Permaculture and Biodynamics. Do they have anything in common? What we can learn from the forest

By Dr. Immo Fiebrig & Marion Buley

Originally developed by the Australian Bill Mollison as early as the 1970s, permaculture has since spread all over the world, but has been confined mostly to private vegetable patches and allotments. Recently, permaculture has been receiving more attention. In their documentary “Tomorrow/ Demain”, C. Dion and M. Laurent visit the “Ferme du Bec Hellouin” market garden in northern France, which has gained a reputation as a model for economically viable, sustainable permaculture. Since then, the market garden has been inundated with visitors. Companies such as lehmann natur GmbH (Germany), real-SB Warenhaus GmbH (Germany) and Lush Cosmetics (UK) have begun to sell products from permaculture production. Permaculture has become an established subject of academic study and teaching, in Europe e.g. at Coventry University (UK) or Lisbon University (P). But what is permaculture? Can some of the insights gained from it be applied to biodynamic agriculture?

WHAT IS THE OBJECTIVE OF PERMACULTURE?

Applied permaculture not only wishes to maintain the quality of agricultural soil, but wants to improve it, restore natural habitats for animals and humans, and provide the socially disadvantaged with a new perspective. As such, it does not differ vastly from organic farming, but it is not subject to any legal standard or relevant production directives. Instead, it is a rather abstract principle that is based on ethics, maxims and guiding principles, which can be interpreted and implemented in accordance with any given location (PermaculturePrinciples.com). Meanwhile, the permaculture principles are at work in landscaping, energy supply, building and construction and in social projects. Rob Hopkins, founder of the Transition Town movement, for example, has initiated communal projects in urban and sub-urban environments that focus on the transition into the post-fossil age. He also re-interpreted the principles of permaculture in an economic context.

Loosely based on Mollison’s original definition, permaculture is the systematic design and maintenance of edible landscapes with the stability and resilience of (primeval) forests. It considers systems in their functional diversity and allows them to evolve as they see fit in order to attain the optimal state of “self-sustaining systems”. The ethical basics of permaculture can be summed up as follows:

- earth care
- people care
- fair share

IN THE BEGINNING: PLANNING AND DESIGN MODELLED ON NATURE

In practical application, permaculture is concerned with finding the best possible design. Before their cultivation, gardens as well as agricultural enterprises require careful analysis and planning. This involves the evaluation of the location, the soil, the climate, slope inclinations, resources, restrictions and social factors by means of different assessment and planning tools and by tapping into renewable, natural resources. Agricultural and gardening concepts involving permacultural elements are often distinguished by combining polycultures with permanent crops. Improving the fertility of the soil through permanent ground cover, minimum tillage and the use of compost, compost teas and microorganisms. Permaculture’s strength lies in the fact that it harnesses the potential of the most adverse locations. The design process serves to identify and maximize a given location’s potential before permaculture cultivation starts.

The following agricultural production systems correspond to the principles of permaculture in that they emulate and harness the ecological stability of forests:

- Forest garden/agroforestry:
  Forestry in combination with food production, e.g. fruit trees + timber + grain cultivation in the same area

- Agro-silvio-pastoral systems:
  Additional element: animal husbandry, example: Dehesa cultivation in the Spanish Extremadura, which combines the cultivation of cork and holly oaks, tillage and pig farming within the same area.

- Mixed crops
  Example: the so-called milpa as cultivated by the Maya in Mexico, where corn was planted in combination with climbing beans and pumpkin for ground coverage. This is still being practiced by smallholders in some parts of Mexico.

- Perennial crops are used so as to restrict tillage to an absolute minimum.
  Some perennial grain types are more resilient during dry periods. The US Land Institute has been conducting studies on this subject since the middle of 1970 (landinstitute.org).

- Symbiotic animal husbandry, e.g. pigs and poultry.
  Animal husbandry within the same space protects chickens from the fox and keeps pigs parasite-free. Gut Herrmannsdorf near Munich/Germany provides an economically viable example. (herrmannsdorf.de)

PERMACULTURE IN PRACTICAL APPLICATION

In Germany, permaculture is widely practiced in private gardening, while in the UK, permaculture is very popular among smaller self-sufficient farming cooperatives, but also the Urban Gardening movement evolved from the principles of permaculture. In the US and Latin America, several agricultural enterprises have been practising permaculture on a professional level. Jerome Osentowski from Colorado...
designs glasshouses that operate without fossil fuels. The Permaculture Research Institute in Australia has registered more than 2,200 permaculture projects all over the world (PermacultureGlobal.org/projects).

PERMACULTURE IN BIODYNAMIC FRUIT CULTIVATION IN SPAIN: Jelanisol and Montebello

Over five years, Friedrich Lehmann, owner of lehman natur with headquarters in Germany, has gradually integrated permaculture elements into the cultivation strategy for his Demeter-certified 50-ha Finca in Andalusia. One of the main objectives was the improvement of fertility by introducing a special composting method and the use of microorganisms. New fields were planted along the ground’s contour lines so as to limit erosion damage and as a natural wind barrier. Nurse crops and permanent ground cover were to enhance these beneficial effects. Moving trickle irrigation underground has already reduced water consumption by 25%. Increasing biodiversity was another objective. In order to achieve this, an eight metre high hedge was planted so as to provide wild animals and insects with a natural habitat. In some areas, fruit trees are cultivated in a polyculture fashion, orange trees and avocado trees intermittently, but more recently, Lehmann started mixing kumquat with pomegranate trees.

In 2014, Lehmann acquired a second Finca with 100 hectares. Gradually, the former cultivation of organic oranges practiced there will be enhanced according to the aspects of permaculture. Prior to the planning stage, the location was evaluated for its potential. In a planning workshop, the ten participants discussed the suitability of different crops and cultivation plans from different perspectives. The main requirement was to change the former monoculture into mixed cultivation while preserving the existing orange trees.

Based on the principles of organic farming, Friedrich Lehmann and his team compiled the “lehman natur Permakultur Produktionsgrundlagen” (permaculture production guidelines), which document and explain their take on permaculture for the company, the producers, retail and consumers (lehmann-natur.com/permakultur).

Basic elements of this document are:

- Soil conservation and build-up by means of gentle tillage, cultivation along ground contour lines (whenever viable), use of compost and ground cover etc.
- Improvement of biodiversity by planting hedges, wild herbs, mixed cultivation etc.
- Water-saving and water-collection measures

Thanks to cooperation with the Centre for Agroecology, Water and Resilience at Coventry University, Friedrich Lehmann’s fincas have become a subject of academic research. The British research centre documents and evaluates the effects of permaculture on the three pillars of sustainability: (1) Environment, (2) Economy and (3) Society.

CHALLENGES

Based on our experience, permaculture is faced with the following challenges:

- Permaculture requires a high level of expertise, observation skills and patience
- Evaluation and planning are very complex, participatory, multi-stage processes that require great care as they provide the groundwork for long-term investment. The input and consultancy of experienced permaculture experts is strongly recommended.
- Mixed cultivation means that mechanisation and crop protection are more difficult.
- There is a lack of standard machinery for permaculture such as direct planters, no-till or low-till care systems.
- Planting sustainable elements such as hedges may be difficult or even impossible on leaseholds.
- Compiling economic or practical budget figures is difficult due to a lack of documented experience and data.

CONCLUSION: PERMACULTURE AS A TOOL FOR EVALUATION AND PLANNING

Careful observation and evaluation of the location are the cornerstones for successful production planning with permaculture. The objective is to identify and maximise the potential of the relevant location. This involves harnessing synergies and services rendered by nature i.e. optimising operations according to natural principles. Economic and practical aspects also play an important role. Permaculture can be seen as a structured evaluation and planning tool which is suitable for every cropping farm, independent on the cultivation type. It will help harness resources in a more efficient manner and increase both the efficiency and resilience of the cultivation.

Translation: Andrea O’Brien
First published: Lebendige Erde, Nov/Dec 2016, by Demeter e. V.

Dr. Immo Fiebrig is a Research Fellow at the Centre for Agroecology, Water and Resilience (CAWR), University of Coventry (Immo.Fiebrig@coventry.ac.uk)

Marion Buley is an agricultural engineer, economist and permaculture consultant (Marion.Buley@t-online.de)