

Open Source Seed Networking: TOWARDS A **GLOBAL COMMUNITY OF SEED COMMONS**

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PREFACE

Diverse and robust seed systems are central to sustainable food systems. Yet at present, seed diversity is still decreasing dramatically, mainly as a result of the intensification of industrial agriculture. The Food and Agriculture Organisation of the United Nations estimates that 75 percent of agricultural biodiversity has been lost in the last century. This has a great impact on our food systems, vastly diminishing the variety of crops grown.

In addition to loss of diversity and climate change, there is also a grave power imbalance in the global seed market, which is dominated by only a few companies. Together, the four biggest companies control 70 percent of the worldwide seed market. They decide what is produced and which innovations will be invested in. In many countries, governments develop seed policies and legislation, introduce intellectual property rights and mandate certified seeds that benefit large seed companies. As a result, the crucial role farmers and local breeders have played in (informal) seed systems is being undermined. This is a major worry especially for farmers who cannot afford certified seeds and have always relied on exchange and on-farm saving of seeds. In Kenya for instance, this applies to 80 percent of all farmers.

Hivos strives for an inclusive, open system in which farmers have access to a broad array of seeds that grow into nutritious and resilient crops. In this system, farmers and breeders are legally supported in their free choice in seed selection and actively engaged in knowledge and innovation. We believe that especially in times of climate change, we need the innovation capacity and knowledge of the many – and not rely only on a few companies – to ensure a healthy diverse seed / food system.

As an outcome of a 3-year exploration with a group of leading CSOs on the challenges and opportunities to scale agro-biodiversity, Hivos developed its Open Source Seed program. With it Hivos aims to create support for open source seed systems, spark debate and inspire national initiatives to increase the resilience of seed systems. This solution-creating program focuses on the full availability of diverse and climate resilient seeds. Thereby, farmers, local breeders, ethical seed companies, (local) governments – that together constitute the seed system – are empowered to contribute to an equitable, resilient and healthy food system. In 2016 Hivos and Bioversity International joined forces in East Africa. Now, two years later, we see a growing interest in Open Source Seed.

Early this year Hivos requested Martin Pedersen and Nina Moeller to put the different existing and emerging initiatives into perspective. This report provides a clear overview of the current state of affairs: what is Open Source Seed, what is happening on the ground, what are the results so far and what are the open questions.

We hope the report will not only provide readers with information but also inspire people to develop their own Open Source Seed initiative building on the ideas and direct contacts provided here. Join the emerging global community of Open Source Seed initiatives so that we can learn, exchange and develop new knowledge on Open Source Seed initiatives, together!

Hivos would like to thank Martin and Nina for their endless efforts to ensure that the content of this report is clear, correct and inspiring. They have become indispensable members of the growing global community.

**Carol Gribnau, Director Green Society Program,
Hivos**

**WE INVITE YOU TO HELP
CREATE A GLOBAL OPEN
SOURCE SEED COMMUNITY,**
ensuring the free flow
OF PLANT GENETIC MATERIAL
IN ORDER TO *increase*
biodiversity

INTRODUCTION

In recent decades the successes of Free Software principles and Open Source methods, which resulted in the creation of a multitude of local and global software commons, have inspired creative social organisation and community building in a variety of other domains and been instrumental in the cultural mind shifts associated with the so called sharing economy. Perhaps surprisingly, Free Software principles and Open Source methods are currently gaining traction among seed saving and plant breeding practitioners for the purposes of creating seed commons. As we shall see, such adaptation is important in a variety of ways and reflects that 'open source' constitutes a new paradigm of social organisation, innovation, development and distribution (cf. Weber 2004).



Over the last ten years a number of Open Source Seed projects have seen the light of day and grown into an informal, global network of seed sharing groups, plant breeders, gardeners and concerned citizens who are working to create seed commons of various kinds. Two are fully established (in the U.S. and Germany), several are in formation (Argentina, India, Kenya, Uganda), and there are potentially many more to come out of on-going conversations in other places.

The next step is a global community meeting, tentatively planned for 2019, at which further collaboration and networking – or commoning – will be explored. For instance the creation of a website (Open SourceSeed.net?) could be imagined, for the purposes of documenting the initiatives' respective and place-specific adaptation of Free/Open Source software principles and methods to the domain of seeds, in order to create a platform for exchange, for cross-cultural learning, mutual support and policy analysis.

In this report we explain these principles and methods, including the relevant legal mechanisms at play and how they differ in the domain of seeds from the domain of software. Next, we present a selection of seed commons in the making with further references to social organisation and the challenges of consolidating seed sharing and plant breeding networks into a global Open Source Seed community. This will provide a comprehensive overview that will be useful for funders and current and future creators of seed commons.

We invite you to help create a global Open Source Seed community, ensuring the free flow of plant genetic material in order to increase biodiversity, enhance resilience to climate chaos, and maintain a healthy, dynamic gene pool of useful and beautiful plants to adorn the landscape and our gardens, parks and dinner tables. Seed commoning is at the heart of human subsistence and that is why it is far too important to leave to corporate culture with its maxim of profit over people and the environment.

Help sow the seeds of a common future!

1. BACKGROUND: SEED FREEDOM

Plants are necessary for animal life on the planet: they are the source of the oxygen we breathe, can provide the food we eat, the clothes we wear, the shelters we build, and the fuel we need for heating homes and cooking foods (cf. Pyne 1995). While not all plants reproduce by growing seeds that are dispersed by winds, insects, animals and chance generally, any plant or life form contains the metaphorical seeds of its own and its kind's continued survival. Seeds, in that sense, are essential for human life.

From the dawn of agriculture successful domestication of plants has relied on selecting, saving, storing, sharing, and planting of seed. Farmers have always been plant breeders. Each bioregion had its own plant selection on the table. Developed and maintained by farmers, these 'landraces' were and are adapted to the local particularities of the landscape, soil and weather.

Over the last century, this situation has been changing. The relation between farming and breeding, between the farmer and the seed, between people and the soil, has too often been severed. The rise of scientific-industrial plant breeding from the late 19th century onwards, the advent of hybrids in the 1930s, seed regulations instituting certification requirements and quality standards have gradually marginalised practices of informal seed systems. Genetic modification and intellectual property rights have further consolidated the industrial food and agriculture systems

now dominant across the globe. This has meant an erosion of subsistence farming and a loss of seeds and sharing traditions. In the book 'The Law of The Seed' we find a useful and sobering summary:

"It is estimated that some ten thousand species have been used for human food and agriculture. Currently no more than 120 cultivated species provide 90% of human food supplied by plants, and 12 plant species and five animal species alone provide more than 70% of all human food. A mere four plant species (potatoes, rice, maize and wheat) and three animal species (cattle, swine and chickens) provide more than half. Hundreds of thousands of farmers' heterogeneous plant varieties and landraces, that existed for generations in farmers' fields until the beginning of the twentieth century, have been substituted by a small number of modern and highly uniform commercial varieties. The loss of agricultural biodiversity has drastically reduced the capability of present and future generations to face unpredictable environmental changes and human needs.'

(Seed Freedom 2013)

Dominant modes of agriculture, food production, processing and distribution are not only increasingly concentrated in the hands of few corporations, the global food system is also severely polluting, the cause of malnutrition, inequitable, and unjustifiably wasteful; and in the face of climate chaos and severe environmental degradation, its failings are particularly stark (Amin & Holt-Gimenez 2011).

In a world where 148 million under 5 year olds in developing regions are underweight for their age (UNICEF 2010), approximately 2 billion people are overweight and 600 million are obese (WHO 2014; doubled since 1980), where metabolic and auto-immune conditions are reaching epidemic proportions, the food system urgently needs to change.

Peasant farmers, independent and small-scale breeders and seed saving networks, as well as NGOS, researchers, ethical seed companies, policy makers and ethical consumers are important agents of such change under a variety of banners – including food democracy, food sovereignty, agroecology, permaculture and real food movements. A radical transformation of food and agriculture systems must be central to a more-than-sustainable future, and such a transformation necessarily includes asking questions concerning the socio-legal organisation of breeding and the saving, sharing and selling of seeds and other plant genetic material.

This report presents an emerging Open Source Seed network consisting of self-organised plant breeding and seed sharing/selling communities that aim to retain and regain freedom to act in a now highly asymmetric legal landscape. These networked initiatives and projects have created or are aiming to create seed commons based on Free Software principles and Open Source methods. Collectively, they explore how the freedom to save, share and access seeds can be ensured in perpetuity with a view to (re)establishing seed commons as crucial building blocks in the wider struggle for access to diverse and healthy food.

In order to further these networking and community building processes a series of global meetings will be helpful. Consolidating the network and creating spaces for important exchanges will also permit brainstorming future activities, such as the creation of a virtual discussion group and a website, for documentation, skill and knowledge sharing between existing and future seed commons; collaborations on policy analysis and proposals, as well as collective bids for research and development funding. Wherever the path may lead, a global seed knowledge commons is emerging.

2. COMMONS

Commons are likely to have always existed in human communities. Most obviously and perhaps anciently, commons would be constituted by people and the landscapes they inhabited with other beings, and they would be structured by more or less explicit cultural rules, habits, customs, and traditions which would organise the way in which certain things (fire wood, water, berries, animals) could be - or could not be - taken from a certain place at a certain time. Often misunderstood as resources to which everyone in a community has open and unlimited access, commons are accurately understood as rule- or norm-based, active relations between people and between people and resources (or goods), enacted by practices of commoning: collective work, shared resources, distributed rights and duties (Ostrom 1991). Communities and commons make each other, and their shared values take form in – and are continuously modified through – acts of commoning (Linebaugh 2008).

Processes of colonialism and capitalism have been successful not least due to the way in which they appropriated collectively managed resources to their own ends. Sometimes people were violently dispossessed of the produce of their commons, sometimes the commons themselves were enclosed and access to them privatised. Sometimes they were enclosed from within, when mercantile ideas from the outside took root (cf. Thompson 1991). When separated from their commons, people's opportunities for autonomous subsistence and self-determination are undermined - if not destroyed - and, necessarily, a dependence on external food systems created. Reclaiming commons in different fields of life today is perhaps the

most important way in which a 'more-than-sustainable' future is being built.

While an ancient practice, sharing resources in common has gained much traction in many new settings: factories and companies, urban gardens, squatted land, by contemporary social movements such as the Landless Workers Movement of Brazil (MST), Free Software hackers, self-managing workers collectives, neighbourhood gardening groups and many more. Commons have in recent decades also attracted much academic attention in political economy, management and design studies, philosophy, law and beyond, as well as from NGOs, policy makers and politicians. Commons are defended, created, recreated, envisaged, and experimented with across a vast spectrum of sectors and geographies and scales.

A widely influential way of reclaiming commons that has inspired many people is the Free Software movement's use of copyright in order to enhance rather than restrict access, use, modification/improvement and redistribution. Known variously as copyleft, open source, or simply free software, it is a social-legal hack that has been adapted to defend other kinds of commons than software, such as seeds (see text box on page 9).

How exactly to reclaim, rebuild or perpetuate particular commons throws up many practical challenges, questions and conundrums. In this report, we draw attention to, and hope to inspire collective reflection on some of these core questions with regard to seed commons, in order to find collective answers.

Access to a Common Good

OPEN SOURCE

The term 'open source' is derived from the domain of computer software. It refers to perpetually free and open access to computer source code facilitated by a clever hack of copyright, which is an intellectual property right (IPR). Open source developed as a response to the threat IPRs posed to the free use and exchange of source code that is at the heart of the hacker community's customs of sharing. Similar legal frameworks threaten the free use and exchange of seeds – mainly in the form of Plant Variety Protection and patents – which has led a number of seed activists to translating the successful open source concept.

Open source, essentially, ensures continued access to a common good by protecting it against privatisation. It is a development of the Free Software principles first articulated in the GNU General Public License (1989) by Richard Stallman. He established the Free Software Foundation (FSF) in the belief that developers and users of computers should always be allowed to investigate how software works and be able to modify and share their work freely with others. Source code contains the information (algorithms, mathematical expressions, text etc.) that are the building blocks of software and without access to the source code a software application is a black box technology that cannot be properly analysed, modified and redistributed in an improved version.

Stallman defined four conditions ('freedoms') required for software to be considered 'free':

- The freedom to run the program as you wish, for any purpose (freedom 0).
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1).
- The freedom to redistribute copies so you can help your neighbour (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3).

In order for software not just to be free, but also remain free in a way that is legally enforceable, the four freedoms of software were articulated in the GNU General Public License (GPL). The GPL is in effect a contract that defines general

business terms and conditions, and rests on and extends the rights defined in copyright law. The GPL ensures that any further and future developments of software code (based on the four freedoms) remain free and open source by obliging developers to pass on their newly developed code with the same rights as they themselves enjoyed in the first place. The method of using copyright to build commons Stallman cleverly called 'copyleft'.

Copyleft turns on the GPL as a contractual agreement between parties in extension of – or as a sub clause to – existing copyright, which by law is automatically assigned to the creator/publisher of software (as is the case with all other literary works, such as a novel or a recipe book). Any user of GPLed code has the duty to pass on the very rights that s/he received if they modify that code and publish the resulting work. If the rights are not passed on, they fall away due to breach of the contract; and basic copyright comes back into play – in the moment you breach the copyleft contract, you become a copyright trespasser – effectively leaving the user with no rights of use and basically no legally sanctioned access at all. Thus, the code and the freedoms become inseparable and that principle, much to the dismay of Stallman, has been called the 'viral clause', because the freedoms 'spread' with the code like a virus.

In other words, copyleft ('all rights reversed') transforms the original purpose of copyright ('all rights reserved') to ensure software freedom in perpetuity.

The copyleft principle of Free Software, now popularly called Open Source, has since been used in many other domains, including seeds, and become a meme indicative of a new zeitgeist of sharing and collective self-organisation. Open source is also sometimes used as a verb, signifying the act of rendering something open source that was hitherto organised (owned) differently: we take as a point of departure that in principle everything can be 'open sourced', but that some things are probably better organised privately/exclusively, such as underwear, toothbrushes and sleeping spaces.

3. A COMMUNITY OF SEED COMMONS AND SUPPORTERS

While they once were the foundation of a diverse and regionally adapted agriculture, many seed commons have disappeared as industrial, commercial practices have replaced traditional agricultural production.

This report reflects on the Open Source Seed phenomenon, which is best understood as recreating seed commons. This is not to imply that there aren't other functioning seed commons in the world, some traditional, some recently initiated. The seed commons we present here, however, are all inspired by Free Software and Open Source and are on their way to form a network for collective reflection on how to build, grow and defend seed commons each in their particular legal, social and ecological landscapes. If your Open Source Seed commons or forming or supporting initiative is not mentioned in this report, please get in touch.

There are two fully formed and operational seed commons (at the time of writing), the Open Source Seed Initiative (OSSI) in the U.S. and Agrecol's OpenSourceSeeds in Germany. They are presented and selectively discussed below with reference to key decisions in the framing of the projects and the general challenges of creating seed commons. Further and necessary details can be found on their respective websites, where more complete information is available.

Before looking at these operational seed commons, however, we briefly introduce a series of initiatives that are working towards creating seed commons. They are in various stages of development and their unique experiences offer fresh perspectives on the insights and principles upon which the established

seed commons rest. With each new iteration of adapting Free Software principles and Open Source methods to seeds (and plant genetic material generally), those principles and methods are refined, refracted and reworked according to the unique local (environmental, social and legal) conditions. As such, the processes of community building diversify and strengthen the core idea of Open Source Seed.

Careful research on the cultural, social, legal and political background, including regulatory mechanisms, is not merely prudent with regards to feasibility – i.e. Would Open Source Seed be a helpful, constructive addition to the food system diversity of a given region? – but will also help define and consolidate the network that would be involved in a seed commons. While commons can spring from the idea of one person (such as was the case with Free Software), commons could never be realised without an engaged network of grassroots groups, communities and organisations. Commons grow best from the ground up.

To avoid confusion take note that we refer to the concept of open sourced, freed seeds as 'Open Source Seed' in the singular, while the German based Open Source Seed commons is called OpenSourceSeeds, written as one word, but in the plural.

INITIATIVES TOWARD OPEN SOURCE SEED COMMONS

Open Source Seed India

The project is coordinated by the Centre for Sustainable Agriculture with the aim to develop an alternative institutional and legal framework to pro-

protect farmers' rights and access to seed based on Free Software principles and Open Source methods.

Objectives of the project:

- Develop a legal mechanism using Material Transfer Agreements for Open Source Seed sharing
- Establish an 'Open Source Seed Foundation'
- Develop a mechanism for data collection on Value for Cultivation and Use (VCU) (including market potential) of various farmer varieties developed through Participatory Varietal Selection
- Collect and document data on VCU and market potential of selected farmer varieties

Open Source Seed India has done extensive background research and conceptualisation work, outlined in their comprehensive (and very informative) report 'Building Open Source Seed Systems', which can be found on their website: <http://csa-india.org/what-we-do/open-source-seeds/> and which will be helpful for budding seed commons elsewhere.

Open Source Seed Systems in East Africa

A network of stakeholders, NGOs and international institutions have been exploring and moving towards the implementation of Open Source Seed Systems in three East African countries: Kenya, Tanzania and Uganda. The network includes Genetic Resources and Research Institute in Kenya; Seed Savers Network Kenya; National Plant Genetic Resources Centre of Tanzania; Tanzania Organic Agriculture Movement; Tanzania Alliance for Biodiversity; Plant Genetic Resources Centre of the National Agricultural Research Organisation, Uganda; Bioversity International; Sustainable Agriculture and Natural Resource Management Africa; and Hivos.

Organisational and financial support has been provided by, amongst others, Open Society Foundation; and the Benefit Sharing Fund of the International Treaty on Plant Genetic Resources for Food and Agriculture.

A series of meetings and workshops, combined with background research under the project titles 'Promoting Open Source Seed Systems for Beans, Forage and Legumes, Millet and Sorghum for climate change adaptation in Kenya, Tanzania and Uganda' and 'Seeds are the Soul of our Food Systems: building Open Source Seed Systems in Kenya, Uganda and Tanzania' have laid the foundations for Open Source Seed in East Africa.

Background research includes an analysis of current users, uses, and sources of seeds, based on data from surveys of approximately 1000 households in the three countries, as well as from focus group discussions with 120 farmers in Uganda. 'The surveys collected various farm- and individual-level data on household demographics; sources of bean, millet and sorghum seeds and their networks for access and exchange; sources of information on adaptation to climate change; and the varieties that are widely used for climate change adaptation', which is here summarised briefly:

'A high percentage of seeds in Kenya come from informal sources: 'own seed' (55%), followed by local market (37%), neighbours (25%), farmer groups (24%), and seed companies (15%). The most common sources of seed information were field days (68%) and agricultural shows (50%). In Uganda, the respondents reported 'own seed' as their main seed source (78%), then local markets (48%) and neighbours (12%). The main sources of seed information were radio talks (71%), agricultural research stations (54%), and agricultural shows (49%). Respondents in Tanzania reported 'own seed' as their main seed source (67%), followed by neighbours (24%), local markets (21%), and extension services (17%). Approximately 34% of Tanzanian respondents were affiliated with an agriculture-related organisation' (Recha & Recha 2018).

The following groups are leading the work on Open Source Seed in their respective countries.

Seed Savers Network Kenya

Seed Savers Network (SSN) is an organisation formally created in 2009 to frame, sustain and further the networking processes of 50,000+ farmers across Kenya. SSN facilitates a variety of programmes, which include seed saving at farm level, organic agriculture, capacity building and advocacy for food sovereignty, in order to improve access to seeds and strengthen agro-biodiversity conservation. Furthermore, SSN aims to satisfy the seed needs of associated farmers; create sustainable seed enterprises; promote practices of seed saving and the importance of conserving diversity in food crops; empower communities with skills, knowledge and attitudes regarding all aspects of seeds; advocate a favourable economic, social and legal environment for communities' efforts to realise seed security; and establish a vibrant network of seed conserving, seed sharing and seed exchange in Kenya. Special attention is also devoted to the empowerment of women.

Find out more about SSN on their website:

www.seedsaverskenya.org



REACHING OUT TO THE PUBLIC IS NOT ONLY *important for the obvious reason* THAT IT IS THE PUBLIC WHO, ULTIMATELY, CONSUMES WHAT **GROWS FROM THE SEEDS**

Tanzania

Two alliances are key in the Tanzanian Open Source Seed movement: Tanzania Organic Agriculture Movement (TOAM) and Tanzania Alliance for Biodiversity (TABIO).

TOAM is a registered NGO formed in 2005 as an umbrella organisation that coordinates and promotes the development of organic farming. TOAM has 115 members, which include various types of institutions and organisations such as farmers associations and cooperatives, NGOs, organic operators, companies, distributors, researchers and trainers.

Website: www.kilimohai.org

Formed in 2011, TABIO is an alliance of civil society and private sector organisations concerned with biodiversity conservation, with an emphasis on agricultural biodiversity for livelihood security and food sovereignty.

Website: www.tabio.org

Uganda

Open Source Seed Systems Initiative (OSSSI) in Uganda comprises a group of people that are working towards improving access to seeds for small-holder farmers. Bioversity International in collaboration with the National Agricultural Research Organisation (NARO) and HIVOS are providing access to a diversity of crops for climate change adaptation from both national gene banks and farmers' collections. The initiative has established a community seed

bank in Hoima for the conservation of farmers' varieties and links with 13 other community seed banks – nine in Uganda and four in Kenya in sharing and conserving crop diversity. The initiative is also working with farmers, breeders and the national seed certification unit to develop farmer capacity and create an enabling environment for the production of quality declared seeds (QDS) and registration of farmers' varieties.

To contact Open Source Seed Systems Initiative in Uganda, write to Gloria Otieno: g.otieno@cgiar.org

STEPS America Latina / Argentina

The ESRC STEPS (Social, Technological and Environmental Pathways to Sustainability) Centre - which is hosted by Institute of Development Studies and the Science Policy Research Unit (SPRU) at the University of Sussex - is a global consortium with hubs in Africa, South Asia, China, Europe, Latin and North America. It is called 'Pathways to Sustainability Global Consortium' and links theory, research methods and practice to highlight and open up the politics of sustainability. STEPS América Latina's mission is to make visible alternative visions and experiences of what sustainable and social development might mean in the region, and to help construct and support new, emerging pathways of change. In their portfolio of activities is a project on seeds.

STEPS América Latina is co-designing - with plant breeders and other stakeholders - an Open Source Seed license for the purposes of defending and

recovering a traditional culture of openness, sharing and collaboration associated with seed sharing and plant breeding. They have labelled their use of Free Software principles and Open Source methods 'Bioleft'. The aspiration is to open up spaces for people interested in increasing diversity and availability of plant genetic resources; in developing plant varieties adapted to many different agricultural settings; and in promoting diverse agricultural practices and production systems.

For detailed information, see the website at www.steps-centre.org/global/steps-america-latina

SEED COMMONS IN OPERATION

There are two fully operational seed commons and they are presented in chronological order: first the Open Source Seed Initiative in the U.S., which has inspired and catalysed the global Open Source Seed community building process, and then OpenSource Seeds in Germany, which has chosen a different socio-legal foundation for their project.

Open Source Seed Initiative in the U.S.

The Open Source Seed Initiative (OSSI) was formally established in 2012 and has since grown to be a successful seed breeding, sharing, and selling organisation. As of July 2018, OSSI comprises more than 400 OSSI-Pledged varieties of 51 species, 38 plant breeders, and 61 seed company partners. OSSI is registered as a not-for-profit 501(c)(3) organisation, and 'is dedicated to maintaining fair and open access to plant genetic resources worldwide in order to ensure the availability of germplasm to farmers, gardeners, breeders, and communities of this and future generations.' It is managed by a ten member board of directors who bring much research, development, management and breeding experience to the organisation.

Originally intending to develop a license with a text mimicking the seemingly secure anchoring in law that the GPL enjoys, OSSI shifted its framing of their project towards 'the simple Pledge'. They did so upon discovering the social, intellectual and cultural difficulties of navigating legalese to the satisfaction of all involved partners and the expectations of legal professionals. Another stumbling block was the near-impossibility of including (as is required for such a license) an expansive license text on/in each seed packet, which is often a rather small package bought for relatively little money. It is easy in the context of software, but with seeds it is another matter.

Legal uncertainty combined with the impracticality of

adding a long text - largely incomprehensible to most people, and requiring that text to be passed on with any further distribution of the seeds or their derivatives - were deciding factors in favour of letting go of the formal license. After extensive meetings and intense debates, frustrated with the absence of working solutions to realise the desire of Open Source Seeds, the group decided to turn to basic measures and adopt a short, straightforward 'Pledge.'

The text for the Pledge reads:

'You have the freedom to use these OSSI-Pledged seeds in any way you choose. In return, you pledge not to restrict others' use of these seeds or their derivatives by patents or other means, and to include this Pledge with any transfer of these seeds or their derivatives.'

This Pledge ensures the maintenance of what OSSI calls its 'Four Seed Freedoms':

- (i) The freedom to save or grow seed for replanting or for any other purpose.
- (ii) The freedom to share, trade, or sell seed to others.
- (iii) The freedom to trial and study seed and to share or publish information about it.
- (iv) The freedom to select or adapt the seed, make crosses with it, or use it to breed new lines and varieties.

The OSSI Pledge can be understood as a marketing tool, an outreach mechanism that taps into the power of a meme created by hackers, which appeals to a broad cross-section of society from urban guerrilla gardeners through independent breeders to companies and sustainability advocates. OSSI facilitates a networking process of individuals, groups, and organisations, coming together in acts of commoning, and creating a seed commons. The Pledge on that view is their brand and in reaching out to the public, OSSI calls their seeds 'freed':

Through its educational and outreach activities, OSSI creates awareness of the value of purchasing 'freed seed' and guides customers to its Seed Company Partners. OSSI is thereby creating a market for ethically produced, 'freed seed' analogous to the markets for 'fair trade' and 'organic' products. The term 'free' caused concerns and internal conflicts in the Free Software movement. It was seen by some as misleading and anti-business, since the idea of free (as in



freedom) is easily confused with the idea of gratis (as in no cost). Eventually this led to the split of the Free Software movement and the formation of the Open Source Initiative and the birth of the 'open source' meme by a focus on an engineering aspect, rather than a struggle for freedom. This anecdote is relevant because using the word 'freed' from the beginning sets a different tone in the debate. This is not something you can get for nothing, because it is free of cost, but it is something that has been liberated, and you can join the liberation movement. A freed seed tells a story of threats to biodiversity and the human habitat and becomes an agent of socio-cultural change.

Reaching out to the public is not only important for the obvious reason that it is the public who, ultimately, consumes what grows from the seeds, but also because establishing the idea of Open Source Seed in the public imagination will be helpful in conflicts: popular support can help policing and enforcing the OSSI Pledge, even if OSSI deliberately focuses more on moving seeds around their network, than policing and enforcing its boundaries. The decision to abandon a legalistic license developed by lawyers in favour of a simple Pledge appears to have added

social value without undermining the legal status of Open Source Seed: insofar as contract law is concerned, a verbal agreement – even if harder to prove – is as valid and binding as a written agreement. In other words, the actual terms and elaborate nature (or not) of 'the contract' is less important than its meaning and clarity, as well as provability. If the meaning is clear, if there are no ambiguities, then it is a good contract that there is little reason to assume will not hold up in court, as long as the rest of the transactions and institutional arrangements surrounding the contract are legal. Hence OSSI writes (on their website):

'We believe the Pledge to be legally enforceable. We chose a simple pledge to highlight the spirit and rationale behind our initiative. We also feel that our Pledge has the greatest chance of being transferred with the seed because of its brevity and simplicity. Our goal is to support the free exchange of plant genetic resources and to foster breeding, seed saving, and seed stewardship.'



While it may not suit certain corporate lawyers, who expect something else, organising around simple terms that everyone understands without legal aid widens the scope for potential commoners. Crucially, it departs from the culture of legalese that defines the commercial threats to biodiversity and speaks in plain and common terms about urgent socio-environmental matters. OSSI, in a way, is more like a social movement and a radical cooperative than it is like a 'seed company'. It is a self-organised commons with its own values, rules and organisation. In hindsight, they achieved more by doing less, which is a hacker mantra ('less is more'): reducing the license to a simple pledge left them with an equally valid contract, as well as time and energy to focus on circulating seeds by developing their organisation, network and outreach.

As a social movement, OSSI is re-establishing customs of sharing through seed commoning. Rather than trying to fit into the existing legal system OSSI has created its own cultural sphere, circumscribed by the Pledge and embodied by those who join the community.

The Free Software Foundation showed the world that cyberspace can be coded differently, more democratically and with free flows of information, and OSSI has successfully adapted the phenomenon to the domain of seeds and plant breeding. Repurposing the tools of (liberal) law in this way is a socio-legal hack of consumer culture. The social value of sharing and a practical understanding of the need for diverse ecosystems become embedded in an OSSI seed and its derivatives. As the seeds spread and the community grows, biodiversity is increased and Open Source Seed add to a growing sense of sharing as necessary for a transition that is actually green and towards socio-environmental justice.

For up-to-date facts and figures on this fast growing seed commons, see the website:

www.osseeds.org

OpenSourceSeeds in Germany

OpenSourceSeeds (OSS) is a service provided and managed by the German NGO Agrecol, Association for AgriCulture and Ecology. During their early organisational work, Agrecol decided that a license was



needed for their specific purposes and cultural and legal environment. The license that Agrecol have developed is a detailed contract which stipulates extensive (general business) terms and conditions, including what exactly constitutes a breach, and what happens in the case of non-compliance. Licenses are widely recognised in legal culture, and in the case of a legal process, there is little room for interpretation: the terms and conditions are stated in great detail, as are the repercussions for infringements.

Similarly to the model of the Free Software Foundation, Agrecol acts as a trustee of the seed commons, by being designated as the 'Beneficiary' in the license. This means that the license is not merely a contract between two partners (for instance between (i) someone who sells a seed, i.e. the licensor, and (ii) someone who buys that seed, i.e. the licensee) – as appears to be the case of OSSIs pledge – but, instead, the OpenSourceSeeds license states that Agrecol is also a partner to the transaction (the 'Beneficiary') and has the right to legally pursue any infringements of the license agreement. With this added element, the license and the transactions that unfold accordingly

are anchored in German law (by virtue of Agrecol being based in Germany and because the license stipulates that it is a matter of German jurisdiction). This is particularly relevant in the case of an international transaction outside the EU: a potential violator of the license (who has read the license) will be aware that they are not merely dealing with, say, a peasant farming community in Kenya selling them a seed with certain rights and duties attached (that such a community might find very hard to police and enforce), but in fact they are also dealing with a German organisation that have expertise in and access to professional legal aid. That is obviously helpful and supportive for some seed commoners, while it may act as a deterrent for would-be violators.

Additionally, during the process of license development, the EU Regulation 511/2014 on 'compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union' came into force. As part of the EU's implementation of the Nagoya Protocol, breeders are required to document the origins of the genetic material used in

Inspiring people

their breeding programmes should they wish to commercialise a plant variety. Pursuant to Article 7.2. of the EU Regulation, before commercialisation of a product developed with the use of genetic resources (such as a plant variety developed via the use of seeds), breeders have to make a declaration to the relevant competent authority (usually the national focal point for the Nagoya Protocol) and provide documentation to prove that they have accessed the genetic resources in question appropriately, i.e. in accordance with access and benefit sharing legislation or mutually agreed terms. This information is held by the public authority and upon request it can be accessed by members of the public as a matter of freedom of information, thus facilitating infringement investigations.

This due diligence requirement creates a new legal environment in which breeders must record the origins of their genetic material in a way that is accessible by the public and which makes misappropriation of open sourced material more difficult: it would require making a false declaration – or openly admit theft – and thereby risk legal proceedings and bring the company into disrepute.

For these reasons, Agrecol decided in favour of a conventional license, which was published in 2016 (<https://www.opensourceseeds.org/en/licence>). Half a year later, OpenSourceSeeds was founded and first varieties were licensed.

While OSSl in the U.S. faced relatively few restrictions on breeding or selling seeds (apart from patented varieties, of course), in the EU and in Germany, seeds sold commercially must appear on an approved list,

in the 'common catalogue', as it is called. In other words, in order to (legally) sell a seed in the EU, that seed's variety must be registered in the common catalogue. In order to appear in the EU 'common catalogue', following the international UPOV framework, a plant must be new and satisfy certain criteria of Distinctness, Uniformity, and Stability – the 'DUS' requirements. A broccoli variety, for instance, must be distinct in terms of one or more of the currently assessed 32 traits (e.g. degree of blistering of the leaf blade, length of the petiole, intensity of yellow colour of the flower, etc.); and it must grow (relatively) uniformly, expressing the same colour, posture and height; and it must be stable, i.e. maintain its specified characteristics across generations. A variety must therefore first be assessed and found to satisfy these criteria before it can be approved for sale in an EU market.

The problem with DUS compliance is that it is time consuming and costly. It thus favours high-yield, genetically uniform, and widely adopted varieties leaving niche varieties to fall out of use and face extinction. (In order to address that, nominally speaking, the EU allows some rare varieties to be sold in limited amounts, but the exceptions are, so far, insufficient.) Consequently, a significant – and prohibitively expensive – degree of investment and management is required to register and commercialise a variety. These costs would be the same for a variety under an OpenSourceSeeds license. However, and crucially, it is possible to open source a seed without having it approved and registered in the common catalogue. Doing so can be understood as a form of protection against appropriation by third parties under exclusive intellectual property rights (such as plant variety protection).

The common catalogue regulation has so far put certain limitations on the adoption of the OpenSourceSeeds license and effectively prevented small scale breeders without required legal and financial capacity from commercialising varieties under the license. The stage is about to change, however. The EU has finally, after the longest debate in its history, agreed to a revised regulation of organic farming and production that introduces two new categories of 'varieties'. According to EU Regulation 2018/848, organic agriculture can from 2021 legally trade 'organic heterogeneous material', which is another way of expressing that the thousands of traditional varieties (or landraces) that were hitherto prohibited from sale will be permitted: a surprise turn by the EU and a modest victory for biodiversity. Importantly, moreover, the registration process will supposedly be straightforward (insofar as that is possible within EU bureaucracy). That will open the market for smaller players and potentially generate a whole new client base for the OpenSourceSeeds license.

Additionally, 'organic varieties suitable for organic production' will be introduced as a new category,

which will create an ecosystem of seeds adapted to organic farming (Seed Freedom 2017). Such seeds do currently not exist to any significant extent and industrial organic agriculture in the EU is largely based on non-organic seeds that are rendered 'organic' in one generation. Bred to perfection for a petrochemical environment, however, such seeds yield significantly less in an organic setting. That's bad for business and gives organic a bad name. The new EU organic regulation, then, constitutes a significant opening for Agrecol's OpenSourceSeeds license.

OpenSourceSeeds could potentially provide a framework of stability and collective protection in perpetuity for the newly permitted traditional and organic seeds in Europe, as well as a popular outreach function in the ways noted about OSSi above. Exciting times could be ahead and things have started moving already. In April 2017 the cocktail tomato Surviva was released under the OpenSourceSeeds license by the Organic Outdoor Tomato Project as part of launching the OSS license and website. A year later, seven varieties are open source licensed and another seed commons is in the making.

OPENSOURCESEEDS COULD
POTENTIALLY *provide a*
framework of stability
AND **COLLECTIVE PROTECTION**
IN PERPETUITY FOR **THE NEWLY**
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organic seeds in Europe





With regard to questions concerning financing open source breeding – which are commonly asked – the OSS website states:

'It is often argued that it would be impossible to finance plant breeding with an open-source licence and without royalties from plant variety protection or patents on seeds. Several factors speak against this assumption. Historically agricultural seeds were primarily developed without a compulsory levy. In many developing countries, plant breeding mostly does not follow a business model based on royalties, and even in developed countries there are private breeding companies that do not rely financially on exclusive intellectual property rights.'

This is a way of saying that there is an alternative, that there are different ways of financing plant breeding, which should be understood and approached as a common good rather than as a private enterprise for profit:

'Commonly owned seed presents more than just an input in agricultural production. Their usage benefits the whole society and is essential for maintaining biodiversity, cultural landscapes, ecosystem system services as well as the capacity to adapt to climate change. These services are increasingly less provided by the business model the private seed sector is currently following. If services for society as a whole have a large share in plant breeding, then not only farmers and direct users should be engaged in covering the costs. Processors, traders and consumers - the whole value chain - and beyond that the government, should contribute.'

Find extensive documentation on the website:
www.opensourceseeds.org

4. OPEN SOURCE SEED SUPPORTERS

A number of interested partners and supporters add diversity and strength to the global seed knowledge commons that in effect is emerging.

While this is not an exhaustive list of past and present partners and supporters, it serves to provide an impression of how diverse the Open Source Seed movement is becoming, with participants from across all scales - geographically and institutionally - ranging from peasant communities, grassroots movements and urban activists through NGOs and academic research institutions and think tanks to public, governmental and inter-governmental organisations. The momentum that has been developed, the traction that the principles and methods have gained, and the popular support that freed seeds enjoy, give reasons to be optimistic. As climate chaos adaptation imperatives move to the foreground in policy making, the Open Source Seed movement embodies a real, tried and tested map and model for a seed system capable of feeding the world.

To free seeds and move towards accessible food diversity, support is both welcome and needed. Get in touch if you want to join the movement.

ASOCIACIÓN ANDES / PERU

Asociación ANDES is an indigenous formed and led NGO, which began in 1995 as a volunteer organisation working with indigenous communities in the Cusco region of Peru, particularly on in-situ conservation and sustainable development methods that respect traditional culture and agroecological methods. ANDES has successfully developed and implemented the concept of 'biocultural' that is central to the Potato Park, which ANDES helped create. Parque de le Papa, as it is formally known in its native context, is a model Indigenous Biocultural Territory (IBCT) that brings together 5 communities in the region known

as the 'centre of origin' (or centre of diversity) of the potato plant.

ANDES, generally, supports struggles against and relief from poverty; biodiversity management; the recognition and strengthening of communal traditional rights on biocultural resources; and the promotion of institutional changes and policies at all scales relevant to biocultural conservation and sustainable development. The mission of Andes is:

'...to advance a rights-based approach to conservation and development through the implementation of Biocultural Territories, a model which has been successfully implemented in the Potato Park. The model creatively brings together Sumaq Causay, the ancient Andean principle and philosophy of well-being; modern science; and research methodologies to nurture resilient agrobiodiversity systems and foster endogenous development and poverty reduction'.

ANDES co-founder Alejandro Argumedo is an OSSSI board member.

Website: www.andes.org.pe

ARCHE NOAH

The ARCHE NOAH Seed Bank - established in 1990 as an initiative of heirloom gardeners, farmers and journalists, concerned with the future of seeds and heirloom varieties - is one of Europe's biggest private collections of cultivated plants, with 15,000 members maintaining about 5,500 accessions of rare vegetables and grains - many of which are not found anywhere else. To further the exchange of knowledge

and experience Arche Noah is participating in different international Lifelong Learning Projects together with partner organisations from different European countries. Arche Noah preserves:

'...diversity for a livable future. From today's perspective, it is impossible to say which plant species or cultivars, or 'genetic resources', will be 'important' one day. It is therefore irresponsible to dispose of these precious rare crops. We must preserve and continue to develop seed diversity and knowledge of cultivation. We have to make them available, to safeguard not only the basis of agriculture, but also the richness of flavours that enhance our quality of life.

Arche Noah is a key player in the efforts to build a global community for Open Source Seed.

Website: www.arche-noah.at

CIRAD

CIRAD is a French public institution governed by Ministry of Higher Education, Research and Innovation and the Ministry for Europe and Foreign Affairs with the objective of building sustainable farming systems capable of feeding ten billion human beings by 2050, while preserving the environment. CIRAD promotes and participates in development through research, training and knowledge sharing in partnerships stretching three continents. CIRAD in figures:

- A staff of 1650, including 800 researchers.
- Joint operations with more than 100 countries and 200 organisations.
- Three scientific departments: Biological Systems (BIOS), Performance of Tropical Production and Processing Systems (PERSYST), and Environment and Societies (ES).
- 14 regional offices throughout the world.
- An annual budget of 200 million Euros in 2016.

In 2018 CIRAD's Selim Louafi organised a workshop to discuss Open Source for seeds and genetic sequence data.

Website: www.cirad.fr

GREEN NET / THAILAND

Green Net is a Thai social enterprise working to link sustainable farmers and community enterprises with consumers. It focuses on promotion of organic agri-

culture and development of alternative fair markets. Green Net works as a marketing and distribution centre for the diverse products of its farmer members including: rice, coconut milk, herbal teas, soybeans, and eco-textiles. The objective is to serve as a marketing channel for small-scale organic farmers, incorporating fair-trade principles in its marketing activities' by combining organic agriculture and fair-trade as its core policies:

'We believe that doing development work for the nation is the responsibility of all sectors of society, including government agencies, research institutions, businesses, and NGOs. The work of non-government organisations that serve disadvantaged groups in society should be considered part of social enterprise, whether it is through building the knowledge of farmers, building the strength of producer groups, or working to manage the market for such groups'.

Green Net's Michael Commons is one of the founders of the Agricultural Biodiversity Community, a worldwide community of practitioners and researchers concerned about and interested in the topic of seeds and agriculture. The community put Open Source Seed on its agenda and Green Net is considering an Open Source Seed initiative in Thailand.

Website: www.greennet.or.th

DE ZADERIJ/FOUNDATION ZAADVAST, THE NETHERLANDS

De Zaderij is a cooperative of farmers, horticulturists and care farms that select and multiply organic seeds. They only sell open pollinated and patent-free varieties. De Zaderij was jointly established with an organic plant breeding foundation called Zaadvast. The foundation and the cooperative are based on several key principles: cultivated crops are common cultural heritage and should be managed sustainably; varieties (of cultivated plants) should be the property of a community (i.e. a common good) and should be freely available; seed (of a given variety) should be treated as a commodity, for which the producer must receive fair and reasonable compensation. Varieties resulting from De Zaderij's breeding programmes will not be protected by intellectual property rights.

Website: www.zaderij.nl and www.zaadvast.nl

5. CHALLENGES OF SEED COMMONING

Seed commons and commoners are faced with challenges of codification of customs, formalisation of associations, declaration of values, envisaging the future and identifying paths to get there. Such challenges and changes can be difficult. Formalisation, codification and official structures – while offering a common front vis-a-vis external threats – can bring rigidity to social organisation. Moreover, such official structures entail a form of literacy or embody an architecture of knowledge that can sustain social stratification: those with the better handle on these new official measures can rise to the top, while some may lose their influence and significance in a community, despite their capacity and skill in terms of growing, breeding and saving seed. The process of formal self-organisation is thus full of pitfalls and challenges that require open minded self-reflection and questioning.

Moreover, the needs of particular communities of seed users are different, possibly contradictory. The needs of farmer-breeders in the US differ from those of indigenous communities in Latin America, which differ from those of small-hold farmers in Asia. There can be no one-size-fits-all approach. Local particu-

larities – ecological, social, cultural, legal – are very diverse. But if there is a pluriverse of commons, a multitude of networks, how can these engage with one another? Can they be mutually supportive? Could and should seeds move amongst them? How could they be linked to facilitate exchange, mutual learning and joint advocacy? These are the challenges ahead, but the seeds are sown and we can look forward to seeing them grow into seed commons as valuable contributions to the urgently needed transformation of agriculture.

Any commons needs protection of its boundaries. An 'unprotected commons' is basically an open access resource - or 'res nullius' - that can be appropriated (or enclosed and commodified) by anyone and as such it is not really a commons at all.

The Free Software movement created the GPL to define its boundaries using copyleft (see Text Box 'Open Source' on page 9): they used a license to enable anyone to freely access and use their communal resources, while clearly defining a limit, namely that any changes to or developments of these resources, if they are made available for others, may only be



released if they provide the same freedoms of access and use (hence they cannot be enclosed and commodified). What is common must remain common and copyleft attaches this communal value to the resource, thereby informing, guiding and shaping the very practices of commoning through which software is created. That is why Free Software released under the GPL is not simply a commodity, but a community building and innovation process based on ideas of freedom and sharing.

The boundary of the Free Software commons defined by the GPL is policed by the members of the community. Identifying a boundary breach is in itself a form of participation and an act of commoning. Policing is self-organised and leads to the first step of enforcing: making what we can call a collective claim. A self-organised collective claim is generally speaking the traditional (and primary) means of GPL enforcement. An email, a phone call or a conversation at a conference or in a chat channel makes the violator aware that they are in breach of the GPL. This has often worked well and resolved the dispute through community support. The commoners state their unity and offer ways to work together – the violator of the GPL may

well become a supporter and active member of the community. Sometimes, of course, the communal approach is not enough and disputes end up in a court of law.

Seed commoners, however, might decide that their priorities lie first and foremost with building community and sharing seed and so they might not place much emphasis on the policing and enforcing of their rules against violators. Policing and enforcing are specialised kinds of activities – involving phones, computers, desks, abstractions, legalese, bureaucrats and technocrats – and seed commoners tend to prefer soil-based activities. An hour spent policing and enforcing is an hour not spent growing, breeding and feeding yourself and your community.

There are still many important discussions to be had on these issues. In the following section we raise a series of questions in order to encourage discussion on these and other issues concerning seed commoning, before concluding.

FINAL AND FREQUENTLY ASKED QUESTIONS

The Open Source Seed movement is an answer to some of the problems of the current food and agriculture system that, in turn, throws up many questions. In order to facilitate further reflection about seed commons, and in particular the idea of 'Open Source Seed', we have collected a series of questions adapted from different critiques of the open source concept and related research on commoning. These are followed by preliminary responses that we hope this report will inspire elaboration of.

1. Why do we need Open Source Seed?

→ **Response:** *The current market and IPR based system favours and has created an oligopoly that abuses seed, soil and the environment, cannot meet nutritional demands, and leaves farmers as mere pawns in a game controlled by banks and a few agricultural corporations. Open Source Seed is a framework that encourages a non-centralised structure of diverse, numerous, small companies pooling their knowledge resources and becoming a commons: more than the sum of their parts. So, the question is: Which structure do you want?*

2. Seeds and software are so different; this whole thing of open source seeds makes no sense at all?

→ **Response:** *That's a good question (even if it isn't actually a question). If you step back and think about what seeds are and what software is in terms of social relations, rather than thinking of them as things, then it will appear that seeds and software are not so dissimilar. Both are relatively easy to transport and share and they are both very useful things, potentially enriching, but in order to use them you require a material context: seeds and software require land to, respectively, grow or to build the material infrastructure and energy supply that their use involve. Both are then moments in a large material dimension. Open source software inscribes values of sharing and working together onto the material and relational realm of computer systems. Open source seeds inscribe values of sharing and working together onto the material and relational realm of food systems.*

3. Because 'open source' is a term from computing, it carries connotations of digital worlds and implies a belief in technical progress that we want to move away from, does it not?

→ **Response:** *There are of course a lot of good reasons to be critical about digital technologies, technical fixes and the progress myth and its development and growth imperatives. Many people are excluded from the digital world of high-tech, for better and for worse. The association of seeds with 'open source', however, is not a reference to the software, or hardware or associated ideologies of technological improvements, but a reference to particular acts of commoning: building community, innovating and developing resources, in a spirit of solidarity, participation and sharing rather than competition, exclusion and profit-orientation.*

4. Are you saying that the term commons always equals good and that because certain software is Open Source or because certain hardware runs on Open Source Software, it is always ethical?

→ **Response:** *'All things have two handles, beware of the wrong one'. Although widely embraced by hackers, nerds and scientists, Free and Open Source software's primary impact on cyberspace is arguably associated with the corporate sector's take-over (recuperation, enclosure) of what was hitherto charted and populated by pioneers and enthusiasts. The rise of Amazon, Facebook and Google et al. (and the consequent demise of the Internet as a frontier of human freedom) has been based on server farms that are running customised versions of GNU/Linux, a Free and Open Source operating system. In the case of Google's infrastructure it is estimated that the total number of servers is more than a million. Open Source, then, has an ambiguous legacy that makes it a mixed blessing.*

→ *The Free Software principles and the Open Source methods, however, are less ambiguous: Except in certain domains of traditional (peasant, indigenous) science and knowledge systems where secrecy, knowledge and power are inextricably linked, the freedom to access, use and share things, as well as the methods of never concealing the historical development and underlying code or composition of a given thing, are suggestive of something that we tend to recognise as a 'good thing', which enhances human freedom and increases diversity.*

5. The unfettered 'freedoms' associated with open source might not work in the case of indigenous customs, will they?

→ **Response:** *If the free sharing of seeds runs counter to particular indigenous customs, e.g. when certain seeds can only be circulated amongst people with particular skills or roles (such as healers or elders), or under certain circumstances (such as during special celebrations or at particular times of the year) due to particular cosmological views, then the importance of cultural integrity might trump the importance of sharing. But this should be discussed and explored with the people in question on a case-by-case basis and not unquestioningly assumed from the outset. Things change, cultures evolve, everything flows.*

→ *Moreover, open source does not promote 'unfettered' freedom, it promotes freedom in perpetuity under certain conditions, e.g. free use as long as the seed is not privatised (through intellectual property rights). It might be fruitful to explore the possibility of attaching other conditions to the seed, such that the sharing of the seed perpetuates rather than undermines the spirit of the indigenous customs that surround its use.*

6. Should 'open source licenses' be developed that are legally defensible? Why? Why not?

- **Response:** In principle all licenses appear to be legally defensible, as long as the necessary rights of exchange are in place, since contract law is quite straightforward with regards to what (very little) constitutes a lawful contract. Open source licenses have been treated in court as a matter of contract law, seeing the GPL as a contract which outlines general business terms and conditions. It is a formal agreement in writing in which 'a promise given for a promise' is made.
- An open source license can arguably be enforced in a court of law – where an oral agreement is as valid and binding as a written agreement – because it articulates a mutually beneficial transaction. There are several precedents (Germany; the U.S.) where the Free Software license (the GPL) has been upheld in court on the basis of contract law. But there are as of yet no precedents for open source seeds. Until a court of law states otherwise, an Open Source Seed license or a Pledge are both valid and binding contracts, even though a license, being a familiar item in legal culture, is potentially more easily enforced. The struggle for the recognition of the rights to freely share seeds and plant genetic material has only just started...

7. What are the advantages and disadvantages of using a pledge (as OSSI does) as opposed to a license (like the one Agrecol has developed)?

- **Response:** A pledge is probably more conducive to grassroots organising, while a detailed license is likely to resonate more in a corporate setting with legal staff. It is possible that a license will be easier to enforce in a court of law, because of its detailed expression of business terms and conditions and consequences of infringement. As such, professional lawyers working for seed and breeding companies interested in open source licensing might prefer a detailed license, not least because such licenses are part of the professional culture.
- The advantage of a pledge is that it is clear and simple, which might in certain circumstances also be its disadvantage. It could be argued that in some cases a simpler expression of terms and conditions that can be read and understood without legal expertise, i.e. a simpler and clearer contract such as a pledge, would be easier to enforce, since neither party to the agreement should be left with any doubt about what they have entered into. Conversely, Agrecol's license arguably removes doubt from and provides clarity to a legal process. It seems that the pledge favours a social movement attitude, while a detailed license is tailored to and targeted at the legal establishment in pre-meditation of possible legal proceedings.
- Moreover, Agrecol's OpenSourceSeeds license articulates that Agrecol is **also** a partner (the 'Beneficiary') in the transaction, and can pursue infringements, which thus anchors the transaction and situates a potential legal process in German law.
- However, in principle both license and pledge are equally valid contracts, hence any kind of further argumentation for a specific license or pledge has to involve a presentation of its spirit and supporting community: the intentions with which the license or pledge was written and those whose interests it represent matter, too. As such, licenses and pledges have to be compared

with consideration to their wider social context, rather than a mere consideration of the letters of the contract itself. Whether one or the other serves a specific seed commons better cannot easily be stated in the abstract, even when local conditions and desires are clear. In some jurisdictions one approach might be better, while in another the opposite might be true. In the absence of a series of case studies – i.e. legal processes – it is not possible to make a definitive statement. Perhaps worthy of note here, too, is that a legal process is also subject to the whims and idiosyncrasies of the judge; and, of course, might is right: 'justice is open to all like the Ritz hotel'.

→ Whatever each Open Source Seed initiative favours, the purpose here is to facilitate their networking and provide food for thought.

8. Pledging seed or licensing seed requires an individual's authority to 'pledge' or license as well as that the variety in question must be novel. This excludes the use of heirloom varieties and indigenous and peasant seed which are not considered to have been bred by one particular person and/or of a definable group, does it not?

→ **Response:** This is an interesting and important question where sides can be chosen: with the letter of the law or with customs in common? Including 'landraces' in a seed commons could be desirable in terms of biodiversity and as legal activism, while excluding such plant varieties pays respect to the existing paradigm of plant protection and patenting. We invite further debate, reflections and discussions on this issue.

9. Does the Pledge thus (in a lesser way than a full license) inscribe its scientific rationality on the commons it creates?

→ **Response:** Yes and no. If 'pledging' plant varieties means that they have to conform to particular standards and metrics e.g. be novel, then, yes, certain scientific values are inscribed on the commons created by the pledge.

→ However, open source as a legally recognisable concept provides the means to define a boundary against the external world, which does not in and of itself determine the internal social organisation. Open source borrows from the modern nation state's conceptual and jurisprudential tool box to be able to set and defend the boundaries of a commons that would otherwise run the risk of being crushed and ignored. It does not necessarily have to inscribe scientific rationality.

10. There are also concerns with regard to misappropriation: will a license or pledge hold up in court? Is it important? And even if not, will placing seeds in an 'official' commons make misappropriation easier and facilitate 'trait mining'?

→ **Response:** For some Open Source Seed systems it will be important to police and enforce their legal boundaries, while for others defending the external boundary is less important than the internal community building that shared and declared values underpin. If an Open Source Seed system provides database access, then yes, all the data it permits access to can be appropriated by those who can access it. Again, this will be a priority to pursue for some, while for others it might not. Further debate and exchange of experiences is necessary to explore this point.



11. OK, YOU HAVE ALMOST CONVINCED ME ABOUT THE WHOLE OPEN SOURCE SEED THING, EXCEPT: WHO IS GOING TO PAY FOR IT ALL, VARIETY PROTECTION AND PATENTS ENSURE REMUNERATION FOR THE HARD WORK INVOLVED IN BREEDING?

→ **Response:** *Free/Open Source Software has shown that freely sharing source code is a viable business model that allows for selling services around your creations: after all you are likely among the top experts on matters concerning your own work. In the past many plant breeders never relied exclusively on direct remuneration for their breeding efforts and the Open Source Seed community side with the many NGOs, policy makers and growing network that consider plant breeding a public concern that must be organised as a public good with public funds and support for breeders, who can sell seeds, services and expertise to sustain their livelihoods.*

LOOKING TO THE FUTURE

Revealing Potential

The emerging network of Open Source Seed projects is a significant contribution to biodiversity, climate chaos adaptation, and a healthy, satisfying dinner table. About a decade old, the translation of the Free Software principles and the Open Source methods into seeds, as in various other domains, have taken root. The seeds were sown well. The network is growing and the success of OSSSI and OpenSourceSeeds suggests that others will follow and give shape to a potential global seed commons protected from enclosure in perpetuity.

Each seed commons is unique, embedded bioregionally, culturally and legally in its own place. That is a resilient feature of the network: it is composed of a series of mutations of the Free Software idea adapted to seeds, each deriving its form of social organisation from a variety of inspirations – including from other social movements – and defining its boundaries using the model of the GPL and the lessons learned in other open source settings.

In order to take these collaborations further a community building meeting has been proposed. Tentatively in April 2019, the form, venue and agenda

are yet to be defined. The purpose is to share experiences, facilitate exchange, encourage debate and make room for creative dissensus. Possible outcomes could include, but not be limited to a website with a guide for the creation of Open Source Seed commons, in addition to documentation of existing seed commons.

Embodying unique, yet common features and, largely, a shared set of values, seeds as an open source phenomenon has only just begun to reveal its potential. The prospect of a global pool of plant genetic material constantly evolving with local and global changes is exciting. As such, it is perhaps only a question of time – as happened with software – before bigger players join the game. It is therefore of particular interest to strengthen the voluntary associations that form the basis of this movement now, to create a resilient base of seed sharing networks and independent plant breeders, that can speak – if necessary and desired – with a unified voice in policy debates and, thus, further entrench seed sharing customs in the future.

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THE EMERGING NETWORK **OF OPEN SOURCE SEED PROJECTS IS A SIGNIFICANT CONTRIBUTION** *to biodiversity*, CLIMATE CHAOS ADAPTATION, AND A HEALTHY, SATISFYING DINNER TABLE. ABOUT A DECADE OLD, THE TRANSLATION **OF THE FREE SOFTWARE PRINCIPLES** *and the Open Source methods* INTO SEEDS, AS IN VARIOUS OTHER DOMAINS, **HAVE TAKEN ROOT.** *The seeds were sown well.*

THE NETWORK **IS GROWING** AND THE SUCCESS OF **OSSI AND OPENSOURCESEEDS SUGGESTS** *that others will follow* AND GIVE SHAPE TO A POTENTIAL GLOBAL SEED COMMONS **PROTECTED** *from enclosure in perpetuity.*



We
The people.



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