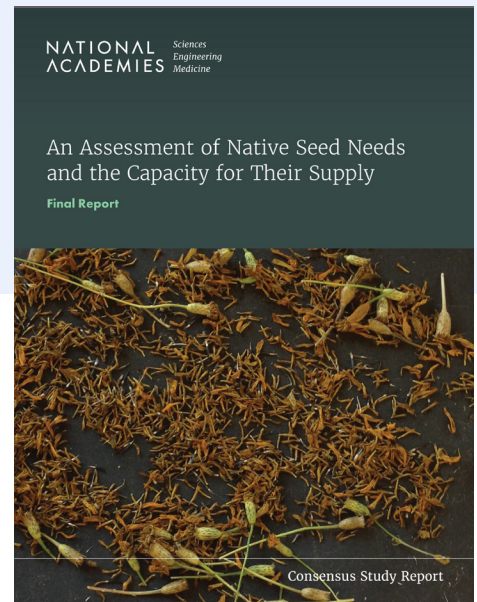


An Assessment of Native Seed Needs and the Capacity for Their Supply: Final Report

Severe wildfires, floods, and droughts are among the growing list of hazards to millions of acres of native plant communities in natural areas across the United States. Native plant communities—populations of plant species that evolved and occur naturally in an area or region—are crucial for maintaining native biodiversity and providing key ecosystem goods and services to the surrounding landscape. After extreme events, restoring damaged landscapes often includes planting large quantities of the native plant seeds to assist the reestablishment of plant communities that stabilize the soil and provide a foundation for resilient, native ecosystems.

The demand for native seed by the federal, state, tribal, and private sectors has increased for a variety of applications, but the supply of seeds from a diversity of native plant species is insufficient to meet those needs. A relatively small segment of the nation’s commercial seed industry produces native plant seeds for ecological restoration and other uses, which requires considerable specialized knowledge and equipment and several years of lead time to produce a specified batch of seeds. In the western U.S., the volatility of demand, influenced by severity of wildfire events from year to year, creates an uncertain market for the native seed industry.

This report examines the prospects for developing the large and sustainable supply of native seeds (and other native plant materials, such as containerized stock, bare root seedlings, and other propagules) that would support successful ecological restoration and other needs for native plants across the nation’s landscapes. The report calls for concerted action to build a more robust native seed supply and industry to meet the needs of today and the future, as the prospects of severe wildland fire and other climate-change related disasters loom on the horizon.



FILLING THE NATIVE SEED SUPPLY

Through surveys and interviews, public sector agency seed users expressed the need for locally adapted native seed from a greater diversity of plant species. Seeds that are likely to be locally adapted to a seeding site are those originating from nearby plant populations or from “seed transfer zones” and ecoregions (See Figure 1). When these seeds are in short supply in the market, users frequently substitute seeds sourced from less similar origins (including non-native species) than where it will be planted. Such seed may initially germinate and establish but not survive over the long term or may have a negative effect on existing native plant communities where it is planted.

The regional and state-level units of federal land-management agencies typically determine seed needs and how to respond to them, what species to use, how much to purchase, and how to implement restoration and revegetation. Some of those units have access to botanical expertise to guide seed selection. Yet, after wildfires when buyers need large amounts of seed in a short timeframe, they are frequently faced with using whatever is available “off the shelf.” The seed preferences of buyers can vary widely, sending mixed signals to seed suppliers.

A survey of seed suppliers shows the greatest barriers to supplying native seed are unpredictable demand;

“difficult to grow” species; and a lack of stock (starter) seed from desired seed zones. Suppliers suggested that better communication from buyers about their seed needs, more realistic timelines for delivery that account for the time needed to acquire and grow seed, and greater technical assistance would help them meet user needs.

The Need for National Coordination and Focus

The report notes that much of the primary source of the stock seed that suppliers say they need exists in the wild native plant communities on large swaths of publicly managed lands. In the western US, multiple federal agencies collectively manage over 615 million acres, their properties intertwined and adjacent to state, tribal land, and private lands. In the eastern US, many natural areas are under the management of state and local governments and private land trusts.

The native plant communities on public and other lands could be used as the building blocks for the comprehensive assembly of a sustainable, public-private native seed industry. The foundation for this approach has already been established by Seeds of Success program started by the Bureau of Land Management (BLM) in 2001, in which small quantities of seed from numerous seed zones and ecoregions were collected and stored by SOS nonfederal, partner seed banks. The report calls for a coordinated interagency approach to seed

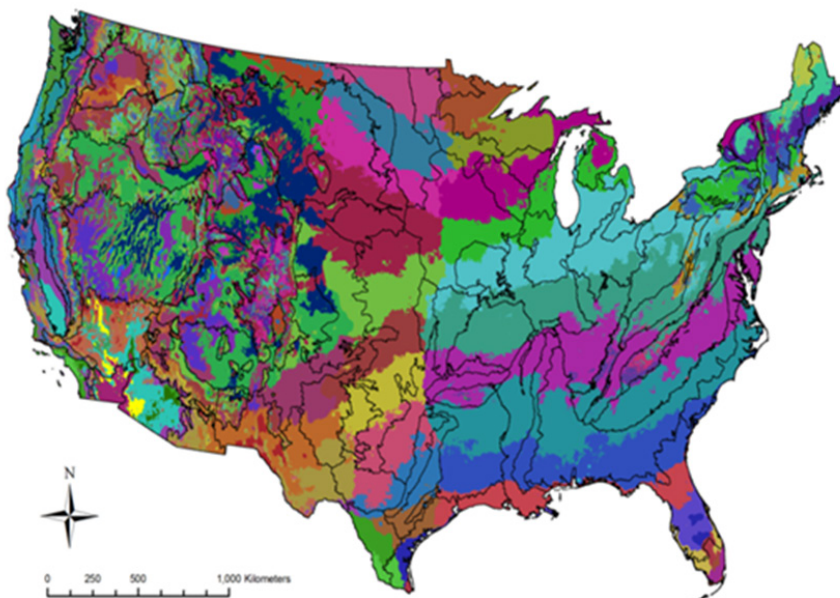


FIGURE 1 Buyers seek seeds from specific seed zones (colored areas) and distinct ecoregions (shown by the black lines). SOURCE: USFS, Bower et al., 2014; DOI and EPA, 2018; Omernik, 1987.

collection across public lands and ultimately, for the seed to be multiplied and provided to commercial suppliers as stock seed for larger-scale production in anticipation of future buyer needs.

The report also calls on public agencies to increase the predictability of purchases by proactively restoring millions of acres of public land that are considered ecologically impaired and creating annual purchase targets, rather than only purchasing seed after a disaster. To reduce uncertainty, agencies should also contract for seed purchases before seed production begins and use realistic timelines in contracts. The report also suggests that to stimulate a local seed industry, USDA should consider providing a premium to landowners who use locally adapted seed types in conservation programs.

The Promise of State and Regional Partnerships

Because locally adapted native seed for a wide range of species has been difficult to find in the commercial marketplace, partnerships have arisen inside and outside of the federal government to develop native seed supplies for restoration and other applications, including to provide stock seed to commercial growers. One of the longest-lived programs began in the 1980s, when the Iowa Tallgrass Prairie Center partnered with the Iowa Department of Transportation to collect seed from the state's remaining stands of tallgrass prairie found along rural roadsides. The program began increasing the seed in fields and has since released stock material for 100 species of Iowa natives to commercial suppliers. In addition to prairie restoration projects, the seeds are now used on roadsides across the state and are available to farmers and other landowners who participate in the Conservation Reserve Program, which puts marginal farmland into conservation use for a decade or more.

The report recommends that the federal land-management agencies help to establish regional programs in partnership with states and other organizations across the nation. These programs can prioritize seed needs and oversee seed collection, increase, and ecological restoration.

Research, Technical, and Infrastructure Needs

Many information gaps affect the ability of the native seed supply to function effectively. Research is needed to understand the optimal number of species to plant together in restoration, the potential to apply traditional ecological knowledge to restoration approaches, the critical conditions necessary for seed germination and establishment, and how climate change should influence the selection of seeds for restoration.

There is also a role for the United States Department of Agriculture in helping producers learn how to grow seeds, and in researching how to keep seed viable in storage for long time periods. The report further calls for an expansion of humidity-controlled seed warehouses and for cooperative seed cleaning facilities in areas where commercial facilities with specialized equipment do not exist, to encourage more small producers to enter the market.

RECOMMENDATIONS TO STRENGTHEN THE NATIVE SEED SUPPLY

The report offers an ambitious agenda for action, commensurate to the challenges facing our natural landscapes, and to the responsibility for public sector leadership of a coordinated public-private effort to build a national native seed supply.

Recommendation 1.0: The leadership of the Departments of the Interior (DOI), Agriculture (USDA), and Defense (DOD) should move quickly to establish an operational structure that facilitates sustained interagency coordination of a comprehensive approach to native plant materials development and restoration.

Recommendation 2.0: Federal land-management agencies should participate in building regional programs and partnerships to promote native plant materials development and native plant restoration, helping to establish such regional programs in areas where they do not yet exist.

Recommendation 3.0: The Bureau of Indian Affairs should work with the Inter-Tribal Nursery Council to promote and expand tribal nurseries.

Recommendation 4.0: The public agencies that purchase native seed should assist suppliers by taking steps to reduce uncertainty, share risk, increase the predictability of purchases, and help suppliers obtain stock material.

Recommendation 5.0: Federal land-management agencies should work with their regional partners to launch an outreach program to provide seed suppliers with critical tools and information.

Recommendation 6.0: The federal government should commit to an expanded research and development agenda aimed at expanding and improving the use of native seeds in ecological restoration.

Recommendation 7.0: Federal agencies and other public and private partners, including seed suppliers, should collaborate on expanding seed storage and seed-cleaning infrastructure that can be cooperatively cost-shared regionally.

Recommendation 8.0: The BLM's Seed Warehouse System needs to be expanded, particularly its capacity for cold storage, and supported by staff with up-to-date knowledge of seed science to manage the seed inventory.

Recommendation 9.0: BLM should identify and conserve locations in which native plant communities provide significant reservoirs of native seeds for restoration.

Recommendation 10.0: The Plant Conservation and Restoration Program (PCRP) should be empowered with the capacity to plan and oversee restoration and to build stocks of seed.

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