



**DYNIVERSITY**

# **Kultursaat e.V., Association for Biodynamic Breeding**

## **(Germany)**

### **Case study analysis**

**DYNAmic seed networks for managing European diversity:  
conserving diversity *in situ* in agriculture and in the food chain**



DYNIVERSITY project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n. 773814

# PART 1: DESCRIPTION

## 1.1 Contextualising the case

Kultursaat e.V. - which could be translated as “culture-seeds” - is a German non-profit organization with headquarters in the region of Hessen, Germany. It emerged from a group of pioneering biodynamic vegetable producers engaged in saving seed of their own open-pollinated (OP) varieties as early as the 1950s; these producers founded the Circle for Biodynamically Produced Vegetable Seeds (“Initiativkreis für Gemüsesaatgut aus biologisch-dynamischem Anbau”) in 1985. The initiative’s objective was to coordinate and share the efforts for biodynamic seed production and breeding. In the beginning the seeds were marketed via Allerleirauh GmbH, and from 2001 on by the company Bingenheimer Saatgut. In 1994, the non-profit association Kultursaat e.V. was founded, with the mission to foster the development of biodynamic vegetable varieties through breeding.

Both the seed company “Bingenheimer Saatgut” and the non-profit “Kultursaat” are based in Bingenheim in Hessen. Almekinders and Jongerden (2002) give a detailed overview of how these two organisations developed jointly and how they are closely connected. Today, Kultursaat e.V. has close to 400 members and an annual budget of about 1.3 M €.

Kultursaat e.V. and its partners have emerged out of the biodynamic agriculture movement and focus on biodynamic breeding, i.e. breeding under biodynamic conditions and according to biodynamic selection criteria, as explained in detail in the following sections. However, its varieties and general approach address the broader organic agriculture movement.

## 1.2 « Doing »

### 1.2.1 Properties WITHIN the initiative (closure)

The activities of the organisation are oriented towards 4 main objectives:

- 1) Conserving historic OPVs is considered the basis of Kultursaat’s breeding work, as on-going and future breeding work depends on the availability of OPVs to cross with and select from. Historic OPVs that are well adapted to today’s commercial organic vegetable gardening are taken into Kultursaat’s conservation programme (“Erhaltungszuchtbank”) to be maintained on organic or biodynamic farms and to be made available to home gardeners and professional vegetable producers.
- 2) Breeding new varieties is based on the combination of market gardening and the conservation of OPVs on biodynamic farms. For Kultursaat, positive mass-selection of promising plants within large populations of an OPV is a method of choice. This can be done either by strictly selecting for desired traits within a population, as for the prominent carrot-variety ‘Rodelika’ or by multiplying a promising off-type individual. Crossings are usually made only for self-pollinating crops like tomato. Particular focus is set on adaptation to organic cropping conditions and excellent taste.
- 3) For transparency, the breeding work is published, i.e. information on varieties and how they are bred is made available to anyone through field visits and documentation. This is based on the conception that the main objective is not financial benefits, but the development of nutritious vegetables.
- 4) Breeding research is focussed on ways in which variability within a species or crop type can be generated, apart from crossing. This is based on the observation by biodynamic researchers that sounds, biodynamic preparations, sowing date or eurythmy may affect plant growth and morphology in a heritable manner, without affecting DNA. Breeding research of Kultursaat breeders is aimed at using such processes in vegetable breeding.

### 1.2.2 Properties BEYOND the initiative (outreach)

Kultursaat makes varieties available on the European market by applying for national variety registration and by this for registration in the EU Common Catalogue of varieties of vegetable species. To date, 110 varieties from 37 crops have been registered, of which 19 were already existing varieties which performed well under organic conditions (Kultursaat’s “conservation” programme) and 91 are newly bred varieties. 11 varieties are currently in the process of registration.

In Germany, Switzerland and the Netherlands, seed producers for the Kultursaat-varieties are still grouped within the initiative circle from which the breeding initiative emerged. While at the beginning, Bingenheimer was the only seed

company granted licenses to produce and market seeds of Kultursaat varieties (Almekinders and Jongerden, J. 2002), five other European seed companies guaranteeing biodynamic production are now granted licenses in Italy, France, Austria, Switzerland and the UK. These partners do not pay compulsory royalties or licence fees, but a voluntary contribution to support Kultursaat's breeding work.

### 1.2.3 Transformative effects beyond the initiative

Open-pollination, adaptation to today's organic cropping conditions and improving nutritional quality including taste are the main focuses of Kultursaat. The choice of open-pollination enables farmers and gardeners to save their own seed. This is particularly relevant when taking into account that Kultursaat has focused on breeding OPVs of crops for which nowadays mainly F1-hybrids are being grown: cabbages, carrots, tomatoes, peppers, sweet corn, leeks, red beets and spinach.

## 1.3 « Organizing »

### 1.3.1 Properties WITHIN the initiative (closure)

The breeding work of Kultursaat is conducted by about 30 breeders, based on 22 farms. Most of them are located in Germany, with one breeding nursery in the Netherlands and two in Switzerland. Among these farms, 14 combine vegetable production with seed production and breeding, while 8 exclusively breed and produce vegetable seeds.

Kultursaat supports these breeding programmes financially. Currently, about 75 % of the breeders' programs are being funded; some breeding research is conducted in the framework of partnerships supported by national funding, such as that coming from Federal Agency for Agriculture and Food. Such projects are usually funded for 36 months; partners are industrial companies, universities and Federal Research Centre units. Since 2000, more than a dozen federally funded projects have been successfully carried out on broccoli, Italian chicory, white, red and Chinese cabbage, carrot, garlic, lettuce and parsnip.

Further along the breeding process, the legal ownership for promising vegetable populations developed by the breeders is transferred to Kultursaat. The organisation then comes up for the costs and responsibilities of registering and maintaining varieties.

### 1.3.2 Properties BEYOND the initiative (outreach)

Two years after the foundation of Kultursaat, an "amicably linked" seed-fund was created by the GLS Trust based in Bochum, which is now managed by the foundation "Zukunftsstiftung Landwirtschaft" (Krautkrämer 2016). Starting off with a budget equivalent of 71.600 € (140.000 Deutsche Mark), thanks to repeated donations by 2018 it was funding biodynamic and organic vegetable, cereal and fruit breeding programs with 1.17 million. Of this total sum, 475.000 € went to Kultursaat for vegetable breeding. According to Krautkrämer (2016), this long-term financial support has allowed for the registration and release of over 70 new vegetable varieties by 2016. The support from other funding sources have started complementing Kultursaat's budget over the years, with in particular the Association of Organic Processors, Wholesalers and Retailers ("BNN") in partnership with the foundation "Software AG". This project connects 33 individual Kultursaat projects with two projects of the organic vegetable breeding association "saat:gut" and has been initiated in order to intensify already running breeding activities over five years (2015 to 2019).

The initiative circle-out of which Kultursaat had originally been created, continues to meet twice a year, to share and exchange knowledge and know-how among and beyond Kultursaat breeders. The observation of crops and practical issues are discussed at the annual summer meeting, while the yearly meeting in winter is dedicated to more theoretical issues, societal and political. The general assemblies of the seed company "Bingenheimer Saatgut" and the non-profit "Kultursaat" are held back-to-back with the winter meeting of the initiative circle, testifying to the overlap of people and activities.

Instead of intellectual property rights (IPR), Kultursaat asks its seed producing partners to pay a voluntary sum to support the maintenance of the varieties they are marketing. Beyond seed producers, Kultursaat also relies on partners who distribute vegetable products, which helps to raise awareness among organic consumers (see the "Gemüse mit Charakter" initiative).

"Gemüse mit Charakter" (Vegetables with Character) is a communication concept developed by Kultursaat and its partners involved in vegetable distribution as a way to sensitize consumers about biodynamic breeding. Facing the challenge of raising awareness on this complex and technical topic without drowning non-professional target groups in factual information, an analysis of the knowledge situation and an expert survey were conducted between 2002 and

2004. These resulted in the idea of sensitizing consumers to biodynamic breeding through the experience of taste. After a planning phase, the concept of variety marketing – already common in produce like wine, apples or potatoes, but never applied to other vegetables – was launched in pilot shops. Rather than just selling carrots, distributors differentiated among three different Kultursaat varieties – intensively aromatic ‘Rodelika’, nutty-mild ‘Robila’ and juicy-fresh ‘Milan’. The pilot-phase was considered a success by all involved partners and granted attention with the prize for “Recommendation of the year” at the 2005 edition of the German organic trade faire “BioFach”. The concept was thus extended to four varieties in 2006 (pepper, lettuce, spinach and cabbage), four more in 2007 (pumpkin, iceberg lettuce, red beat and carrot) and finally one parsnip variety in 2010. Specific labels for vegetable crates, information sheets for shop owners and employees and information leaflets for customers are among the communication material which has been developed. A more in-depth booklet on biodynamic breeding is available for people wanting to go into further technical detail. Organic grocery stores have seized the marketing initiative as a means to put forward their specialization in the domain of vegetables and specific training sessions for shop staff have been organised, as well.

### 1.3.3 Transformative effects beyond the initiative

The 110 varieties that have been registered and are being maintained by Kultursaat broadened the offer of vegetable OPVs bred for organic market gardening, first for farmers in Germany (through the seed company “Bingenheimer”), then in five other European countries.

The dense network of actors from the biodynamic and broader organic scene – from trusts and foundations to wholesalers and grocery stores to consumers – that Kultursaat has assembled around biodynamic breeding allows the initiative to raise significant funds and rely on a good level of awareness across these actor groups.

## **PART 2: ANALYSIS**

### **2.1 Knowing**

#### 2.1.1 Properties WITHIN the initiative (closure)

Crops and varieties are considered a cultural common good. Therefore, responsibility (“Verantwortung”), i.e. caring for and maintaining OPVs, is stressed and practiced, as opposed to claiming intellectual property rights (Krautkrämer 2016).

Breeding processes supported by Kultursaat mobilise forms of knowing which are specific to biodynamic agriculture and the anthroposophical worldview, mainly based on research and writings of Rudolf Steiner and Johann Wolfgang Goethe. This includes picture-forming methods (an assessment based on the comparative visual analysis of the pattern of the crystals formed by mineral salts in contact with a given sample, Geier n.d.) and the perception and observation of formative forces (Schmidt and Martin 2013) as a way of assessing the vitality and quality of breeding material. “Vitality” is a central concept in the biodynamic approach to plants and refers to the living forces of plants and other living beings (Taupier-Letage 2009).

#### 2.1.2 Properties BEYOND the initiative (outreach)

With the aim of making a wider range of genetic vegetable diversity adapted to organic growing conditions available to growers, Kultursaat pursues a strategy of aligning its breeding efforts and variety releases with the criteria of distinctiveness, uniformity and stability (DUS) related to official variety registration. The variety registration has made Kultursaat varieties accessible to European vegetable growers. With the spread of these varieties, the recognition of the association, its breeding scheme based on biodynamic cultivation and its competences has risen.

Awareness for the biodynamic breeding scheme practiced by Kultursaat is spread among organic grocery store staff and organic consumers through the “Gemüse mit Charakter” program described in sub-section 1.3.2. Shops and consumers are encouraged to support biodynamic breeding, as opposed to conventional breeding programs of multinational companies, by respectively carrying or buying vegetables grown from Kultursaat varieties.

#### 2.1.3 Transformative effects beyond the initiative

The organization opts for a “holistic” approach to plant breeding, which relies on the naturally present diversity within crops, growing environments, and the effects of “cosmic rhythms” and biodynamic preparations to shape crop varieties. The organisation places human perception and the interaction between crops and humans at the centre of vegetable breeding and rejects breeding techniques which interfere at the cell level, including induced mutagenesis, *in vitro* and

tissue culture.

## 2.2 Framing

### 2.2.1 Properties WITHIN the initiative (closure)

Based on the basic principle of organic agriculture, and biodynamic agriculture in particular, that a farm is to be considered as a living organism founded on cycles – of matter, nutrients, energy and life processes – Kultursaat identifies reproducible OPVs as a need for organic and biodynamic farmers. The organisation therefore sets out to provide commercial organic vegetable growers with OPVs adapted to organic farming conditions, through biodynamic breeding and variety conservation programs.

Beyond the question of open-pollination and adaptation to organic growing conditions, Kultursaat's breeding programs also places a focus on the quality of vegetables. This includes "harmonious" development of the plant, as well as typical and intense taste and nutritional quality, including vitality, an energetic concept which is specific to biodynamic agriculture, as described in sub-section 2.1.1.

### 2.2.2 Properties BEYOND the initiative (outreach)

Sub-section 2.1.2 describes how the organic value chain is involved in raising awareness for and supporting the biodynamic breeding efforts of Kultursaat. Breeding and crop diversity is framed as the responsibility of humanity, as opposed to a model where a small number of multinational companies take responsibility – and control – of varieties that are dominant on the market.

Among the tools used to inform and sensitize the broader public, Kultursaat's website contains a considerable amount of information, structured in a way that allows the reader to get informed and educated about the biodynamic perspective on vegetable breeding.

### 2.1.3 Transformative effects beyond the initiative

The specific needs of organic agriculture for robust, high quality vegetable varieties constitutes both a starting point and a path to develop a breeding network and model expected to bring more genetic crop diversity into market gardening. This model opposes the globalized plant breeding schemes of multinational corporations oriented towards obtaining intellectual property rights to maximize financial benefits.

## 2.3 Networking

Two main bridges that support networking have been identified in the case of Kultursaat, which are further developed below, in the summary.

1) A shared worldview based on biodynamic agriculture has allowed for the establishment of a dense network of actors, from funders to consumers, around biodynamic breeding. Within this network, Kultursaat has been able to effectively fund breeding programs and provide newly bred varieties to vegetable growers.

2) Within the "Gemüse mit Charakter" marketing initiative, the vegetables grown from Kultursaat varieties, and their taste in particular, have been used to gain consumers interest for biodynamic breeding and broader seed issues.

## **PART 3: SUMMARY**

From the early stages, Kultursaat has been embedded in a network of actors – funds and foundations (Zukunftsstiftung Landwirtschaft, Software AG), a seed company (Bingenheimer) and seed producers (Initiativkreis) – who share a

worldview stemming from a background in biodynamic agriculture and broader anthroposophy. This network has helped both in generating funds for breeding programs and producing and marketing seed of newly released varieties. In a second stage, this network was extended to the value chain of organic vegetable produce, again basing the partnership with organic wholesalers and grocery stores on a shared vision of what an ideal organic value chain should look like, starting from the seeds and varieties used. Therefore, in the case of Kultursaat, shared values and worldviews stemming from biodynamic agriculture have been a facilitator for networking and successful breeding programs.

In the framework of the “Gemüse mit Charakter” marketing initiative, the marketed vegetables themselves, and their taste in particular, has been used as a support for communication with both wholesalers (Zukunftsstiftung Biomarkt, see part 1.3.2) and final consumers. Opting for the sensory experience of taste as an entry point, rather than factual information on breeding processes and techniques that is difficult to summarize and communicate effectively, seems to have been a successful choice for awareness-raising among the general public.

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