Seeds of Sustainability: Roles and Practices of Seed Libraries

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Abstract
Seed libraries are becoming an increasingly common feature within public and academic libraries in North America, but the formal literature on this topic remains limited. This review explores the context of seed libraries, including the ecological and legal underpinnings of seed saving; community outreach in libraries through the 'library of things'; food security and sustainability initiatives; and the importance of community partnerships to the success of seed libraries. Common seed library practices within libraries are also illustrated.

Keywords: seed library, seed saving, community outreach, sustainability, food security, library of things

S eed libraries have become a feature of many public libraries and some academic libraries across North America in the past decade. The seed library has a simple goal: to provide community members with access, free of charge, to seeds they can take home and grow. Ideally, users will then return a sample of seeds from their harvest at the end of the season (Ingalls, 2021, p. 98). Seed saving and seed exchanges are a long-standing practice in agricultural communities (Conner, 2014, p. 5; Tanner and Goodman, 2017, p. 62), but the idea of providing seeds as a library resource is more recent. The first seed library in North America is considered to be the Bay Area Seed Interchange Library at Berkeley, opened in 1999 (Peekhaus, 2018, p. 271). Richmond Public Library in California was one instrumental figure in popularizing the concept among public libraries—their seed library was established in 2010

(Landgraf, 2015, p. 58), along with an extensive selection of online how-to resources at www.richmondgrowsseeds.org, which are commonly referenced in seed library literature (Landgraf, 2015, p. 59, Peekhaus, 2018, p. 281, Tanner and Goodman, 2017, p. 70). In my own local context of western Canada, seed libraries are still a relatively new addition to many public and academic library spaces—seed libraries were piloted at Edmonton Public Library in 2022 (Edmonton Public Library, 2023) and Red Deer Public Library in spring 2023 (Whiting, 2023). Some more established examples are Lifecycles' Victoria Seed Library, hosted at Greater Victoria Public Library since 2014 (Arrais, 2014), and UBC's seed libraries in Vancouver, established in 2017 (Blackwell, 2019).

There are many potential benefits to providing seeds in a library space—the ALA's core values for libraries include access, education & lifelong learning, social responsibility, and sustainability (ALA Council, 2019), all of which are embodied by the seed library. Seed libraries can be a resource for education and community outreach (Ingalls, 2021, p. 99). They can contribute to providing more equitable access to local and healthy food, and supporting biodiversity and sustainable gardening practices (Peekhaus, 2018, p. 273). The seed library also aligns with library trends towards an expanded role as a hub for community resources (Ingalls, 2021, p. 99; Peekhaus, 2018, p. 272).

Much of the literature on seed libraries is practical in nature, often in the form of informal articles regarding the establishment of individual seed libraries (Peekhaus, 2018, p. 272). Much of the widely available literature comes from the United States, and few formal studies exist that synthesize data about multiple seed libraries. While seed libraries are as varied as their communities, this review seeks to provide a broad context for the seed library as it exists within public and academic libraries, as a basis for deeper explorations of the trends, desired outcomes, and challenges that surround seed library projects. Further academic research into the role of the seed library could help to establish best practices, particularly in Canadian and other non-U.S. legal and climatic contexts, and identify the most effective and sustainable ways to integrate this resource into the library of the future.

What is Seed Saving?

A seed library may simply share seeds donated or purchased from commercial or farm partners, but the aim is frequently to encourage a practice of seed saving, where those who succeed in growing the seeds take from the library preserve and return a sample of seeds that can be loaned out to other patrons. In some cases modern seeds cannot be saved—hybrid varieties do not return seeds that grow the same variety that was planted, and an increasing number of seeds are protected by intellectual property law and cannot be redistributed (Volkening, 2018, pp. 107-108). The increasing control of agricultural material by centralized companies has placed limitations on the genetic diversity of the most commonly grown food crops by increasing the amount of plant genetic materials that are protected under intellectual property law (pp. 106-107). Major players like Bayer-Monsanto, Syngenta and Dupont-Pioneer have absorbed many smaller seed companies in recent decades, and genetic diversity of crops being grown in the United States has declined steadily since the 1970s (Schapiro, 2017, pp. 25-26). The shift to purchasing seed rather than saving it year to year for many farmers has diminished the number of varieties being grown of many crops (Wilson, 2009, p. 3), meaning adaptation to the varying climatic conditions of different regions is often achieved through the application of agricultural chemicals rather than through the use of local varieties that have been genetically adapted over time (Schapiro, 2017, pp. 25-26). Reduced crop variety can increase vulnerability to pests and disease, and when diverse genetic material is lost, fewer options are available to develop new varieties to suit changing climactic conditions (Wilson, 2009, pp. 3-4). Global efforts are in place to preserve the genetic diversity of food crops in order to ensure future generations have options for maintaining food security—the Svalbard Global Seed Vault holds over a million seed varieties from around the world, and is intended as a "backup" for the hundreds of other genebanks that exist worldwide (Crop Trust, 2023).

However, localized seed exchanges still have a unique role to play in preserving and developing individual communities' agricultural stock, providing a level of participation and continuous development that formal genebanks do not. Phillips (2013) provides a more expansive definition of the seed saving process, calling it "a shorthand term for a complex set of practices including the planting, tending, harvesting, storing,

eating and replanting of seeds (and other propagating material), as well as the attendant processes of exchanging and knowledge-building" (p. 3). Each step of the process, from planting to harvest, is an opportunity to gather knowledge. Seed saving is most often practiced with "heirloom" varieties of vegetables and fruits, defined as open-pollinated plants that have a history of being saved by an individual or community and can continue to be grown "true to type" from seed (Volkening, 2018, p. 108). These seeds carry stories, both culturally and genetically. Conner (2014) emphasizes that "whoever owns the seeds controls the food supply" (p. 17); seed saving is a way communities can reclaim control of what types of food are available to them. Community seed saving projects like seed libraries both reduce dependence on commercial suppliers, and allow seed growers to become familiar with their community's unique climate benefits and challenges (Schapiro, 2017, p. 26). Phillips (2013) calls seed saving an "ecological, economic, cultural and survival necessity" (p. 4). She emphasizes a holistic view of sustainable living, where activities like seed-saving encourage closer attention to nature, openness to unpredictability, and building relationships with one's local environment for the good of all living things, not only humans.

One major seed saving endeavour is the Seed Savers Exchange (SSE), a non-profit that aims to conserve heirloom seeds and plants in the United States (Volkening, 2018, p. 106). While they contribute to genebanks, including Svalbard (p. 110), they also emphasize that conservation of seed stock is an active process. The core collection is preserved professionally, but "participatory preservation" is also enacted through community distribution networks, including member to member sharing and donations of seeds and supplies to community groups (pp. 109-112). These processes allow gardeners in various climates to collect information about how seed varieties fare in different environments, and to create new localized adaptations by resaving seeds from these varieties over many years (p. 109). By saving seeds that survive the potentially harsh conditions of a particular growing season, a process of selection is enacted that passes the most resilient genetic traits to the next year's crop (Schapiro, 2017, p. 27) — a process that does not occur when genetically identical hybrid or patented seeds are purchased each year.

Some legal concerns exist, both for large seed saving organizations or small seed libraries. In addition to patented seeds being illegal to distribute, some states have laws that prohibit re-distribution of seeds that have not been quality controlled (Tanner and Goodman, 2017, pp. 74-75). In Pennsylvania and Maryland, there were cases where seed libraries were restricted for fears that the distribution of unregistered seed could negatively impact commercial agriculture by circumventing existing quality control regulations (Musser, 2014, p. 14). However, Musser rejects the idea that seeds cannot be safe and valuable without government intervention, and emphasizes the community value of seed exchanges. As a solution, he suggests that seed libraries enact their own less formal quality control, by gathering as much detail about returned seeds as possible, and not distributing old or unknown seeds (p. 15). The legal frameworks have since begun to shift as awareness of and interest in seed sharing has grown—Schapiro (2017) describes a high level of public interest in the aforementioned 2014 Pennsylvania case, which led to exemptions to seed-registration laws being established in several states (p. 27).

In Canada there is less local variation to these laws. Ingalls (2021) states that the federal Seeds Act protects the right to exchange seeds on a small scale; while patented seeds can't be redistributed, the exchange of heirloom varieties should not face barriers in a Canadian context (pp. 100-101). Further details on the legal landscape around seeds in Canada are discussed in a policy review by the Bauta Family Initiative for Canadian Seed Security (BFICSS, 2014)—they list the Seeds Act, Organic Products Regulations, intellectual property regulations and the International Treaty on Plant Genetic Resources for Food and Agriculture as relevant legal frameworks (p. 1). The first two policies face challenges in balancing quality assurance for crops and organic products with diversity of both plants themselves and agricultural practices (pp. 4-5). The treaty is an international document meant to protect farmers' rights to save seed and to promote locally adapted seed varieties and other ecologically sustainable practices (p. 10). While these policies aren't without tensions, and current versions of these regulations should be reviewed by seed librarians, overall Canada seems to be amenable to the seed library.

The Role of Seeds in the Library

Seeds may not be the first thing patrons think of when they visit a local library, but seed libraries are part of a larger trend of expanding what the library can be. Collections are becoming less book-centric, and community outreach is growing. Incorporating objects beyond information resources in the library isn't as new as it might seem; Robinson and Shedd (2017) describe the 'library of things' concept as a challenge to the traditional role of the library, but also a reinforcement of the library's role as a community resource (p. 15). Curriculum materials centres in schools and teachers' colleges and toy collections in public libraries became popular by the mid-20th century, as ideas about childhood education methods expanded (pp. 16-18, 19-20). Tool libraries, though typically run by city services or non-profits rather than libraries, became popular in the 1970s and are gaining momentum again in the present day (p. 18). And as resources for information creation, not just information consumption, have become expected, the library of things has become more technological, such as by providing equipment and software for digital multimedia projects in many school and academic libraries starting in the 1990s and 2000s (p. 22). Collections of things, from cameras to craft supplies to cake pans, are common in many libraries now, and develop in response to community interests and needs (pp. 22-23). This concept is also closely linked to the increasing integration of 'makerspaces' into public, academic and school libraries, which provide a wide range of both digital and physical tools for creative projects (Kim et. al, 2022, p. 1). The impetus of these spaces is not only to provide access to resources, but also to provide hands-on learning opportunities and a sense of community (p. 2). Seed libraries manifest these themes as both a tangible resource for patrons, and an opportunity for experiential learning.

Several broad motivations exist for providing gardening-related collections and programming in particular, including serving the needs of agricultural communities, supporting food security, and promoting environmental sustainability. Singh et al. (2022) discuss the importance of agriculture-based community engagement for rural public libraries. Half of U.S. public libraries serve communities of less than 2,500, and while they often face challenges like lack of funding and staff, they can also be highly valuable

as resource hubs in communities where services are limited—but only if these resources are relevant and responsive to the needs of their populations (pp. 405-406). Survey responses from 49 libraries in the southern U.S. regarding their community service initiatives identified agriculture-related programs ranging from seed libraries, gardening programs, and farmers' markets to traditional information services such as agricultural information resources and workshops on agricultural topics (pp. 407-408). Community partnerships were essential to the success of these initiatives, whether with other community organizations, continuing education departments, schools, state offices, farmers or local business owners (p. 408). While the programs discussed were agriculture-based in order to connect with the existing interests and resources of their communities, the "domains" of community service were found to overlap: agricultural initiatives like seed libraries also served various social welfare, economic, educational, environmental and health needs (pp. 411-412).

D'Arpa et al. (2021) explore the library's ability to promote public health, specifically through food gardening initiatives, which are framed as an avenue towards food justice (equitable access to healthy food) as well as an extension of libraries' role in promoting health literacy (pp. 42-44). The initiatives discussed all involved the use of library property as garden space and redistributing the produce to members of the community. Some were linked to youth programming, while others focussed more on community-building for adults. Seed libraries and seed exchanges were also mentioned as related programming (pp. 46-51). Multifaceted programming that combines related areas like seed libraries, garden space, collections of gardening or cooking tools, teaching kitchens, and farmers' markets, has potential to expand the reach and success of a seed library. Programs like these can also contribute to the library's lifelong learning and community-building goals (pp. 52-54).

Environmental issues are another growing priority of many communities. Embree and Gilman (2020) explore how the academic library can function as a "sustainability hub" for a university campus (p. 28). This article is a case study in how the authors are working to turn their university's science library into a centralized physical and virtual hub for sustainability initiatives, that can help support a culture of sustainability across the campus (p. 29). This has included providing meeting spaces for sustainability-

related clubs, hosting events such as speaker panels, and creating exhibitions, LibGuides and collections related to sustainability. Projects still in development include a pollinator garden, seed-saving workshops, and partnerships that emphasize social aspects of sustainability such as food security and impacts of environmental issues on diverse groups (pp. 31-39). Again, a key takeaway is that the seed library might function best, not as a stand-alone special project, but as part of a suite of initiatives that help to meet the increasingly essential goal of building climate resilience. A flexible and holistic approach to seed library projects that connects to existing initiatives and partnerships can allow libraries to best serve their community's particular needs and interests.

Seed Library Practices

The literature above indicates several motivations and areas of programming within libraries that may lead to the implementation of a seed library project, but what do library-embedded seed libraries look like in practice? Peekhaus's (2018) study is one of the more formal efforts to compile information on seed library practices, based on interviews from 10 purposively-sampled libraries across the US about their seed library programs (p. 273). He found that community engagement was essential to success, especially partnerships with other community groups to share knowledge and cross-promote one another (p. 274). Many seed libraries were established with start-up grants to acquire initial stock and supplies, print educational and promotional materials, and host opening events and workshops, but ongoing costs were suggested to be minimal (p. 274-275). Seed libraries that tracked their inventory found 'return' rates of 30-40% (p. 280), and all respondents purchased or received donations from seed companies to maintain their stock (p. 277). Often an adult services librarian was responsible for the seed library, with volunteer assistance. Labour peaked seasonally with spring re-stocking (p. 276). Inventory tracking and checkout processes ranged from barcoding each package and tracking circulation through the library's computer system, to using a paper sign-out sheet on the honour system (p. 278). Accompanying resources included workshops on gardening and seed-saving, as well as print resources on these topics; encouraging a spirit of experimentation was preferred over a strict emphasis on returning seeds (p. 281). The seed libraries were often found to be effective in bringing

in new library patrons; they also had the potential to function as an avenue for empowerment and participation in community life, and to contribute to the idea of the library as a 'commons' for resource and knowledge sharing (pp. 281-283).

These processes and patterns of development that Peekhaus notes appear across many other overviews of seed libraries, with the main area of variation being the types of partnerships and related programming, which vary depending on each library's community and resources. For example, Landgraf (2015) highlights the educational potential of the seed library, including support for youth science curriculums, and building connections to existing library collections on topics like gardening (p. 59). Community partnerships are also described, including supplying seeds for community gardens for refugees and at a senior's centre, and sharing expertise from local gardening groups through seed library programming (p. 62). Conner (2014) suggests seed libraries in public libraries could be linked to makerspaces, garden projects, and even book clubs (pp. 35-39). Singh et al. (2022) describe seed libraries that took their cues from outside initiatives—one started by partnering with a women's agriculture group that was already exchanging seeds; another saw an opportunity when a local business selling seeds closed. They also highlight the role of seed libraries in engaging library non-users—seed libraries brought new traffic into library spaces, garnered community support, and created recurring relationships with the library (p. 409-410). In many cases a seed library operating in partnership with an existing community group can create a symbiotic relationship—Tanner and Goodman (2017) note that even if the seed library is operated primarily by outside volunteers, the library's resources for marketing, tracking use, and educating patrons are highly valuable (pp. 64, 66). Alger et al.'s (2014) case study provides another example of this phenomenon, detailing how a seed library already established by a local food co-op was brought into a public library, which connected expert volunteers and an existing collection with the library's wider audience and cataloging resources.

Case studies on the establishment of individual seed libraries can provide more minute details on how seed libraries are established and operated, and are often written with prospective seed librarians in mind. Anderson (2021) details the steps taken to open a "seed exchange" in the Chattanooga Public Library (p. 61). These included

identifying donors in the local farm community to build their seed stock, repurposing an old card catalogue for patrons to browse the seeds in, and establishing a cataloguing and barcoding scheme integrated with the library's computer system so that popularity of different types of seeds could be tracked. Weak (2014) describes a more no-frills approach to establishing the Mountain View Public Library's seed library, involving a Tupperware container of small seed packets and a handwritten sign-out sheet. The support of volunteers in tasks like stocking is noted, as is the importance of programming in building interest — in this case examples include talks from another seed librarian, a garden blogger and master gardeners, as well as partnerships with a conservation group and schools.

From Canada, the most detailed study is Ingalls' (2021) description of the process of developing a seed library at McGill University. The academic library context provides unique opportunities, such as collaborating with student community gardens and sustainability clubs, linking the seed library to course projects and academic research, and supporting student wellness and mental health (p. 99). Partnerships with student groups were fruitful for outreach, including creating workshops on related skills like gardening and canning, and establishing a partnership for seed sharing with the permaculture club (p. 105). The university library system's resources were also utilized—in this case, modifying the library catalogue to accommodate seed lending was not possible, but a web record of seed holdings was created, including a seed request form for delivery of seeds to other McGill campuses (pp. 103-104). Ingalls saw a high level of interest in the project and noted supply and demand as a key challenge, as the library had quickly run out of seed stock when it first opened (p. 106). Soliciting donations from as many farm and seed company sources as possible, maintaining awareness of the legal context, and establishing clear policies for borrowing and inventory tracking up front, were other key pieces of advice (p. 109).

While these are only a few examples of seed library descriptions, these and other case studies can provide useful insights into the wide range of methods and focuses seed libraries can take on. For the prospective seed librarian, inspiration and informal advice is bountiful—however, more comprehensive analyses of the effectiveness, sustainability and outcomes of various methods are harder to find.

Conclusion

The literature described here provides a snapshot of some of the many ways seed libraries take shape in library spaces, and their potential as information resources, educational and community-building tools, and avenues for supporting food security and sustainability. While case studies and web resources are plentiful and provide guidance on common practices for establishing and maintaining seed libraries, data is lacking on the long-term sustainability of these projects, and very little formal research exists that synthesizes information on the practices of seed libraries, particularly in the Canadian context. Taking cues from Peekhaus' (2018) and Singh et al.'s (2022) studies, further research is needed that compiles and compares the experiences of many libraries in operating seed library programs. Exploratory studies that identify trends in seed library practices, challenges and outcomes could help to guide seed library practice and identify links between seed libraries and other library programming, partnerships and goals, in order to solidify the role of the seed library as a tool for outreach, education and sustainability in the library of the future.

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