

Researchers: A shortage of native seeds is slowing land restoration across the US

March 28 2023, by Julia Kuzovkina and John Campanelli



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Spring is planting time for home gardeners, landscapers and public works agencies across the U.S. And there's rising demand for [native plants](#)—species that are genetically adapted to the specific regions where

they are used.

Native plants have evolved with local climates and soil conditions. As a result, they generally require less maintenance, such as watering and fertilizing, after they become established, and they are hardier than non-native species.

Many federal, state and city agencies [rank native plants as a first choice](#) for restoring areas that have been disturbed by natural disasters or human activities like mining and development. Repairing damaged landscapes is a critical strategy for [slowing climate change and species loss](#).

But there's one big problem: There aren't enough native seeds. This issue is so serious that it was the [subject of a recent report](#) from the National Academies of Sciences, Engineering and Medicine. The study found an urgent need to build a native [seed](#) supply.

As [plant scientists](#) who have worked on [ecological restoration projects](#), we're familiar with this challenge. Here's how we are working to promote the use of [native plants](#) for [roadside restoration in New England](#), including by building up a seed supply network.

The need for native plants

Many stressors can damage and degrade land. They include natural disasters, such as wildfires and flooding, and human actions, such as urbanization, energy production, ranching and development.

Invasive plants [often move into disturbed areas](#), causing further harm. They may [drift there on the wind](#), be excreted by [birds and animals that consume fruit](#), or be [introduced by humans](#), unintentionally or deliberately.

Ecological [restoration](#) aims to bring back degraded lands' native biological diversity and the ecological functions that these areas provided, such as sheltering wildlife and soaking up floodwater. In 2021, the United Nations launched the [U.N. Decade on Ecosystem Restoration](#) to promote such efforts worldwide.

Native plants have many features that make them an essential part of healthy ecosystems. For example, they provide long-term defense against invasive and noxious weeds; shelter local pollinators and wildlife; and have [roots that stabilize soil](#), which helps reduce erosion.

Restoration projects require vast quantities of native seeds—but commercial supplies fall far short of what's needed. Developing a batch of seeds for a specific species takes skill and several years of lead time to either [collect native seeds in the wild or grow plants to produce them](#). Suppliers say one of their biggest obstacles is unpredictable demand from large-scale customers, such as government and tribal agencies, that don't plan far enough ahead for producers to have stocks ready.

Restoring roadsides in New England

Most drivers give little thought to what grows next to highways, but the wrong plants in these areas can cause serious problems. Roadsides that aren't replanted using ecological restoration methods may erode and be taken over by invasive weeds. Ecological restoration provides effective erosion control and better habitat habitats for wildlife and pollinators. It's also more attractive.

For decades, state transportation departments across the U.S. used non-native cool-season turfgrasses, such as fescue and ryegrass, to restore roadsides. The main benefits of using these species, which grow well during the [cooler months of spring and fall](#), were that they grew fast and provided a quick cover.

Then in 2013 the [New England Transportation Consortium](#)—a research cooperative funded by state transportation agencies—commissioned our research team to help the states transition to native warm-season grasses instead. These grasses [grow well in hot, dry weather](#) and need less moisture than cool-season grasses. One of us, John Campanelli, developed the [framework for selecting plant species](#) based on conservation practices and identified methods for establishing native plant communities for the region.

We recommended using warm-season grasses that are native to the region, such as [little bluestem](#), [purple lovegrass](#), [switchgrass](#) and [purpletop](#). These species required less long-term maintenance and less-frequent mowing than the cool-season species that agencies had previously used.

To ensure sound conservation practices, we wanted to use seeds produced locally. Seeds sourced from other locations would produce grasses that would interbreed with [local ecotypes](#)—grasses adapted to New England—and disrupt the local grasses' gene complexes.

At that time, however, there was no reliable seed supply for local ecotypes in New England. Only a few sources offered an incomplete selection of small quantities of local seeds, at prices that were too expensive for large-scale [restoration projects](#). Most organizations carrying out [ecological restoration](#) projects purchased their bulk seeds mainly from large wholesale producers in the Midwest, which introduced non-local genetic material to the restoration sites.

Improving native seed supply chains

Many agencies are concerned that lack of a local seed supply could limit restoration efforts in New England. To tackle this problem, our team launched a project in 2022 with funding from the New England

Transportation Consortium. Our goals are to increase native plantings and pollinator habitats with seeds from local ecotypes, and to make our previous recommendations for roadside restoration with native grasses more feasible.

As we were analyzing ways to obtain affordable native seeds for these roadside projects, we learned about work by [Eve Allen](#), a master's degree student in city planning at the Massachusetts Institute of Technology. For her thesis, Allen used supply chain management and social network analysis to identify the best methods to [strengthen the native seed supply chain network](#).

Her research showed that developing native seed supplies would require cooperative partnerships that included federal, state and local government agencies and the private and nonprofit sectors. Allen reached out to many of these organizations' stakeholders and established a broad network. This led to the launch of the regional Northeast Seed Network, which will be hosted by the Massachusetts-based [Native Plant Trust](#), a nonprofit that works to conserve New England's native plants.

We expect this network will promote all aspects of native seed production in the region, from collecting seeds in the wild to cultivating plants for seed production, developing regional seed markets and carrying out related research. In the meantime, we are [developing a road map](#) for new revegetation practices in New England.

We aim to build greater coordination between these agencies and seed producers to promote expanded selections of affordable native seeds and make demand more predictable. Our ultimate goal is to help native plants, bees and butterflies thrive along roads throughout New England.

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