



DYNIVERSITY

Seed Savers Exchange (USA)

Case study analysis



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



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PART 1: DESCRIPTION

1.1 Contextualising the case

Seed Savers Exchange (SSE) finds its roots in 1975, when Diane Ott Whealy and Kent Whealy started an exchange network for farm-saved seeds named « True Seed Exchange ». Diane's grandfather had passed on heirloom tomato varieties called Grandpa Ott's Morning Glory and German Pink to them shortly before passing away, and it dawned on the couple that many heirlooms risk being lost forever if they are not passed on in similar ways. They therefore reached out to other gardeners through several magazines, offering to collect information on vegetable seeds available for sharing by the different gardeners. Their first "True Seed Exchange" letter included seed offered by 29 gardeners. Each gardener had contributed 0,25\$ for the shipping. The seed exchange involved around 100 gardeners the next year and -continued to grow quickly. As Diane's and Kent's concern for agrobiodiversity became known among seed-savers, some, especially elderly people, began giving them seeds to be taken into stewardship. Gradually, the number of the varieties taken into custody by the couple grew, and the collection reached another level in 1981, when John Withee donated a set of 1.186 bean varieties. They then realised they were going to have to be prepared to manage a rapidly growing collection. In 1993, the initiative produced a seed catalogue and began selling seed as a means to obtain funds to maintain the collection, while continuing the publication of the "Yearbook" to favour the exchange of seeds among seed-savers.

In 2019, SSE has around 13.000 members, mostly in the USA. 379 gardeners share over 20.000 seed batches through the yearbook, representing an estimated 16.000 different open-pollinated (OP) varieties. The basic rules of the seed exchange remain the same: gardeners can connect with each other through the Yearbook and self-organise to share seeds with each other. Participants requesting a variety pay for shipping and handling only. At regular intervals (3-11 years), SSE also publishes a compendium of OP varieties available from companies on the US seed market. The 2015 Compendium included 12.892 varieties, from which one can deduce that about 3000 varieties are unique to SSE in the USA, not taking into account synonyms which may remain in the Yearbook count. The in-house collection is estimated to have about 25.0000 entries, of which many remain undescribed.

SSE also sells seeds in its in-house shop, in shops all over the country and online. In 2018, SSE offered 743 varieties for sale. The association has a farm called "Heritage Farm", 890-acre farm. They multiply 1000 varieties annually. This space welcomes between 12,000 and 14,000 visitors each year.



The Heritage Farm in Iowa

1.2 « Doing »

1.2.1 Properties WITHIN the initiative (closure)

The initial purpose was to keep heirloom varieties alive by favouring seed exchange among gardeners. Today, the Seed Exchange Yearbook exists in an online and a paper version. Most users type information on the seed they are willing to share into the online platform, but around 10-12 elderly users not familiar with this technology continue to send in their information by e-mail or letter. One employee is responsible for editing the yearbook. SSE itself also offers its collection for exchange in the yearbook, consisting in more than 12.000 varieties in 2019. As the main objective is to favour seed exchange among gardeners, SSE offers only varieties that are not offered by others. The paper Yearbook is sent out to those members contributing to the seed exchange and to those requesting it. In 2018, 1.500 paper copies were shipped. It seems that users like to take time to comfortably explore the paper catalogue and keep track of how it evolves over the years.

Potatoes hold a particular challenge for conservation and exchange. Currently, *in-vitro* tissue culture, on a sorbitol-based, growth-slowing medium, is used for the conservation, as growing out all the varieties yearly is not feasible. Phytosanitary requirements do not permit to plant or share virus-infected tubers. Of the 730 potato varieties in the SSE collection, only about 10% are virus-free. The in-house tissue culture technician is currently experimenting with a technique to free potato varieties from virus-infection. This is based on the *in-vitro* culture of shoot tips on an antiviral medium (containing ribavirin) under specific temperature conditions alternating heat and cold. Getting previously infected varieties virus-free would allow growing them out for characterization and sharing them.

1.2.2 Properties BEYOND the initiative (outreach)

Seed sales through the catalogue allow getting OP and heirloom seeds to a target group that goes beyond the members and seed exchangers. Whereas the users of the Yearbook engage in seed-saving, many of the catalogue clients simply seek to grow OP and heirloom varieties, without necessarily saving seeds of their own. Commercial seed batches for the catalogue sales are either produced in-house by SSE or contracted externally, preferably to organic growers and SSE members.

For the entire SSE collection, each variety that has been grown out and multiplied is stored in a cold seed vault for the purpose of conservation, but also sent out for storage in two other seed vaults, at the USDA and the global genebank in Svalbard, Norway.

1.2.3 Transformative effects beyond the initiative

Among the SSE staff, one seed historian researches and collects historical information about the varieties in the collection, and two staff members evaluate the varieties in terms of agronomical and taste properties. These activities create new knowledge about the varieties, which is included in the Yearbook and catalogue descriptions. What conditions is a given variety adapted to? How does it taste? Where does it come from and who grew it before? By equipping the varieties with this information, exchange and sales are favoured. One staff member observes that seed exchangers tend to request varieties that have a description, while they are less attracted to varieties that are not at all described. Describing varieties also allows for deciding which varieties are offered for sale on the catalogue, in addition to the Yearbook. As varieties from the SSE catalogue become popular and available from other seed companies, SSE seeks to remove those varieties from its catalogue to make space for rare, unknown varieties. This is both to push for increasing diversity on the seed market, and to maintain the SSE catalogue as a place to obtain rare varieties.

SSE members are involved in the evaluation of the SSE collection entries through a citizen-science approach embedded within the network's ADAPT program. This allows sharing variety evaluations beyond the staff's small circle and evaluating varieties under a wider range of soil and weather conditions. This is particularly valuable for varieties that are ill adapted to conditions in Iowa and allows for a more robust multi-site evaluation. The citizen-science core of the ADAPT programme has relied on paper evaluation sheets in the past years. Since 2018, the SSE evaluation team has contributed to the development of "SeedLinked", a collaborative online platform for the interactive collection and analysis of evaluation data. Currently in a beta-version, SeedLinked will be tested by gardeners and researchers in 2019. Data can be typed in from a computer, or in a smartphone application currently under development¹. The SSE evaluation team expects this tool to make the analysis of the evaluation data more efficient, while allowing more gardeners to participate in the program. In 2019, it has allowed doubling the number of participating gardeners, from about 100 to 200, and interest from gardeners to join in is high.

For the past year, SSE has been involved in setting up the "Seed community network" in collaboration with Unitarian Service Committee (USC) Canada. This online platform aims at favouring networking among seed initiatives, especially seed libraries. The platform offers both an online map of seed initiatives and resources on seed saving techniques, organizational and legal aspects. Seed initiatives – groups or individuals – are invited to reference themselves in the online network and may sign up as regional mentor, thus offering support to other seed initiatives in their fields of

¹ For more information, see annex

competency.

1.3 « Organizing »

1.3.1 Properties WITHIN the initiative (closure)

SSE is structured in 5 departments:

The preservation department is responsible for the initial task of bringing seed into the collection, facilitating the seed exchange and editing the Yearbook, offering varieties on the Yearbook, as well as evaluation and describing the varieties, from a historical and a phenotypic perspective. The Seed House department manages the seed catalog, seed production and processing in preparation for the seed sales. The Visitors Center consists of the onsite facilities which welcome visitors, and include a showcase garden, an orchard with heirloom varieties, Ancient White Park cattle and a shop selling seeds, plantlets, information material, gardening tools and souvenirs. The other departments are sales and business; and administration support. The association's budget is \$5,547,000 (2017). SSE funds its activities through 4 channels, the main one being seed sales through the catalogue (70%). Membership fees play a smaller role (5%). Currently, approximately 12,000 members pay a minimum fee of 25\$ a year but may pay more if they want. Donations are a third source of income, complemented by occasional grants from private foundations (22%). A next step to acquire more stable and long-term funding for the future would be to obtain an endowment from a foundation.

The overall SSE activity is run by a board of directors, chaired by Rowen White. The board of directors is made up of 9 people with different profiles and skills that complement each other (agriculture historian, jurist, farmer, community-worker, doctoral students, biologists, chief, gardeners, authors). SSE is currently developing its next 5-year strategy plan, using a collaborative process. We did not have the opportunity to discuss this point in detail, but many flipchart pages in the meeting room testify of a collaborative effort to construct this strategic plan, facilitated by a professional.

1.3.2 Properties BEYOND the initiative (outreach)

SSE uses various tools to reach out and create awareness for OP and heirloom seeds beyond its own members.

The summer camp-out, with many conferences, attracts active members, as well as other people who would like to know more about SSE, seed-saving and agrobiodiversity. In a similar way, gardeners are introduced to seed-saving through training courses given by SSE.

SSE supports the wider North American seed community in several ways, seed libraries in particular. Firstly, it is involved in setting up in coordinating the Community Seed Network online platform, where community seed networks are given the opportunity to network among each other and to access online resources as described above, in section 1.2.3. SSE has in the past given talks in seed libraries and given some support to these regarding legal issues, as authorities were about to shut down several seed libraries on the basis of phytosanitary legislation. Beyond North America, SSE sustains relations with European initiatives like Arche Noah in Austria and Aegilops in Greece, with whom they connect at international meetings and conferences.

SSE also has working relationships with small-scale seed companies and public and independent breeders. SSE prides itself of independent breeding and seed companies who have started their business on the basis of the inspiration, experience and seed gained through the seed exchange. Several of these seed companies continue to contribute seed to the seed exchange, as an "homage" to the work done at SSE, according to one staff member. By editing the Compendium at intervals ranging from 3 to 11 years, SSE seeks both to monitor the OP varieties available on the market, and to support seed companies offering OP varieties with some extra communication.

SSE also collaborates with public researchers, such as Julie Dawson at UW Madison. The evaluation team sends promising varieties identified in the ADAPT program to be included in the organic variety testing which she coordinates. They have been collaborating, along with others, in the development of the SeedLinked platform for data sharing.

1.3.3 Transformative effects beyond the initiative

The seed exchange and seed-saving training courses for gardeners are obvious ways in which SSE contributes to empower gardeners to engage in seed-saving and the conservation of OP and heirloom varieties.

The way in which SSE encourages and supports independent plant breeders and seed companies deserves more attention. Indeed, the non-profit association prides itself of the fact that breeders and seed companies have emerged out of the seed exchange. In fact, an exhibit on the SSE website specifically celebrates some of the breeding and seed companies which have grown out of the exchange. One success story concerns a ripe-green heirloom tomato named

'Aunt Ruby's' after the person having initially passed on the variety before it arrived in the hands of a passionate tomato collector, Bill Minky, who offered it on the seed exchange Yearbook. This unique variety was much requested and gained in notoriety. It is now offered by many seed companies as a well-known variety and is listed in Slow Food's Arch of Taste. SSE staff consider this a success, because a variety has made it from being endangered to being popular.

PART 2: ANALYSIS

2.1 Knowing

2.1.1 Properties WITHIN the initiative (closure)

Knowledge and know-how on seed-saving is created, facilitated and shared through many of SSE' activities. Seed-saving training courses, conferences at the summer camp-out and the online Community Seed Network are places where knowledge and know-how are created and shared. According to one staff member, the summer camp-out is a place where participants share more than technical knowledge on seed-saving and variety conservation. Seed connects people beyond the mere gardening experience of seed-saving.

Beyond knowledge on seed-saving, knowledge on the heirloom varieties in the SSE collection is generated both by the seed historian and by the evaluation team. Members engaged in seed exchange appreciate meeting each other personally after having exchanged e-mails, letters, seeds and sometimes phone calls. At these summer camp-outs, it is a sense of a sharing community and a way of relating to seeds and plants that is celebrated.

As concerns the evaluation and description of varieties, the evaluation team expects the SeedLinked online data sharing tool to accelerate and improve data collection and analysis among participants of the citizen science ADAPT program, allowing for the participation of more gardeners.

The seed historian researches to discover the histories of the varieties in the collection, one variety at a time. From the information initially passed on with the seeds and collected in her database, she investigates to find the people and places that have co-evolved with the variety. She does this by tracing the genealogy and the descendants of the person having shared the variety initially, collecting written, oral information and photos.

This knowledge is to be published in the Yearbook, in a regular letter to the Members and is at the service of OP and heirloom varieties and of those people saving them. While the information on agronomical traits and taste enables people to know what to expect from a variety, the history passes on the heritage which have made it come into existence. The wealth of information provided with the seed gives a sense of relationship with the environment and of broader food sovereignty.

2.1.2 Properties BEYOND the initiative (outreach)

By all the activities described above, SSE has gradually become a hub for agrobiodiversity: it receives and distributes. They have gained considerable skill and experience, as well as technical equipment for the collection, (physical and socio-cultural) description and distribution of OP and heirloom varieties. It is the only non-profit organisation in the USA dedicated to heirloom varieties operating in this way and at this scale. Although this has no doubt contributed to SSE's outreach and legitimacy, our hypothesis is that legitimacy also comes from their positioning as seed custodians. People who care for agrobiodiversity trust in SSE' understanding and respect for the relationship between people and their heirlooms. SSE staff, individually and collectively, are at the service of seeds and the persons who have cared for them. They feel it is their responsibility to honour and maintain the link between the material and the socio-cultural aspects of heirloom varieties.

2.1.3 Transformative effects beyond the initiative

Varieties taken into SSE custody are studied and evaluated, not to obtain a (genetic) improvement of performance, but to produce knowledge about the variety. The identity of the variety is therefore reconstructed in three dimensions, agronomic, historical and organoleptic. One might describe the intention behind this approach as to achieve a "cultural-phenotypal" improvement, whereby varieties are (re-)embedded socio-culturally and technically. In our opinion, linking the material and cultural attributes of seed, SSE is building a "reservoir of potential" for the future of OP and heirloom varieties and seed saving.

2.2 Framing

2.2.1 Properties WITHIN the initiative (closure)

Being at the service of OP and heirloom varieties and their stewards is the heart of SSE's identity, which remains intact since the beginning of the network. This applies both to members engaging in the seed exchange and to the staff of the preservation department.

As researchers seeking to understand how the initiative networks and to interview some of its staff, we have experienced this sense of sharing in how we were welcomed and guided through the preservation department for a day. Each staff member took time to explain their role and position, making sure we had all the information necessary for our work.

2.2.2 Properties BEYOND the initiative (outreach)

The legal framework regarding seeds in the USA is very different from the European. In Europe, an obligation to register plant varieties in an official catalogue restricts the activity of seed initiatives and artisanal, small-scale seed organic companies very significantly. This restriction, which is suffered by most seed initiatives as an injustice, pushes seed initiatives and artisanal organic seed companies to create awareness about this problem. Seeds are thus framed socio-politically, not only technically or agronomically.

SSE's efforts in the USA rather go towards publicizing and creating awareness for the socio-cultural background of varieties, in parallel of describing them agronomically and phenotypically. The sociocultural embeddedness of OP and heirloom varieties is passed on through the stories related to each and reported on seed packets, on the website, and even when SSE staff or member gardeners give public talks. One example is the Grandpa Miller potato, which was donated by Mike Green in 2014. Mike himself had started growing the potato in his home garden in Oregon in 1995, after having received tubers from his grandmother, Loris May Borden, born in 1917. Loris had in turn received tubers from her father, Laurence Miller. With the tubers, Mike provided a photo (see figure) of his grandmother holding a tuber at about age 2. Although the family does not know exactly how this potato came to be their heirloom, they know that Laurence's father Willis Miller came to grow it as he moved to Oregon to search for gold in the 1880's.



Loris May Borden as a child



.....and a few years later

According to SSE's seed historian, this story is representative of the stories behind other heirloom varieties: although families often don't know the exact date when their ancestors began growing it, the heirloom forms part of their memories and traditions. This example also shows how pictures of a plant variety with its former stewards is a powerful and effective means to reach out to the public and enhance their understanding about the relationship with seeds. People who have strongly committed to heirloom varieties and their conservation are also celebrated in "exhibits" on the SSE website, which is an important source of information about SSE.

Stories are also an important means to pass on SSE's own heritage and values. Most staff members we have met have at some point referred to the initiators of SSE and their initial idea and motivation. One staff member explains with fascination that the initial idea and commitment of the Whealy couple sparked something that still lives on in SSE today. The heritage and values of the initiative are passed on through stories and in everyday practice based on open sharing and the care for OP and heirloom varieties and their stewards. Although these practices are intrinsically political – they are geared towards agrobiodiversity and an open and general access to that diversity – the political perspective of the activity remains implicit and is not something the people involved in SSE are used to talk about. In the same manner, values are communicated through everyday practices, as something that is passed on without necessarily putting it into words.

In these ways, SSE reaches out through its practices and values, passing on a sense of relationship between plants and people as their stewards. In SSE's trajectory, this has attracted gardeners to get involved in the seed exchange, become members or send in varieties for the collection. In addition to this, the SSE Community Seed Network now begins to reach out explicitly to independent plant breeders to see how the SSE collection can be of use to them.

2.2.3 Transformative effects beyond the initiative

As opposed to the prevailing model on the global seed market, driven by profit and inevitably entailing a reduction of agrobiodiversity, SSE's approach provides a continuity in space (the Yearbook) and time (the stories and the work of the seed historian) which connects seed savers to seed diversity. The framing of OP and heirloom varieties (section 2.1.1) and the effort to (re-)embed varieties in the gardening landscape (section 2.1.2) enables the connection of the material and human dimensions of seeds. The story of Grandpa Miller potato is a great example of how varieties are given an identity and embedded in a human history through the people who have cared for them.

One SSE staff member observes that in the seed exchange, participants tend to request varieties that have some description, rather than those varieties that don't have any information available. Rather than requesting a completely unknown variety and making it their own, seed-savers prefer re-connecting with previous generations of seed-savers that have conserved a variety. We hypothesize that the connection with those previous generations and their commitment conveys a sense of caring for the varieties. One example cited by the seed historian is a Lima bean which had been sent to SSE with a letter in the 1980's. Phoebe, the donor, had received the bean from her mother and continued to grow it to save seed despite her family's dislike for its taste. Becoming elderly, suspecting that none of her family members would continue seed-saving, she sent bean seeds de SSE to be taken into care. Years later, the SSE seed historian researched and found Phoebe's great-grand-children, who were happy to learn about the existence of this heirloom and to receive some seeds. Restoring this heirloom to Phoebe's descendants was an important experience for the seed historian, a culmination of the effort she puts into connecting heirlooms with life histories. It seems like the forgotten 'soul' of the variety is made intelligible and that seed-savers seek to connect not only with the material satisfaction of seed-saving, but also with the history and « soul » of heirloom varieties, be it their own heirlooms of heirlooms « adopted » from other family or community histories.

2.3 Networking

According to the seed historian, the main idea of the collection is to reflect and conserve the OP and heirloom varieties which have shaped and continue to shape gardening in the USA. This becomes clear from the criteria applied for accepting varieties in the collection. To be taken in, the variety must be (i) an OP variety with (ii) at least 20 years of stewardship and (iii) at least part of its trajectory in the USA.

When SSE takes a new variety into its collection, it engages in a temporary « stabilisation » of the variety, with the longer-term objective of disseminating it. At first, the research of the seed historian renders the commitment of the people who have multiplied and selected the variety in the past visible and have thereby permeated it. After that, the agronomical and taste characters of the variety are described and conserved along with the variety as they have received it. Basically, each incoming variety is equipped with a stabilized identity (phenotype description) and a « soul » (history). We assume that many gardeners requesting or buying seed of a variety seek to step into the lineage of people who have co-evolved with the variety. From there, the variety pursues its trajectory as it enters into relation with future seed-savers.

This link between heirloom seeds and family histories is particularly tangible in the USA, because the history of heirlooms often goes back to an immigrant having brought seeds from Europe. We hypothesize that even if the story behind a variety isn't related to a person's own family, the gardeners "adopting" these varieties identify with a shared history such as that of immigration and uprooting and a quest for historical roots. The conservation and dissemination effort of SSE therefore enables seed-savers to share more than seeds.

Recently, SSE has begun a reflection on the *rematriation*² of “native” seeds present in the collection by the indigenous peoples that have been historically linked to them. In 2018, a first experience of rematriating a plant variety to the native community from where it originated, in New Mexico, motivated SSE staff to further seek and strengthen collaborations with native communities, at least so communities and be informed of native seed available for rematriation. The chairperson of the SSE board of directors, Rowen White, is also national coordinator of the Indigenous Seed Keeper Network (an initiative of the Native American Food Sovereignty Alliance) and can help make that connection.

PART 3: SUMMARY

During our visit at SSE, the place of a variety’s history, cultural heritage, and relation with human beings – what we have above summarised as its “soul” - as an important dimension to take into account when working with seeds became very clear. In the USA, the history of the heirlooms reflects the history of the people, descending from native Americans and/or settlers. OP varieties operate as a means to make that link between human beings and their varieties visible. However, SSE does not only look back in history, but seeks to stabilize varieties and their histories momentarily for present-day and future gardeners to take them into stewardship and create an ongoing trajectory for the varieties.

Political implications and claims of the work with seed are not made explicit. SSE focusses its resources and efforts on practice and sharing. As opposed to what we know from initiatives in the EU, SSE does not have to deal with or resistance against a legal framework restricting the access of heirlooms and crop diversity in general to markets. It seems that this allows SSE to focus on the socio-material and the socio-cultural aspects of OP and heirloom varieties, whereas Semailles in Belgium, just to give a single example, focusses on the socio-material and socio-political aspects.

Open pollination enables SSE to widely share varieties steeped with history. The main objective of SSE is to disseminate them as widely as possible and independent seed companies contribute to the dissemination of OP varieties. Therefore, it is seen as positive when independent seed companies appropriate varieties first shared or marketed by SSE and sell them abundantly. The appropriation of SSE varieties by multinational companies has not been an issue within SSE until now, perhaps because the general legal framework has not prevented the association to operate according to its mission. Thus, SSE manufactures and makes available a potential that can freely be appropriated by others.

² In many native American communities, seeds were traditionally considered a feminine aspect of life and were cared for by women. Therefore, the process of restoring a variety to its community is named “rematriation”, as opposed to “repatriation”. See for example: <https://medium.com/permaculturewomen/on-seeds-decolonization-and-the-feminine-side-of-things-a-conversation-with-rowen-white-4114aa19a8b8>