

Climate Change and Sustainable Agriculture

Climate change is a global problem that becomes visible at local levels. The Louis Bolk Institute searches for practical answers. Tools have been developed that provide practical measures for individual farmers to reduce greenhouse gas emissions and to adapt to more extreme weather circumstances. We combine research, technical assistance and training courses for groups of farmers in the Netherlands and abroad. Besides, we deliver consultancy services such as policy preparations for policy makers and stakeholders. Our system approach is unique. Cross linkages are being made with related sustainability issues like nutrient dynamics, biodiversity, landscape, animal welfare and ethics. In this way we search for win-win solutions, working on sustainability from a broad perspective.

Climate Change Adaptation Assessment A Climate Change Adaptation Assessment by our institute gives insight in the preferred soil management strategy for climate change adaptation. The assessment consists of three phases. Phase 1 is a zero-measurement including chemical, physical and biological parameters. Phase 2 is the application of a management strategy to improve the climate change adaptation. Phase 3 is the monitoring period during following years. Field sites are chosen based on differences in historical site management. Examples are recently sown grassland versus old grassland and pastures with good and poor water retention and infiltration capacity. This successfully leads to the best soil management strategies for climate adaptation.



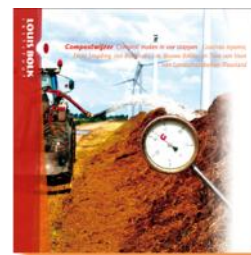
Guidance for Climate Friendly Farming Creative thinking and practical solutions are the result of our participatory approach towards farmers. With regard to climate change, we organize voluntary study groups. In co-operation, practical measures are developed for climate change adaptation and mitigation on the field, company and regional level. Greenhouse gas emission reductions are inventoried for instance by optimizing nutrient dynamics, connecting companies within regional networks and reducing fossil fuel use.



Combining nature management and agriculture In co-operation with farmers and nature management organizations, the Louis Bolk Institute developed innovative measures that reduce costs and increase efficiency of nature management. For example, biomass from nature reserves can be used for agricultural practices such as supplements for animal diets, straw beddings and soil improvement. In this way carbon and nutrient cycles are closed on the regional level.



Technical assistance for composting Composting is an ancient technique that is still effective for the recycling of organic waste and the improvement of soil quality. Recently, the technique has made a revival thanks to the acknowledgement of the reduction potential for greenhouse gas emissions. Louis Bolk Institute has built its expertise on composting processes and their applicability.



Training courses for smallholders in the Tropics Our tropical department provides training courses for smallholders to stimulate conservation agriculture. Training courses often include the use of demonstration sites, farmer field schools and field experiments, for instance in Sierra Leone and Liberia. Conservation agriculture mitigates climate change by reducing deforestation and land degradation.



Determination of emission reduction potentials The Louis Bolk Institute has a long history in guiding farmers that use alternative farming systems, fertilization, and breeding programs. In different projects we focus on the emission reduction potential of these farming systems (see examples below).

Low input farming

The Louis Bolk Institute collaborates in a European project in which new poultry breeds are developed especially for low input agriculture. A new development in animal husbandry is Pure Graze Farming: dairy farmers intensify the grazing scheme and reduce the emissions due to the production of feed concentrates. A second benefit of Pure Graze farming related to climate change is the accumulation of organic matter in the soil. Animal welfare and emission reductions are in both projects strongly correlated.



Improvement of soil carbon stocks and soil fertility in arid regions

Arid regions are faced with insufficient soil fertility and water availability for farming. Compost applications and green manures turn out to improve significantly soil carbon stocks and long term soil fertility in arid soils. These measures also reduce the use of irrigation water.



Development of sustainable agroforestry systems in the tropics

Agroforestry is a form of land use in which agricultural crops are intercropped with trees that provide shade and protection. Shade plantations of cocoa store more carbon and are more resilient for droughts, floods and erosion than mono-cropped plantations. The Louis Bolk Institute co-operates with African cocoa farmers to develop and maintain sustainable agroforestry systems.



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Louis Bolk Institute: Research and advice to advance truly sustainable agriculture, nutrition and health

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