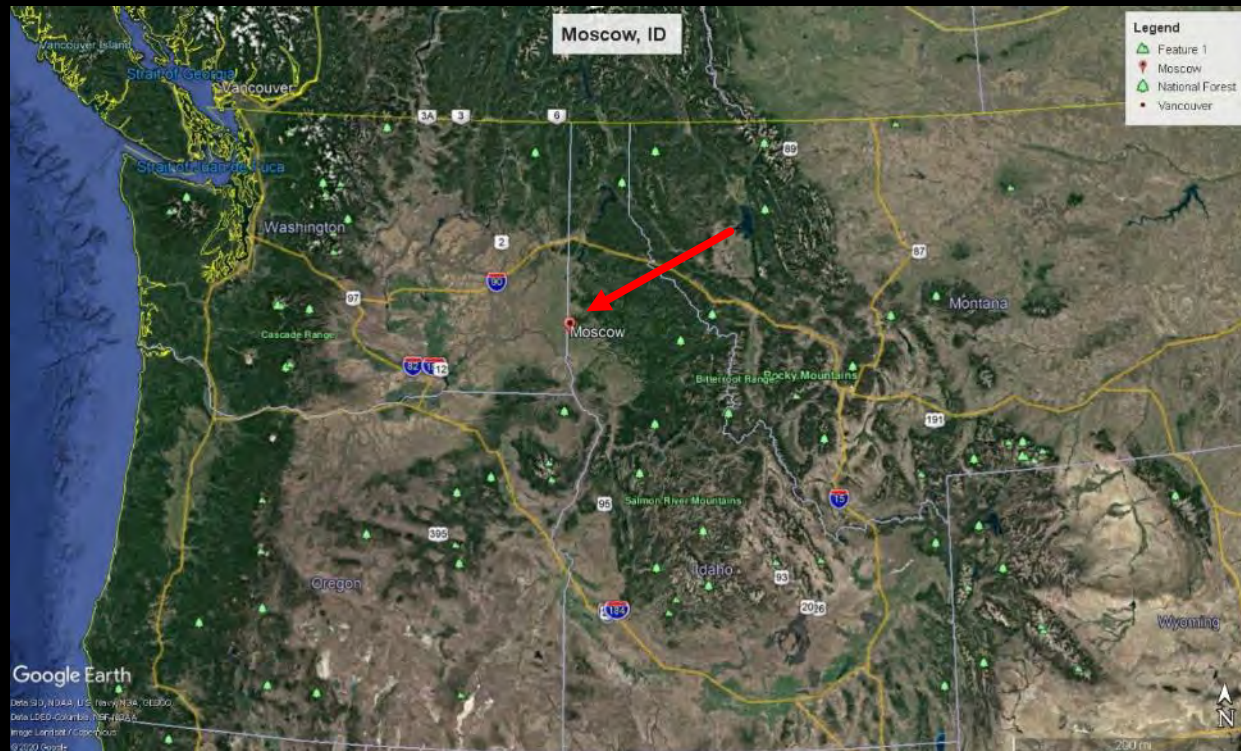


Land Acknowledgment

- Moscow Forestry Sciences Laboratory is located on the homelands of the Nez Perce (Nimiipu)



Starting a Native Plant Nursery: Challenges and Opportunities

Restoring Tribal Culture, Ecology, and Food Systems
Webinar Series, Episode 4

Your computer, somewhere, anywhere • 21 October 2020

Jeremiah R Pinto

USDA Forest Service

Rocky Mountain Research Station/
State & Private Forestry



Photo: Terry McGrath



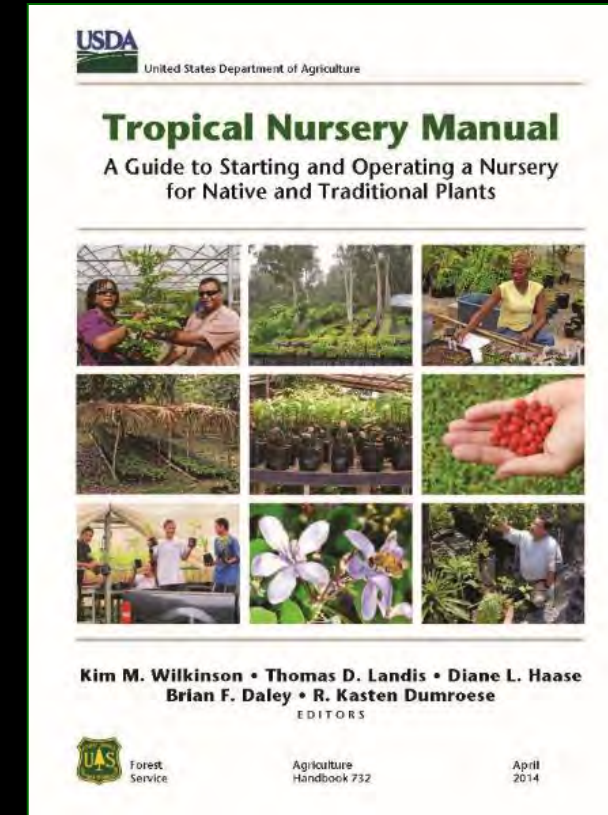
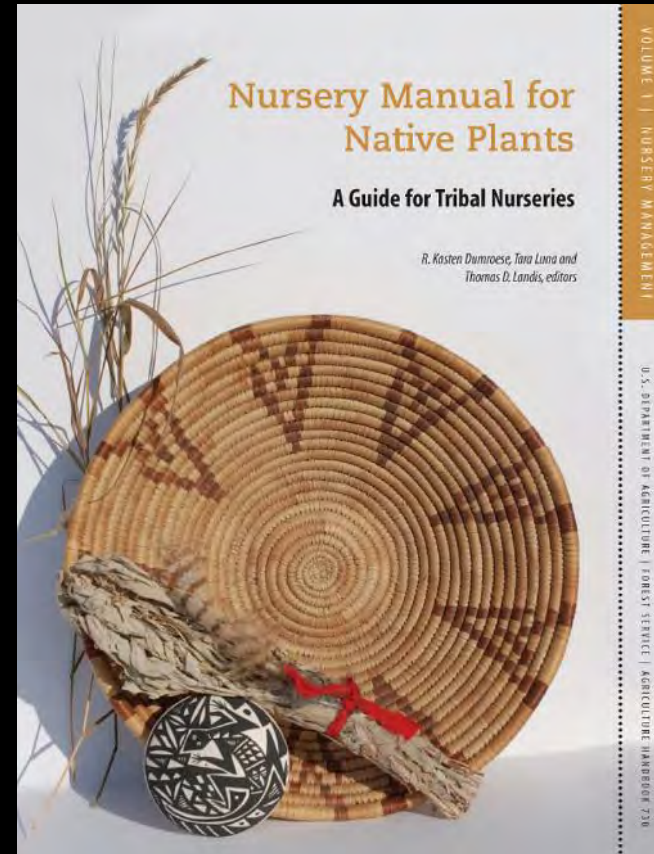
Acknowledgments

People:

- Tara Luna
- Kim M. Wilkinson
- Thomas D. Landis
- Intertribal Nursery Council Participants

Resources:

- Nursery Manual for Native Plants: A Guide for Tribal Nurseries
 - USDA Agricultural Handbook 730
- Tropical Nursery Manual
 - USDA Agricultural Handbook 732

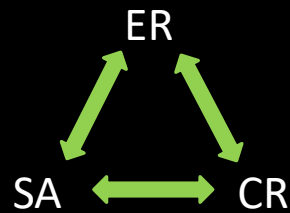


Available at: <https://rngr.net>

Why Nurseries?

Key links to:

- Ecological Restoration and Biodiversity Protection
 - Plant materials jump start succession
 - Enrich species biodiversity
- Sustainable Agriculture and Economic Resilience
 - Production of first foods
 - Agroforestry
- Cultural Renewal and Learning
 - Rekindling traditional knowledge
 - Schools and public



Jeremy Ojua, Jerry Bailey

Why is Careful Nursery Planning so Important?

- Clarify the vision and goals so that you can achieve all objectives of the nursery
- Develop a long term, sustainable program
 - You want it to be successful!
- Each step affects every other step
 - E.g. containers, irrigation, workflow, scheduling, production costs
 - Prevent costly errors
- Develop working relationships with community members, tribal resource managers, educators, other cooperating agencies

Do you need your own nursery?

Purchase Plants

Benefits

- Time and capital available for other uses
- No nursery staff needed
- More long-term flexibility
- Plants grown by supplier in large quantities may be less expensive than plants grown in small, local nurseries
- Short-term or no commitment required*

Drawbacks

- No control over growing process
- Less control over plant quality and availability
- Plants may not be adapted to local environment
- Unique needs of local clients may not be met

Start Own Nursery

Benefits

- High control over quality and availability of plants*
- Can develop local expertise on plant growing and handling
- Can use traditional or culturally appropriate methods if applicable
- Plants will be adapted to local environment
- No reliance on other individuals or organizations
- Create job opportunities

Drawbacks

- Large initial investment, capital, and time
- Long-term professional and economic commitment
- Must hire and maintain staff
- Native plant markets are notorious for year-to-year fluctuations

Define Nursery Vision or Objectives

Many factors contribute to the desired end products of the nursery (target plant)

- Direct factors
 - Inputs related to the production of target plants
- Indirect factors
 - Goals/Visions
 - Education
 - Research
 - Management
 - Economics
 - Community



Define Objectives for Nursery

Some community/ecological objectives:

- Bring the community together
- Cultural education and heritage
- Make plants available to community
- Provide employment and economic opportunities
- Restore degraded lands
- Support other tribal programs and enterprises
- Protect important cultural/natural sites



Objective: Provide Cultural Plants to Community



Camas, The Confederated Tribes of the Grand Ronde. Courtesy of Jeremy Ojua



White-root sedge, Redwood Valley Rancheria. Chuck Williams



Tule, The Confederated Tribes of the Umatilla Indian Reservation. Tara Luna

Objective: Provide Educational and Employment Opportunities

- Nursery can be used for educational purposes from elementary to college level; may determine location of nursery
- Larger scale nurseries provide additional local employment



Objective: Restore Degraded Lands

- Wetland and Riparian
- Reforestation
- Prairie
- Many more



Objective: Restore Areas of Cultural/Ecological Importance



Objective: Conserving Diversity



Species inhabiting rich fen wetlands in northern Wisconsin and Minnesota

- Special habitats and plant populations may require conservation or special management to ensure that habitat conditions remain favorable for the persistence of rare species.

Objective: Support Other Tribal Programs and Efforts

- Tribal Natural Resource Program (forestry, wetlands protection, water resources, etc.)
- Cultural Resource Program
- Community outreach and educational programs (short courses, nutrition and health, etc.)
- Community College, Secondary and Primary Schools
- Community Service Program
- Casino, Tribal Offices, Home Landscaping
- Greater Surrounding Area
- Sustainable Agriculture

Objective: Provide Source of Native Landscape Material

- Provide community and surrounding area with locally grown native plants for landscaping tribal enterprises, office grounds, individual homes, and greater surrounding area



Jeremiah Pinto, Tara Luna, Kas Dumroese

Assessing Community Needs

- Species the nursery is capable of growing
- Types of environments where plants will be outplanted (home, community access, restoration sites)
- Requirements for species (seed source, material use)
- Size and age of nursery stock
- Season of planting or usage
- Quantities
- Distance people will travel to obtain plants
- Shipping distances to restoration sites

Example: Redwood Tribe: Cultural Uses

- Whiteroot sedge (basketry plant)
- Harvest begins 1 yr after planting
- Material is harvested in spring months
- Community plots provide sustainable quantities of plant materials for weavers
- Community plots (0.25 acres) provide easy, short distance access for basket makers, elders
- Near Central California wetland restoration sites



Example: Salish-Kootenai Tribe, Restoration

- Collect local seed sources of forest and riparian native plants
- Offer different stock types depending on restoration site
- Plan and ship around spring and early fall planting window
- Quantities: Large scale restoration projects
- Centrally located in western Montana



Step 0: Assessing Feasibility

Diné Native Plants Program

- Native Plants Needs Assessment (2018)
 - Two surveys: Community members and Navajo Nation agencies
 - Full Report:
https://www.nndfw.org/nnhp/docs_reps/NNPP_Feasibility_Assessment_Report.pdf
- Priority species list



Gene Aker



Diné Native Plants Program: Navajo Nation Native Plant Needs and Feasibility Assessment



Jesse Mike¹, Kelsey Jensen¹, Nora Talkington²

December 2018



Step 1: Incorporate Objectives Into Nursery Planning and Design

With regards to location:

- access to schools
- planting sites
- community
- highway for delivery and shipment needs)
- Emergencies
 - Plants or people



Step 2a: Assessing Resources and Costs

- Financial Resources (grants, other tribal programs, revenue sources)
 - Short vs. long term
- Research and develop initial start-up costs and for 5 year working plan
- Human Resources (managerial, labor, support services)
 - Full-time, part-time, seasonal
- Identify key employees for nursery, labor pool, administrative program
- Market Analysis (establish a client base)
 - Cost per plant
 - Cost per square foot



Step 2b: Assessing Personnel, Labor, & Admin

- Identify department or program that will administer the nursery
- Identify key personnel: grant administrator, payroll and purchases, nursery manager, construction, repair and maintenance, propagator/grower
 - Qualifications and experience are critical
- Labor: seasonal, fulltime



Step 3: Starting with a Small Pilot Nursery?

- Assess Feasibility
- Assess uses and applications of a larger nursery
- Provides time to develop larger nursery as demand for plants and services increase
- Serves as training resource for larger nursery and other tribal cultural and natural resource programs
- Provides time for research and refinement of plant material production
- Lower financial and resource risk at initial stages

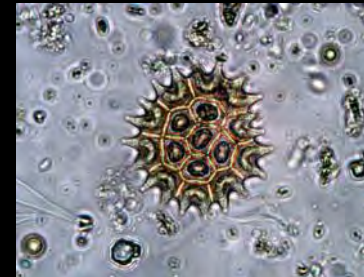
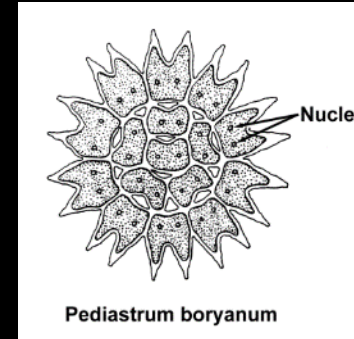
Selecting Location of Small Pilot Nursery

- Community colleges and local schools are ideal locations for small pilot nurseries
- The pilot nursery can continue to be a training and education resource for community, even after the larger nursery has become operational



Step 4: Selecting the Nursery Location

- Access to Quality, Affordable, Reliable Water
- Adequate Microclimate Conditions
 - Unobstructed Solar Access
 - Wind Protection (reduced energy use)
- No Existing Environmental Concerns
 - Soil (quality, drainage, texture, etc.)
- Inexpensive and Reliable Energy
- Easy Access for Staff, Community, Clients
- No Regulatory Concerns
- Gentle or level topography

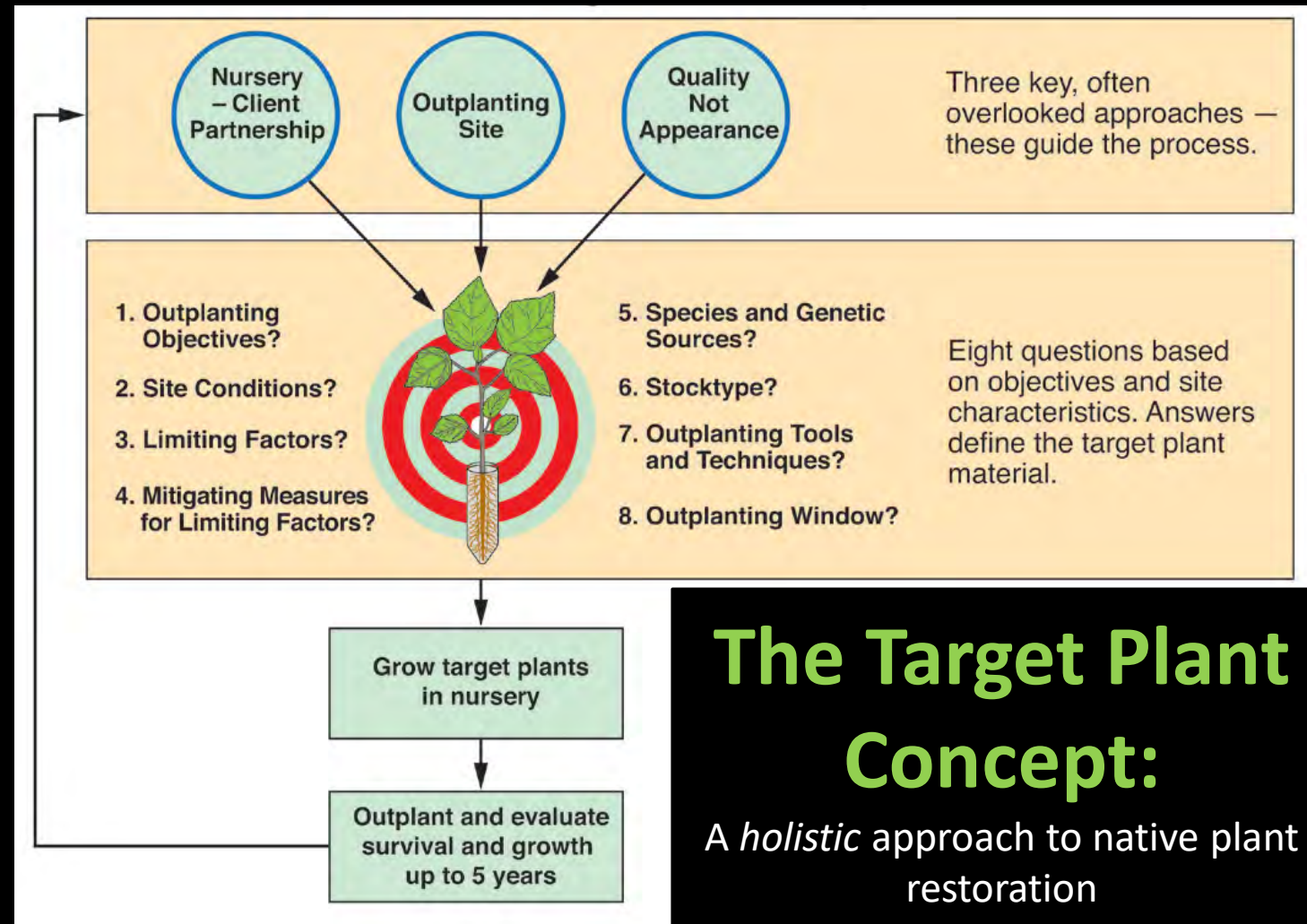


Decision Matrix for Evaluating Potential Sites

Site selection criteria	Weight value ^a	Site A		Site B		Site C	
		Rating	Weighted score	Rating	Weighted score	Rating	Weighted score
Critical factors							
Good solar access	10	9	90	7	70	9	90
Water quality	9	9	81	7	63	4	36
Water quantity	8	10	80	8	64	9	72
Available energy	8	9	72	9	72	10	80
Adequate land area	7	8	56	8	56	10	70
Zoning restrictions	7	10	70	6	42	8	56
Pollution concerns	6	9	54	7	42	9	54
Secondary factors							
Microclimate	6	9	54	8	48	9	54
Topography	5	10	50	9	45	10	50
Labor supply	4	9	36	8	32	10	40
Accessibility	4	8	32	6	24	8	32
Shipping distances	3	9	27	7	21	10	30
Total			702		579		664
Site suitability			#1		#3		#2

Planning Structures and Flow of Work around the Target Plant

- All nursery planning pivots around the target plant (nursery stock types)
- Plan structures for species to be grown and their requirements met during all phases of growth
 - Single, large vs. multiple, small structures



Planning Structures and Flow of Work: Plants

- Greenhouse
- Shadehouse
- Outdoor growing area
- Overwintering Storage for Plants
- Equipment Storage Buildings
- Seed Storage and Seed Processing
- Seed Testing
- Office Space
- Some structures can be used for multiple purposes



Flow of Work Considerations: People

Producing quality plants is labor intensive

- Time, space, effort efficiency
 - Saves \$\$
- Nursery Staff Safety concerns-bench height
 - Occupational health and safety
- Visitors, School Groups, Handicap access
- Aisle and Door widths for movement of plants and growing materials
- Repair and Maintenance Service access



Flow of Materials: Safety

Nurseries contain many hazards!

- Protect your employees and guests
 - PPE
 - Occupational health
 - Chemicals and pesticides
 - Messaging
 - Plan ahead



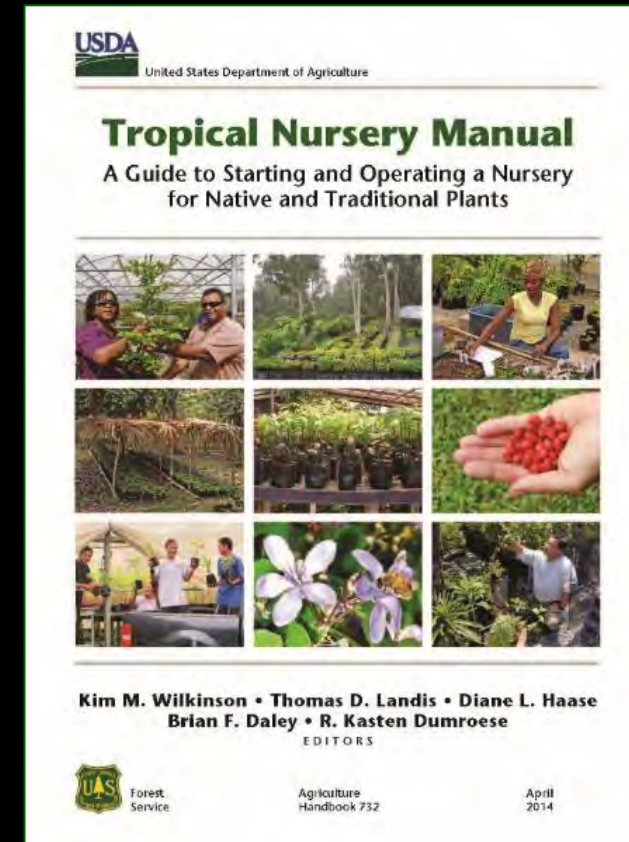
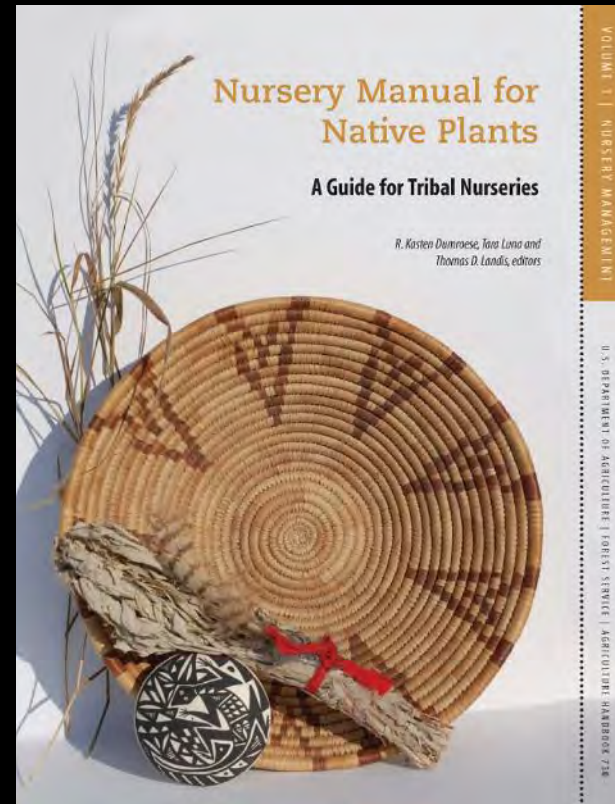
Summary: Planning a Nursery

- Nursery planning is complex
 - Do your research
 - Visit other nurseries and talk with the managers
 - Define objectives
 - If you can, start small
 - Work *with* people
 - “Nothing is set in stone”
 - It should be an ongoing process that adapts to the changing needs of the community and environment
- Develops in tandem with long term needs of community and environment



Resources (rngnr.net)

- USDA Agricultural Handbooks:
 - The Nursery Manual for Native Plants: A Guide for Tribal Nurseries, AH-730
 - Tropical Nursery Manual: A Guide to Starting and Operating a Nursery for Native and Traditional Plants, AH-732



Thank You! Ahehee'!

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