Supply of Native Seeds Insufficient to Meet the Needs of Current and Future Ecological Restoration Projects, Says New Report

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News Release | January 26, 2023

WASHINGTON — A new report from the National Academies of Sciences, Engineering, and Medicine says the insufficient supply of seeds from native plants is a major barrier to ecological restoration and other revegetation projects across the United States. The report calls for concerted action to build a more robust native seed supply and industry, especially as climate change increases the possibility of extreme weather events that often damage natural areas.

Conserving and restoring native plant communities is urgently needed in many natural areas of the U.S., particularly the millions of acres of public and private land affected by extreme wildfires, floods, drought, invasive plants, and other hazards. Native plants have coevolved with native animals in distinctive environments, unlike introduced nonnative plant species. Native plants are often more drought tolerant than nonnatives and are a foundation for native biodiversity in ecosystems. When areas are damaged, agencies such as the Bureau of Land Management seek out native seeds to restore plant populations and stabilize ecosystems. In 2020 alone, BLM field offices purchased about 1.5 million pounds of seed to use in areas affected by wildfires.

The current insufficient supply of native seeds means that restoration efforts frequently substitute with nonnative varieties or native seeds sourced from climatically different environments than where they will be planted, says the report. Seeds need to be genetically adapted to the climate where they are used, which requires regional collection and agricultural cultivation of future seed supply. Native seeds can be obtained from natural areas, but judicious harvesting is required so native plant populations are not depleted. There are some companies that produce large volumes of native seeds, but they face challenges such as a lack of the stock (starter) seed from appropriate locations, production risks, and inconsistent demand from purchasers.

“As the vulnerabilities of humans, wildlife, and critical ecosystem services to disruptions continue to grow, the need for ecological restoration in the 21st century will continue its trajectory toward a previously unmatched scale,” said Susan P. Harrison, distinguished professor in the department of environmental science and policy of the University of California, Davis, and chair of the committee that wrote the report. “A limited supply of native seeds and other native plant materials is a widely acknowledged barrier to fulfilling our most critical restoration needs. Our recommendations represent an ambitious agenda for action, commensurate to the challenges we face.”

Unifying Federal Native Seed Efforts

In 2002, at the request of Congress, the U.S. Department of the Interior and U.S. Department of Agriculture developed a plan for a native seed supply, but the last two decades have shown that the plan needs to be accelerated, the report says. The leadership of the departments of the Interior, Agriculture, and Defense should move quickly to strengthen the supply of native seeds and foster a native seed industry that better meets the needs of producers and consumers by shifting to a focused interagency approach, the report recommends. These efforts could focus on a variety of activities, such as developing a national policy for native seed collection, reviewing policy guidance for use of native seeds on public lands, serving as a focal point for communication and data sharing, and developing best practices for seed storage and cultivation.

Sharing Risk with Native Seed Suppliers

The report also recommends that 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 seed. This includes proactively restoring millions of acres of U.S. public land that are considered ecologically impaired and creating annual purchase targets, rather than only purchasing after a disaster. Agencies should also contract for seed purchases before seed production begins and use realistic timelines in contracts. USDA should consider providing a premium to landowners who use locally adapted seed types in conservation programs.

Building Regional Programs

Federal land-management agencies should participate in building regional programs to promote native plant development and restoration, and help establish these programs in areas where they do not exist. Regional programs could meet the specific seed needs of each region by developing a list of priority species and by monitoring, collecting, and curating stock seed. Regional partners should work directly with suppliers to help them anticipate future needs, provide growers with resources and tools, share information, and coordinate seed collection protocols to protect wild populations.

The report also recommends:

- **BLM should identify and conserve natural native plant communities** that provide significant reservoirs of native seeds for restoration. Natural plant communities provide the ultimate sources of native seeds for ecological restoration, the report says. Public land agencies should use protective designations to actively recognize and protect them for future restoration needs.
- **The Bureau of Indian Affairs should promote and expand tribal nurseries** in partnership with the Inter-Tribal Nursery Council. The report highlights the importance of involving tribal leadership in planning, conducting, and applying results from projects related to seed production and conservation, native plant restoration, and ecosystem management on tribal land.
- **Federal agencies and partners should collaborate on seed infrastructure** for storage and seed cleaning that can be cooperatively cost-shared regionally to reduce costs and increase access with fluctuating needs. Additional storage can improve the availability of seed ready for restoration when urgent but hard-to-predict needs arise. The report says the BLM's Seed Warehouse system also needs to be expanded, especially its capacity for cold storage.
- **The federal government should commit to an expanded research agenda** aimed at expanding and improving the use of native seeds in ecological restoration. The report says this should include supporting basic research, building technical knowledge, and adaptive planning. A more uniform system for developing "seed zones" would streamline communication between buyers and suppliers about the suitability of seeds for different regions.

The report completes the second and final stage of the study undertaken by the Committee on an Assessment of Native Seed Needs and Capacities and sponsored by the U.S. Department of the Interior's Bureau of Land Management.

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