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Report Briefing:

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

Feb. 8, 2024

Seed Central, UC Davis

*Dr. Susan Harrison, UC Davis, Committee Chair*

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# An Assessment of Native Seed Needs and the Capacity for their Supply: *Final Report*

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## Biden-Harris Administration Announces \$18 Million from Investing in America Agenda to Enhance Native Seed Supply, Boost Climate Resilience

*Investment helps advance Department's new National Seed Strategy Keystone Initiative*

pressreleases/  
tration-announces-  
america-agenda-en

w link.

08/2024

Date: Wednesday, Feb

Contact: [Interior Pres](#)

# National Academies Study Committee

## Statement of task:

- Assess uses of and demand for native plant materials ('seeds')
- Assess the native seed supply chain
- Recommend ways to increase the native seed supply
- Nationwide, with a Western US focus

*Interim report Fall 2020, final report Jan. 2023*

*Sponsored by U.S. Bureau of Land Management*

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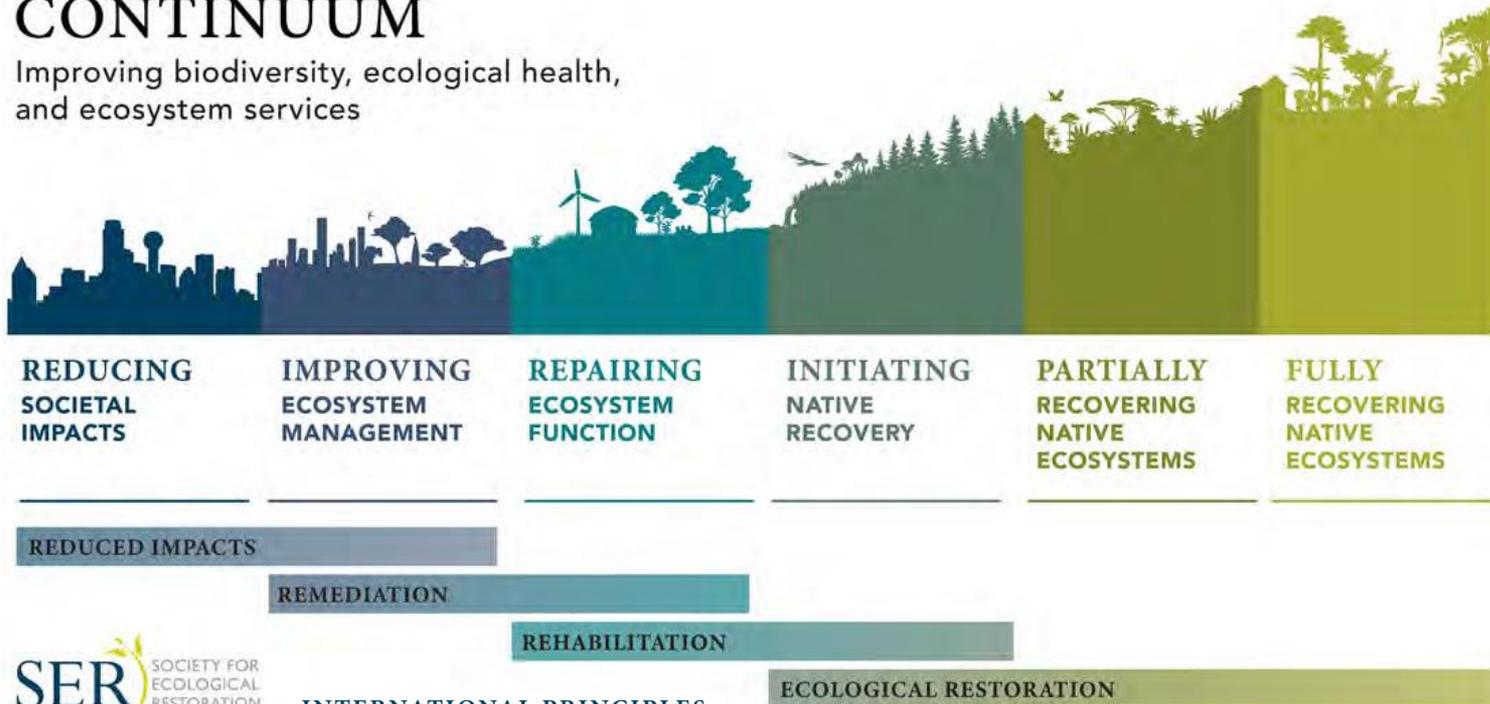
### ***National Academies Staff:***

Robin Schoen, Krisztina Marton, Jenna Briscoe, Sarah Kwon and Samantha Sisanachandeng

# Restoration of degraded land: An ever-growing national need

## THE RESTORATIVE CONTINUUM

Improving biodiversity, ecological health,  
and ecosystem services



INTERNATIONAL PRINCIPLES  
AND STANDARDS FOR THE  
PRACTICE OF ECOLOGICAL  
RESTORATION

SECOND EDITION: November 2019

# Native seed: the basis of restoration

## NATIONAL SEED STRATEGY FOR REHABILITATION AND RESTORATION

### VISION

The right seed in the right place at the right time.

### MISSION

To ensure the availability of genetically appropriate seed to restore viable and productive plant communities and sustainable ecosystems.



for Rehabilitation and Restoration

*Making Progress*



# Native Seed: the Basis of Restoration



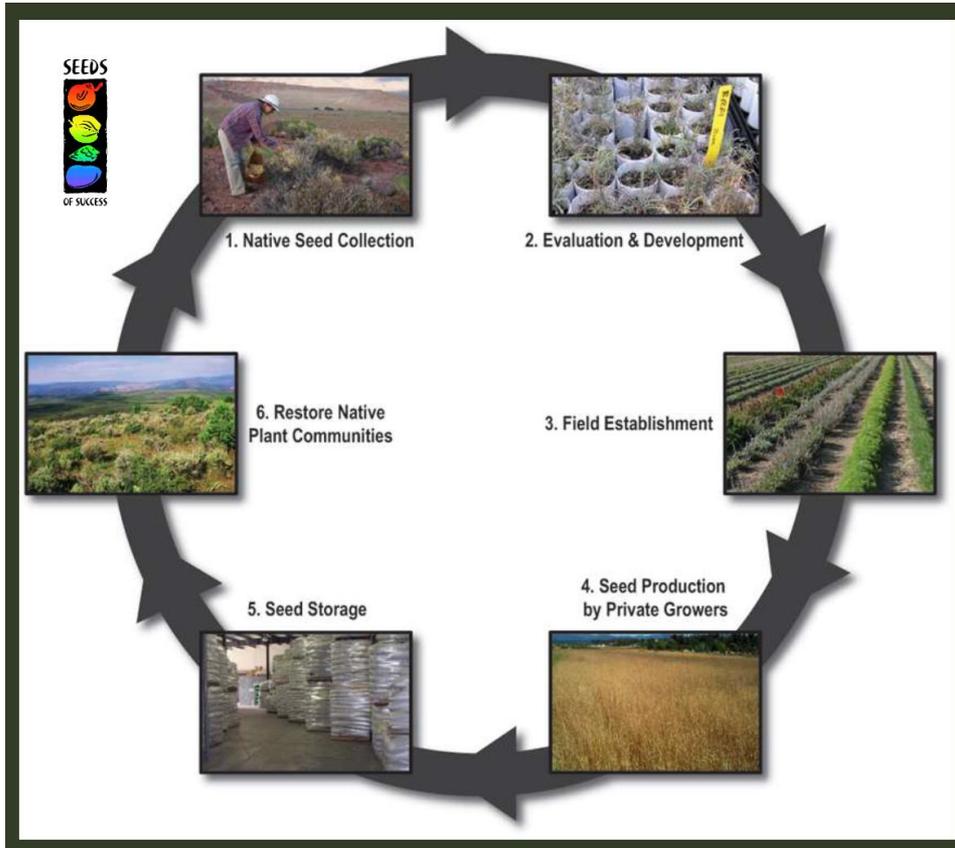
**Identification of seed needs and availability of genetically appropriate seed** ✓

**Research to improve seed production and ecosystem restoration**

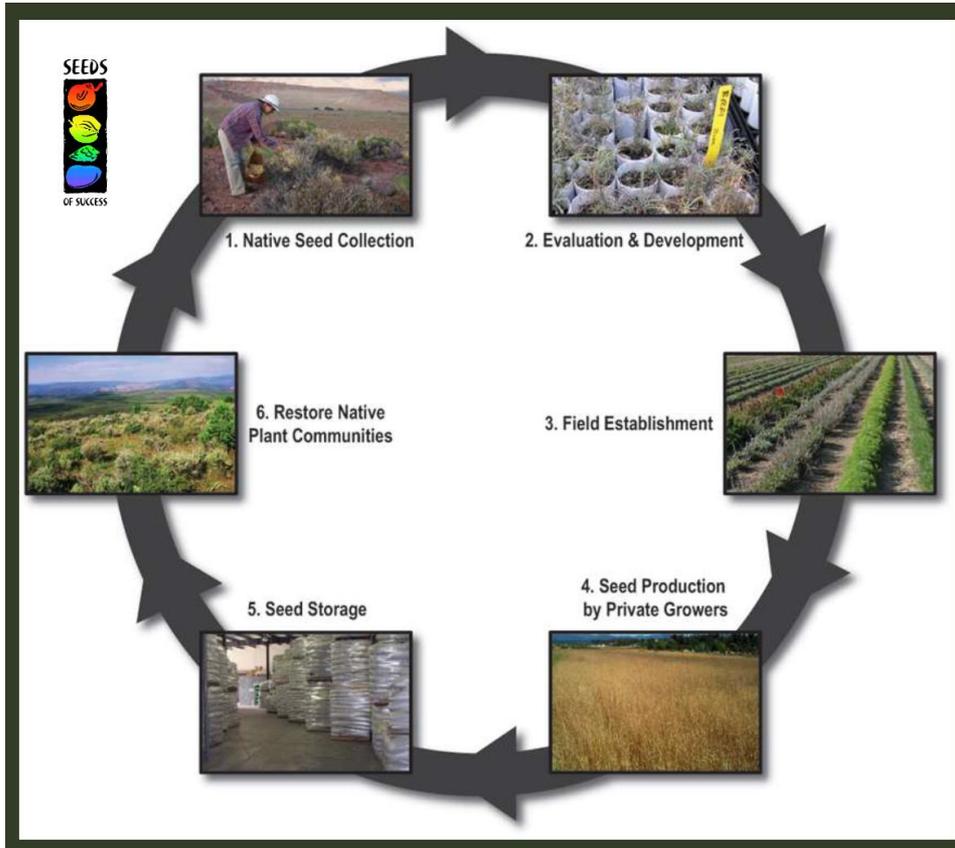
**Development of decision support tools for ecological restoration**

**Communication and outreach**

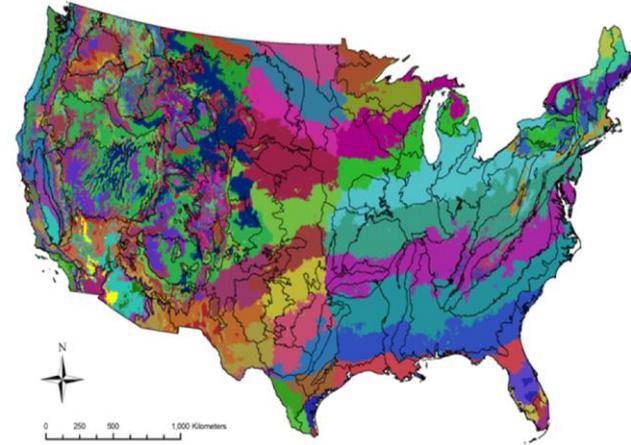
# Native seed: a time- and knowledge-demanding product



# Native seed: a time- and knowledge-demanding product



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



8-1a Provisional seed transfer zones (colored areas) developed by the USDA Forest Service

“genetically appropriate”

- native to that region
- from the same “seed zone”
- not altered by cultivation

# In a nutshell...



# Presenters and Advisers

Molly Anthony, Bureau of Land Management (BLM)  
Emergency Stabilization and Rehabilitation Program  
Kevin Badick, The Nature Conservancy (TNC) Nevada  
Jerry Benson, BFI Native Seeds  
Anne Bradley, TNC New Mexico  
William Carromero, US Forest Service (USFS)  
Jim Dobrowolski, USDA National Institute of Food and  
Agriculture  
Greg Eckert, National Park Service  
Cristina Eisenberg, Oregon State University  
John Englert, US Department of Agriculture (USDA),  
Natural Resources Conservation Service (NRCS)  
Andy Ernst, Ernst Conservation Seeds  
Vicky Erickson, USFS Pacific Northwest  
Ricardo Galvan, BLM Seed Warehouse  
Ken Greave, Minnesota Dept of Transportation  
Anne S Halford, BLM Idaho  
Bonnie Harper-Lore, Federal Highway Administration (retired)  
Kayla Herriman, USFS Bend, Oregon Extractory  
Rick Iovanna, USDA NRCS  
Laura Jackson, Tallgrass Prairie Center (TPC),  
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Bart Johansen-Harris, Defenders of Wildlife  
Olga Kildesheva, TNC, Oregon  
Ed Kleiner, Comstock Seed, LLC  
John Krouse, Maryland Dept of Transportation  
Sarah Kulpa, US Fish and Wildlife Service  
Justin Meissen, TPC/UNI  
Peggy Olwell, BLM Plant Conservation Program  
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Kristine Nemec, TPC/UNI  
Adrienne Pilmanis, BLM Colorado Plateau  
Keith Pawelek, Texas Native Seeds  
Gord Pearse, Bruce Seed Farm  
Charles Perring, Arizona State University  
Jeremy Pinto, USFS / US Tribal Nursery Council  
Monica Pokorny, USDA NRCS  
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Vera Smith, Defenders of Wildlife  
Carol Spurrier, USFS Headquarters  
Barry Schrumppf, OSU/Oregon Seed Association  
Dustin Terrell, Buffalo Brand Seed, LLC  
Gil Waibel, Bayer Crop Sciences

# Survey and Interview Respondents

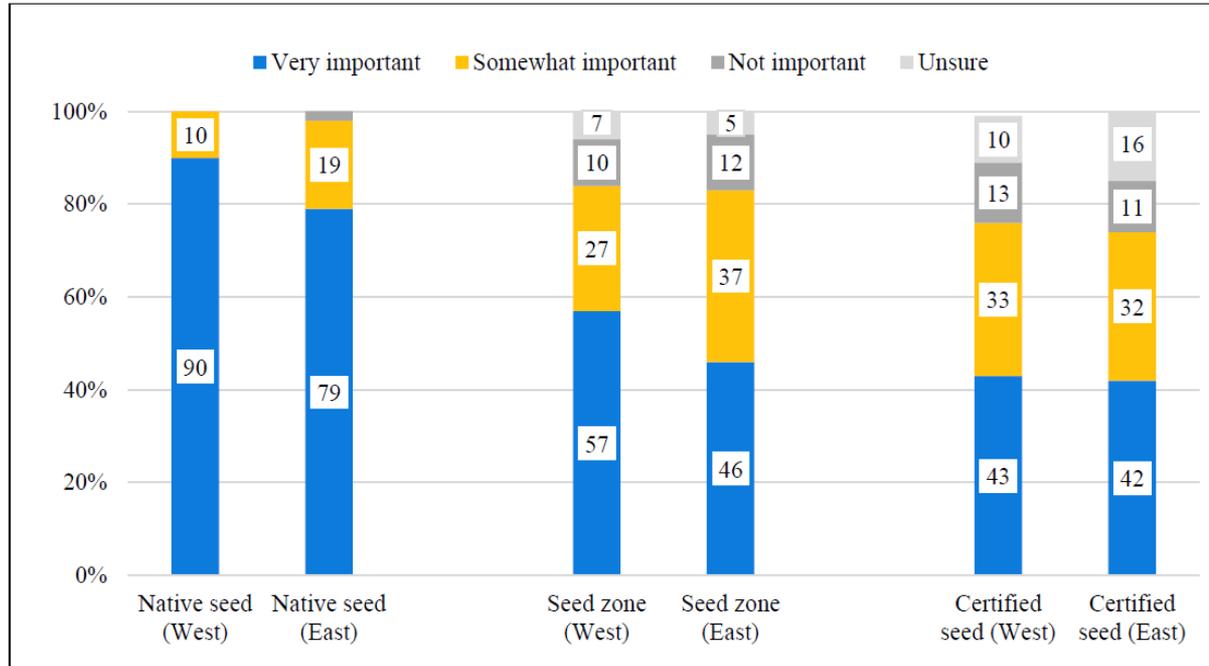
- Native Seed Producers and Suppliers (223)
- State Departments of Natural Resources, Forestry, Fish & Wildlife, Parks, Transportation (97)
- Department of Defense (Armed Services), National Park Service, Bureau of Land Management, US Fish and Wildlife Service, and US Forest Service (23)

# Examples of our findings: State User Survey

**TABLE 4-1** State Departments' Use of Native Seed or Plant Materials for Specific Purposes

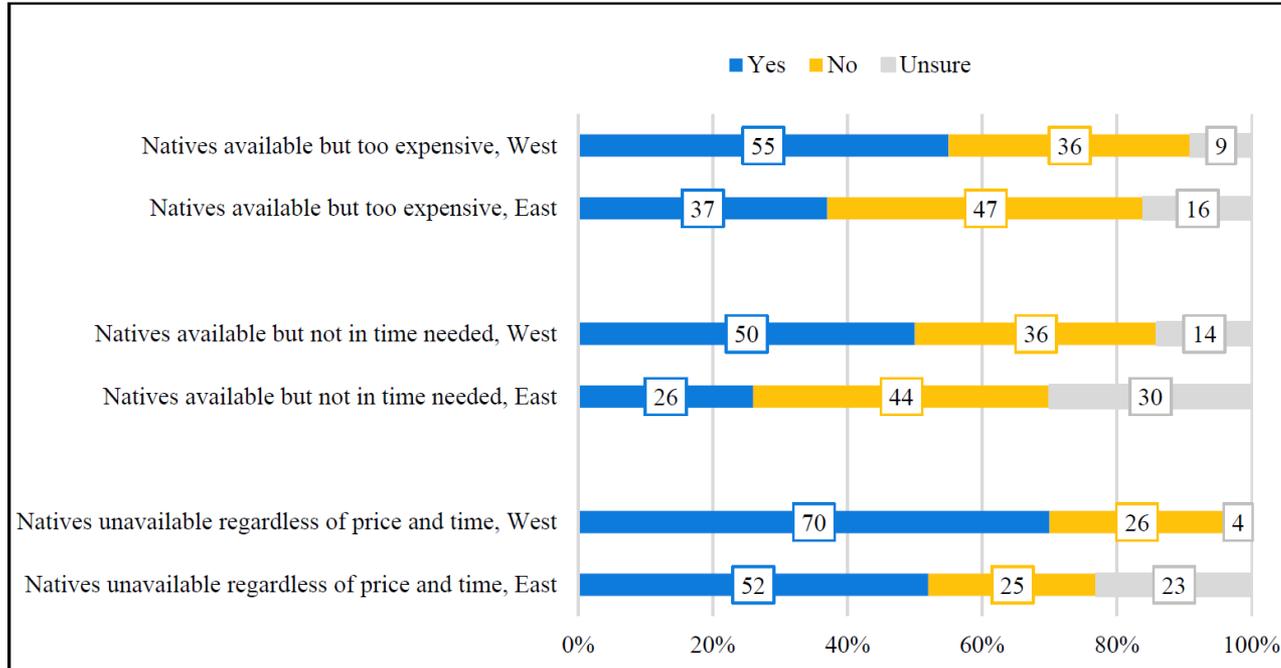
<b>Purpose of use</b>	<b>Percent of departments</b>
Creation or restoration of wildlife habitat (other than pollinator habitat)	87
Pollinator habitat projects	83
Stream erosion mitigation or restoration	80
Restorative activity on land in a wilderness or natural area	75
Soil protection	72
Invasive species suppression	59
Roadside seeding	67
Landscaping	61
“Green” infrastructure	49
Roadside maintenance	47
Natural disaster recovery	37
Another purpose	31

# Examples of our findings: State User Survey



**FIGURE 4-8** Importance of certain seed attributes to state departments, by region.

# Unmet Demand For Native Seed is Widespread (State user survey)

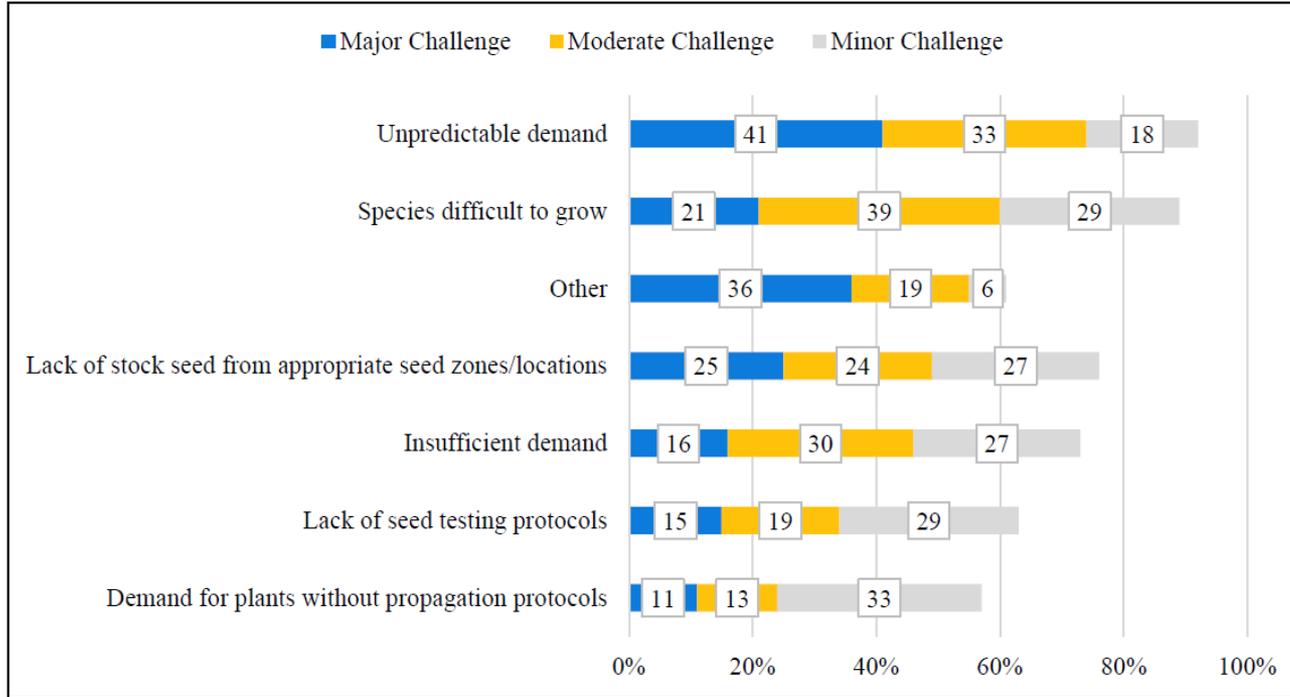


**FIGURE 4-12** Typical reasons for substituting with non-natives, by region.

# Examples of our findings: Federal User Semi-Structured Interviews

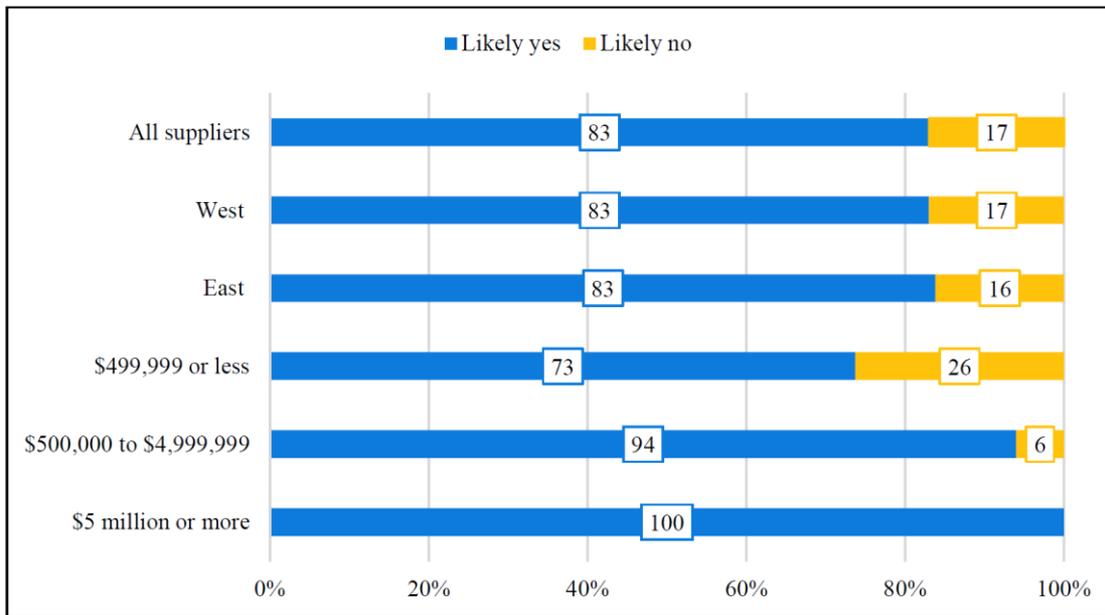
- There is a need for expertise in botany and ecology to inform seed selection.
- There is a benefit to having a planning horizon of 3 to 5 years, which enables seed to be acquired (or wild collected and increased) and projects implemented according to plans.
- There is some ambiguity about the definition of “local” when purchasing seed.

# Examples of our findings: Supplier Survey



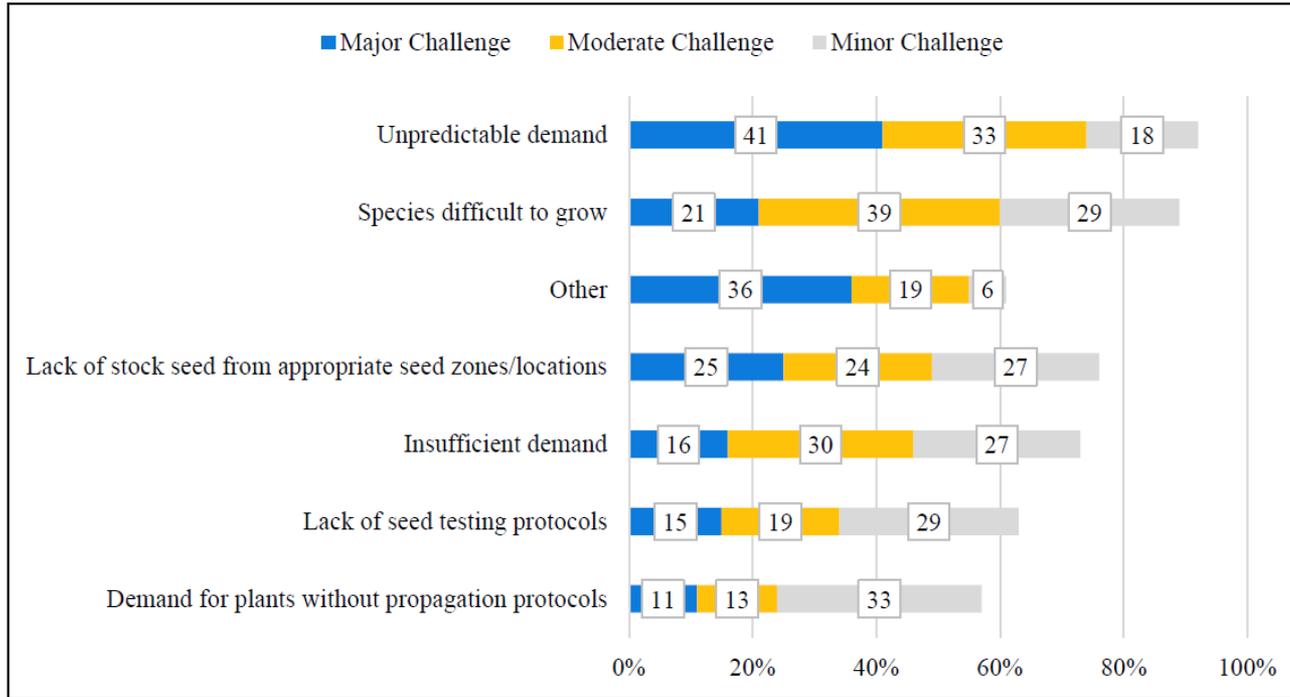
**FIGURE 7-16a** Challenges faced by suppliers of native seed

# Latent Supply Capacity is Also Widespread (Supplier survey)



**FIGURE 7-19** Suppliers' ability to grow and sell more plants if they were to anticipate higher demand, by region and annual sales.

# More Stable Demand & Technical Support would go a long way (Supplier survey)



**FIGURE 7-16a** Challenges faced by suppliers of native seed

# Recommendation 1: Federal Interagency Leadership

**The DOI, USDA, and DOD should establish a coordinating structure for native plant materials development and restoration.**

- Coordinate across regions and agencies

***Policies:*** seed collection, seed use, seed sharing

***Priority setting:*** seed, infrastructure, policy, data, research, restoration needs

***Initiation:*** of new regional programs

***Support:*** training, techniques, adaptive management, problem solving

***Information:*** data collection, analysis, reports

***Communication:*** consultations, conferences, reports, public engagement

- \* National Interagency Fire Center as a possible model

# Recommendation 2: Regional Partnerships

## Federal land management agencies should participate in building regional partnerships for native plant restoration

Goal: a nationwide network of regional programs, helped by the central coordinating platform

Regional programs vary in size, structure, and membership

Federal and nonfederal partners, seed banks, botanic nurseries, universities, native seed industry

**Regional priorities:** Develop lists of essential species

**Scenario planning:** Estimate present and future needs

**Curate stock seed:** Seed collections, seed banking, increases, releases

**Share information:** Monitor regional seed use practices and outcomes



# Recommendation 3: Supporting Tribal Efforts

**The Bureau of Indian Affairs should work with the Inter-Tribal Nursery Council to promote tribal nurseries.**

- Support the interest of many tribes to establish native plant nurseries
- Promote use of traditional ecological knowledge in restoration
- Promote restoration partnerships involving tribal leadership
  - Diné Native Plant Program, Fort Belknap Native Seed and Restoration Program, Tribal Native Plant Materials Program Development Plan for the Confederated Tribes of Grand Ronde

# Recommendation 4: Public Sector as a Better Customer & Partner

**Public land agencies should support suppliers by becoming more reliable buyers, sharing production risks, and helping obtain stock material.**

- Plan and conduct restoration proactively on a large scale
- Establish clear policies on native seed use (reduce substitutions)
- Contract for seed purchases in advance
- Oversee responsible seed collecting
- USDA conservation programs should consider incentivizing native seed use



# Recommendation 5: Outreach to Suppliers

**Federal land agencies and their regional partners should launch outreach programs to seed suppliers.**

- Strengthen the role of the NRCS in supporting native seed suppliers
- Support information sharing on restoration outcomes
- Facilitate communication with growers



# Recommendation 6: Research and Technical Development

## **Federal agencies should support research and development on native seeds and ecological restoration.**

*Basic research:* Climate-adapted restoration, ecosystem function, traditional knowledge, economics of the seed industry

*Technical knowledge:* Seed production, maintenance of genetic integrity, seed testing, seed storage, seeding practices

*Adaptive management:* Use restoration projects as experiments to fill knowledge gaps

*Seed zones:* Work toward a national system of seed zone delineation



# Recommendation 7: Infrastructure

**Federal agencies and their partners should collaborate to expand critical infrastructure.**

*Warehouses:* Humidity-controlled seed storage is needed in all regions of the US

*Seed cleaning:* Cooperatives with specialized equipment are needed to expand the diversity of species and enable the participation of small suppliers

## Recommendations 8-10: BLM

- 8. BLM should expand and support its Seed Warehouse System as part of a shared, national program.**
  
- 9. BLM should identify and conserve native plant communities on its lands that provide significant natural reservoirs of native seeds.**
  
- 10. BLM's Plant Conservation and Restoration Program should be elevated and empowered**
  - to: build stocks of seed, oversee warehouses, provide expertise to field offices, plan restoration, track outcomes ---**

# Summary: Recommendations for the nation's seed supply

- 1: Federal Interagency Leadership
- 2: Regional Partnerships
- 3: Supporting Tribal Efforts
- 4: Public Sector as a Better Customer
- 5: Outreach to Suppliers
- 6: Research & Technical Development
- 7: Infrastructure
- 8: BLM Warehouses
- 9: BLM Lands as Seed Sources
- 10: Elevating Plant Conservation & Restoration in BLM



# Updates from BLM, May 2023:

- Implementing the National Seed Strategy is one of USDI's Keystone Initiatives, supported by Bipartisan Infrastructure Law funds
- Internal BLM proposal is being developed to use Inflation Reduction Act funds to create a new national seed warehouse focused on native plants and proactive restoration needs.
- Consultant will be hired to study the National Interagency Seed & Restoration Center proposal and develop an implementation plan (supported by BLM and USFWS BIL funds).
- BLM has submitted a legislative proposal for a separate subactivity for the Plant Conservation & Restoration Program for FY25

## Presentations on our report:

- Natural Areas Association 4-28-20 (Interim Report)
- National Academies Public Webinar 11-13-2020 (Interim Report)
- BLM Director & staff 1-17-2023
- Congressional Staffers 1-24-2023
- National Academies Public Webinar 1-26-2023
- USDA Undersecretary, Farm Production & Conservation 5-25-2023
- Council on Environmental Quality 6-22-2023
- Department of Interior 7-31-23
- Senate Energy and Natural Resources Committee 11-14-2023
- YOU 2-8-2024

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and the Capacity for Their Supply

**Final Report**

Download the Report:

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