooding, fire and disease, adverse effects on water quality, species extinction and reduced agricultural yields.

Inaction on greenhouse gas emission reductions risks even higher temperature rises. The Stern Review says that inaction means there is a 50% chance of a rise by 5 ºC. This is a temperature rise equivalent to a change in temperature from the last ice age to today and is described by the Review as “very dangerous indeed”.

Agriculture is both affected by climate change but also contributes to it. As a sector, agriculture must therefore both adapt to changes and offers options for mitigation ie reducing greenhouse gas emissions and store carbon.

Agricultural land use contributes to 12% of global greenhouse gas emissions. This figure is rising. As demand for food increases, farmers are clearing new land resulting in deforestation, tilling of pasture and soil degradation. This activity opens carbon sinks and so releases greenhouse gases.

Agriculture must also adapt to changes in climate in order to provide food security. Rising temperatures and decreasing water availability are reducing yields particularly in developing countries where agriculture is vital for the food security of these populations. Extreme weather events such as droughts and floods are making cropping and animal production even more prone to failure.

The objective of the study is to explore the mitigation and adaptation potential of organic agriculture. It examines organic agriculture’s performance on greenhouse gas emissions and carbon sequestration. With respect to adaptation, the study discusses how organic farming systems utilize traditional skills and knowledge, manage with weather extremes, and enhance productivity and resilience.

The weaknesses of organic agriculture are examined with respect to productivity and reliance on livestock.

The study is based on a comprehensive review of peer reviewed scientific literature. It concludes that organic agriculture has much to offer in both mitigation of climate change through its emphasis on closed nutrient cycles and is a particularly resilient and productive system for adaptation strategies.

The study raises the issue of whether organic agriculture should be eligible for carbon credits under voluntary carbon offsetting markets and the Clean Development Mechanism. On the basis of the findings of this study, organic agriculture may well serve as a "quick win" policy option to store carbon and reduce emissions.

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TABLE OF CONTENTS

Introduction **1**

1. Agriculture as Cause and Victim of Climate Change **2**

1.1 Greenhouse gases emitted by the agricultural sector 3

1.2 Further increase in emissions expected unless agricultural practices change 5

1.3 Higher risks due to more unpredictable weather 5

1.4 Measures proposed by IPCC to mitigate the global warming impact of agriculture 5

2. The Potential of Organic Farming to Mitigate Climate Change **7**

2.1 Reduction of greenhouse gas emissions 7

2.2 Organic farming sequesters CO_2 in the soil 12

2.3 Mitigation potential of organic agriculture beyond purely agricultural practices 15

3. Does Organic Farming have Greater Potential to Adapt to Climate Change? **17**

3.1 Traditional skills and knowledge as a key to adaptation to climate change 17

3.2 Organically managed soils are better adapted to weather extremes 17

3.3 Enhancing productivity of degraded soils by building soil fertility 18

3.4 Diversity enhances farm resilience 18

4. What are the Weaknesses of Organic Agriculture in the Context of Climate Change? **19**

4.1 Criticism No. 1: Organic farming is less productive 19

4.2 Criticism No. 2: High dependency on nutrients derived from livestock 20

4.3 More funding is needed for research on organic farming 20

5. Look: Climate credit for organic farming? **21**

5.1 Special benefits of organic agriculture 21

5.2 CO_2 sequestration excluded from the Clean Development Mechanism 21

5.3 Benefits of CO_2 sequestration acknowledged by IPCC 22

5.4 Voluntary CO2 emissions markets 22

6. Conclusions **23**

6.1 Benefits of organic farming 23

6.2 Weaknesses of organic farming and research requirements 23

7. References **25**

8. Links **30**

Introduction

Climate change will dramatically alter global food production. The inequity in food supply between industrialized and developing countries is expected to increase, as the 40 poorest countries in the tropical and subtropical zones will suffer most, both from droughts and periodic floods.

Agriculture is not only affected by climate change but also contributes to it. Ten to twelve percent of global greenhouse gas emissions are due to human food production. In addition, intensive agriculture has led to deforestation, overgrazing and widespread use of practices that result in soil degradation. These changes in land use contribute considerably to global CO_2 emissions. Sustainable agriculture and food supply systems are thus more urgently needed than ever before. They must boost the capacity of agricultural production to adapt to more unpredictable and extreme weather conditions such as droughts and floods, reduce greenhouse gas emissions in primary food production and halt or reverse carbon losses in soils.

Organic agriculture is claimed to be the most sustainable approach in food production. It emphasizes recycling techniques and low external input and high output strategies. It is based on enhancing soil fertility and diversity at all levels and makes soils less susceptible to erosion. In this publication, organic farming and food systems are evaluated in the context of climate change scenarios. As simple answers cannot be given to such a complex and global problem, it is equally important to highlight recommendations for future development and research requirements in organic agriculture.

Organic farming links productivity with ecology and creates livelihoods in rural areas: it is a surprisingly multifaceted option.