



# Initiating Seed Production for Effective Establishment of Native Plants on Roadsides in New England

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## ABSTRACT

### Problem Statement

Since 2013, the Federal Highway Administration has recommended that DOTs use native plants for roadside revegetation because they provide sustainable environmental benefits, promote ecological health, and can provide economic benefits through reduced maintenance and better adaptation to local conditions. However, after decades of revegetating roadsides using turfgrass seed, New England DOTs have struggled to transition to more complicated practices of establishing and maintaining biodiverse native plant communities. In addition, since roadside native vegetation will significantly impact existing native plants, DOTs want to use locally sourced and grown native species seed, which currently does not exist on a scale large enough for DOT use.

### Methods

- Focus groups of DOT employees to determine how to help DOTs adopt new practices.
- Demonstration plots as case studies to determine potential challenges DOTs might encounter during implementation.
- Communication with the project Technical Committee to translate research to user-friendly language.
- Roundtables with stakeholders who use and produce native plant material to coordinate and accelerate regional native seed production.
- Literature review, common garden research, and consultation with experts who research native plants to help with species selection and development of seed mixes DOTs could use for various roadside conditions.

### Results

A final report was formatted into a user-friendly manual that DOT personnel could consult to properly implement, accelerate adoption, and explain the benefits of roadside revegetation practices using native plants.

## DATA

- Focus groups with DOT personnel found New England DOTs had made little widespread progress using native seed to revegetate roadsides. However, CT DOT increased reduced mowing practices, established pollinator areas, and has acquired three no-till drills to meet the requirements of a 2016 state pollinator bill. CT DOT practices provide a model of gradual transition to new practices for other DOTs
- The Technical Committee wanted seed mixes ecologically appropriate for various roadside conditions. They also urged communication of research findings in language accessible to laypersons rather than to scientists.
- Demonstration plots revealed that DOT challenges varied under each state's regulations and each site's conditions. CT had an infestation of foxtail that had to be treated for successful establishment. MA had herbicide regulations that took time and effort to meet. The VT site had an elevated soil pH.
- Research into available regional native plant material revealed that seed mixes required flexibility to ensure that DOTs could create ecologically effective suites of native plant combinations.
- Roundtables with producers of regional seed revealed that they did not increase seed production because they did not know which species and how much volume were in demand.

## ANALYSIS

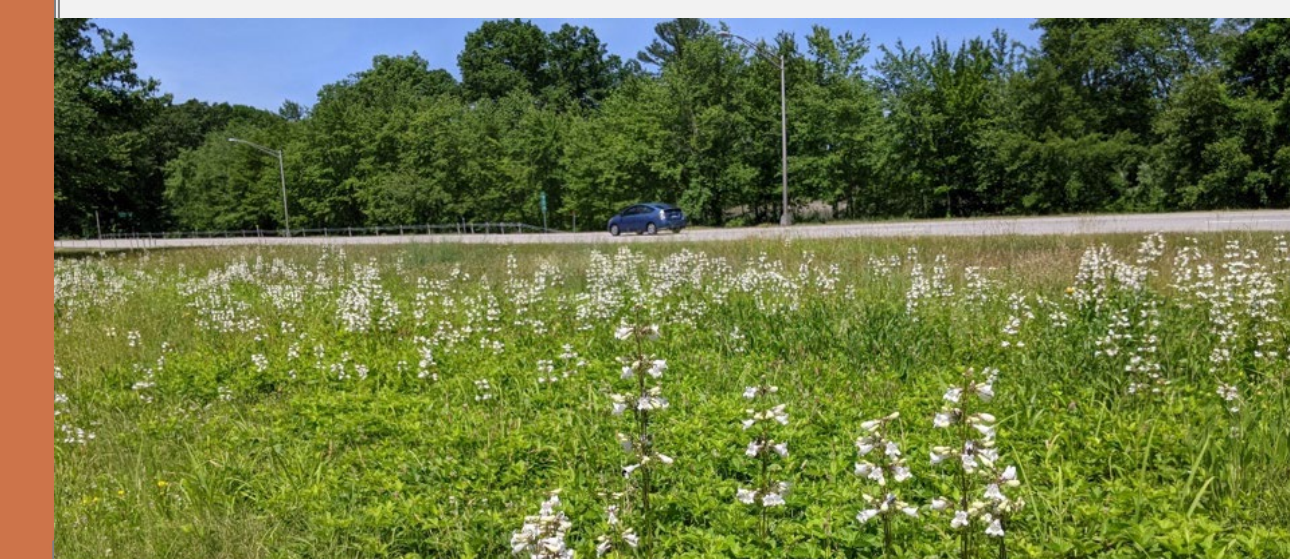
- Sortable Excel tables with multiple native forbs for four bloom periods – late spring, early summer, mid-summer, and late summer – allow for sequential blooms that provide pollinators continual floral resources.
- Effective roadside native plant community establishment requires site analysis and knowledge of state regulations months before seeding to ensure enough time to meet and overcome potential hurdles.
- The VT demonstration site revealed two important data: a 50% increase in the quantity of native seed helps counter high pH levels and late summer seeding allows enough time for seedlings to germinate before frost.
- The incorporation of native woody plants in roadside design provides important ecosystem services, including resources for pollinators during times when herbaceous species rarely bloom, such as in early spring.
- Native seed producers grow enough species that originate from the Northeast region that genetically appropriate seed species can comprise a significant portion of any seed mix.

## CONCLUSIONS

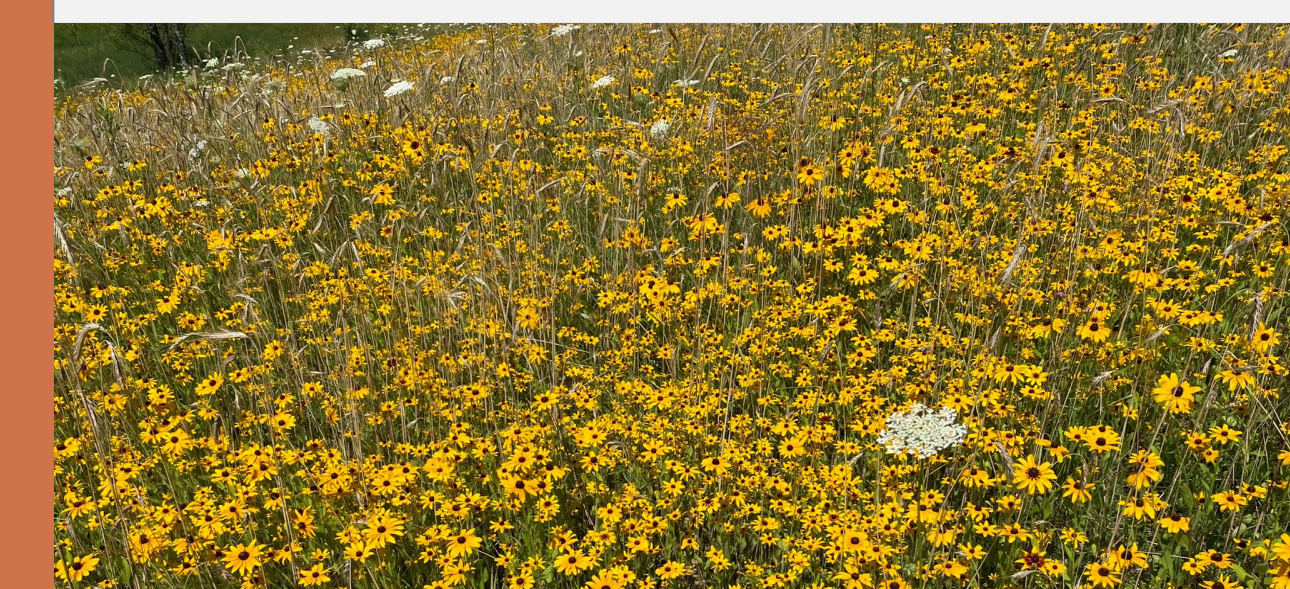
- DOTs will be one of the largest buyers of locally produced native seed. Agencies would benefit from developing lines of communication with local seed producers so that producers can feel comfortable investing in growing seed in volumes that can meet the needs of the DOTs.
- Since roadsides revegetated with native plant communities provide significant ecosystem services, DOTs would benefit from designing corridors for wildlife by coordinating reduced mowing of the roadsides that connect native plant communities created from seeding
- The Iowa DOT has a successful model for using native plants to revegetate roadsides that the New England DOTs should consider using. Agencies could designate specialists to consult with staff on seeding plans, development of seed mixes, subcontractor responsibilities, effective ways to meet state regulations, solutions for overcoming challenging site conditions, inspection of seeded sites to determine successful establishment, and timing and manner of reduced mowing.



Fall seeding of MA demonstration site.



Foxglove beardtongue arose along CT Rte. 6 from dormant seed banks as a result of conservation mowing.



Black-eyed Susan are the first species to flower in spring at the VT demonstration site after fall seeding.

## ACKNOWLEDGMENTS

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