

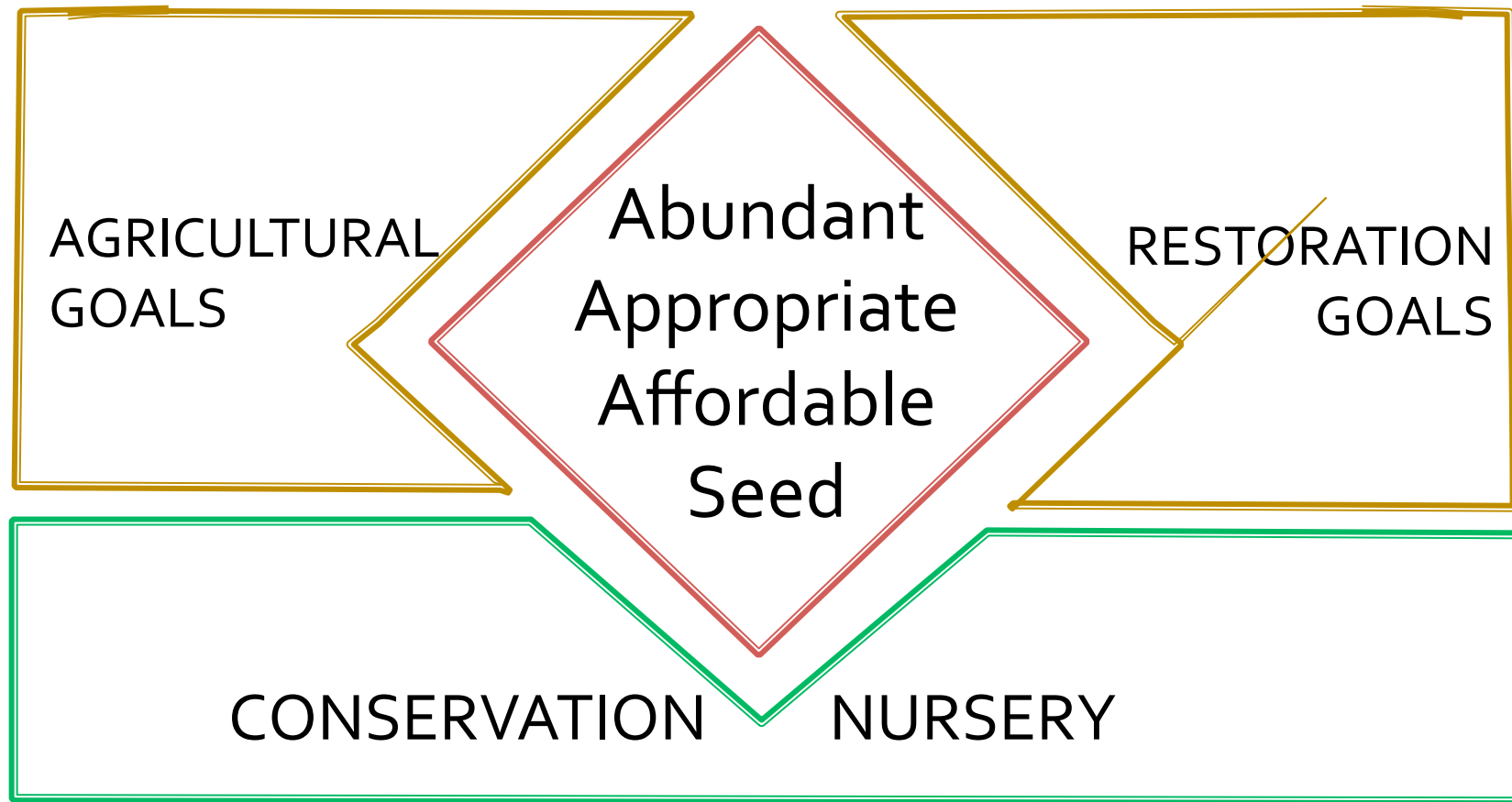
We're not growing veggies anymore

Strategies to Keep
Agriculturally Increased
Native Plant Seed
Wild



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Understanding Conflicts, Finding Balance



Agricultural Goal: Efficiency

- Maximize harvest yield and quality
- Minimize labor and material inputs



Agricultural Strategy: Uniformity

- Homogeneous plants increase efficiency
 - Support mechanization
 - Decrease labor
 - Reduce uncertainty



Agricultural Strategy: Selection

- Intentional:
 - **Cultivar**: homogenous, highly productive, selected genotype
- Unintentional:
 - Mechanical selection
 - Vigor bias
 - Agricultural growing conditions
 - Seed cleaning



Agricultural Selection

- Tends towards uniformity
- Narrows genetics
- Increases production efficiency



Most plants in commercial production (native or otherwise) are **cultivars**.

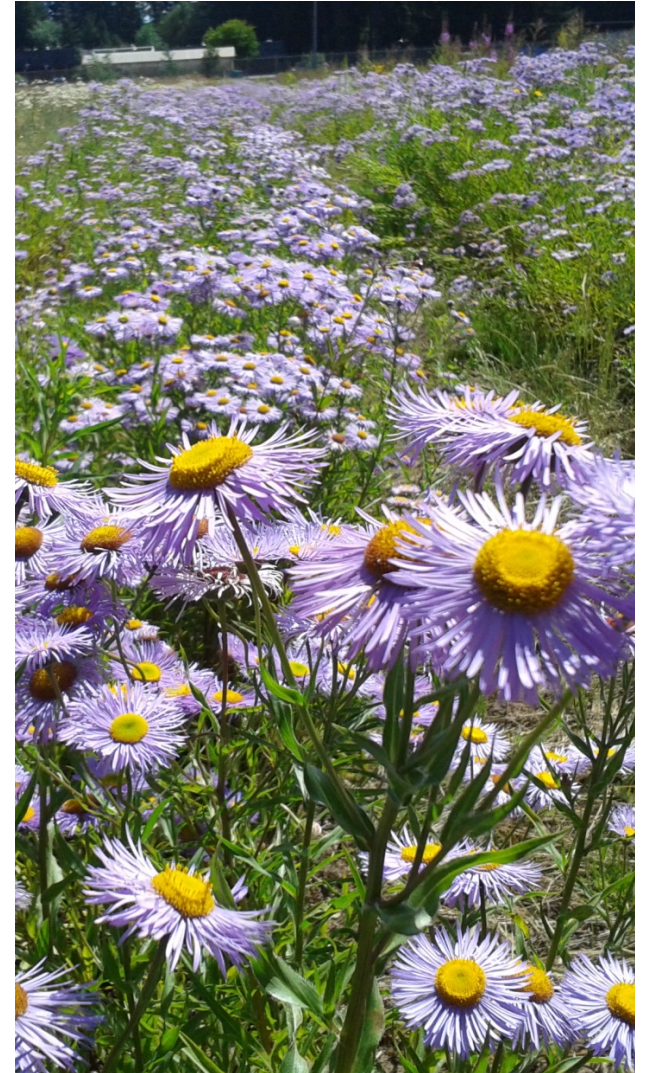
Restoration Goals:

Ecological:

- Maximize genetic diversity
- Maintain any local adaptations

Practical:

- Large quantities of native seed
- Affordable price



Options for Native Seed

Wild Collection

- Maximize genetic diversity
- Maintain local adaptation
- Large quantities of native seed
- Affordable price

Agricultural Production

- Maximize genetic diversity
- Maintain local adaptation
- Large quantities of native seed
- Affordable price



Bridge the Divide

Genetic diversity

**Abundant,
affordable
seed**

Local adaptation

Balance the Ecological and Practical

Conservation Nursery: Balance

Agricultural production is necessary for landscape scale restoration

Modified production can counter agricultural selection but increases cost of seed

Prioritize Deselection

Homogeneity over Uniformity



Conservation Nursery: Practices

Establishment:

- Perennial species seed beds established using only wild collected seed

Benefits:

- Production seed is only one generation removed from wild populations
- Production seed can be traced to collection site

Costs:

- Must maintain active wild collection program
- Low viability and high variability in wild seed requires greenhouse plug production and transplants for good establishment
- Record keeping and field demarcation of lots

Conservation Nursery: Practices

Establishment:

- Plant the weak

Benefits:

- Increases genetic representation
- Avoids vigor selection

Costs:

- Lower seed yield
- Less uniformity
- Longer planting times
- Slower canopy closure (more weeding)



Conservation Nursery: Practices

Seed Harvest:

- Hand collection of early and late seeds

Benefits:

- Better maintains full representation of genetic diversity of source population

Costs:

- Substantially increases harvest time and expense for very limited increase in yield



Conservation Nursery: Practices

Seed Harvest:

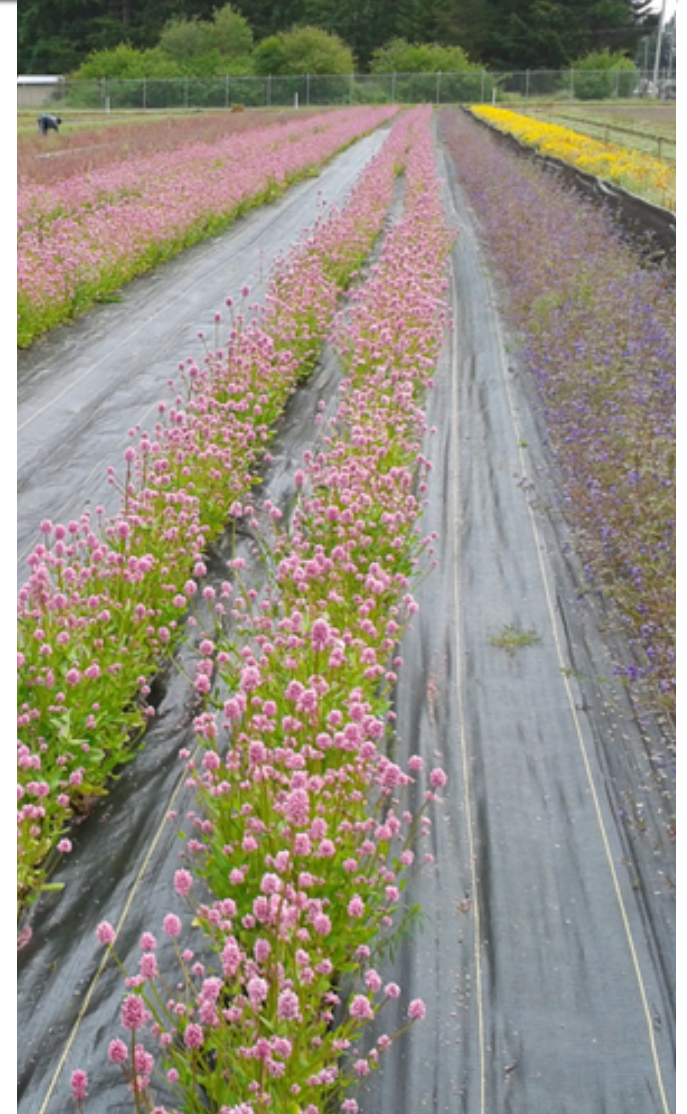
- Ground cloth collection of seeds

Benefits:

- Better maintains full representation of genetic diversity of source population

Costs:

- Increased material and labor input to establish
- Seed loss to predation
- “Dirtier” seed



Conservation Nursery: Practices

Seed Cleaning:

- Salvage lower grade seed

Benefits:

- Better maintains full representation of genetic diversity of source population

Costs:

- Greatly increased seed cleaning times
- Increased lot numbers
- Decreased PLS



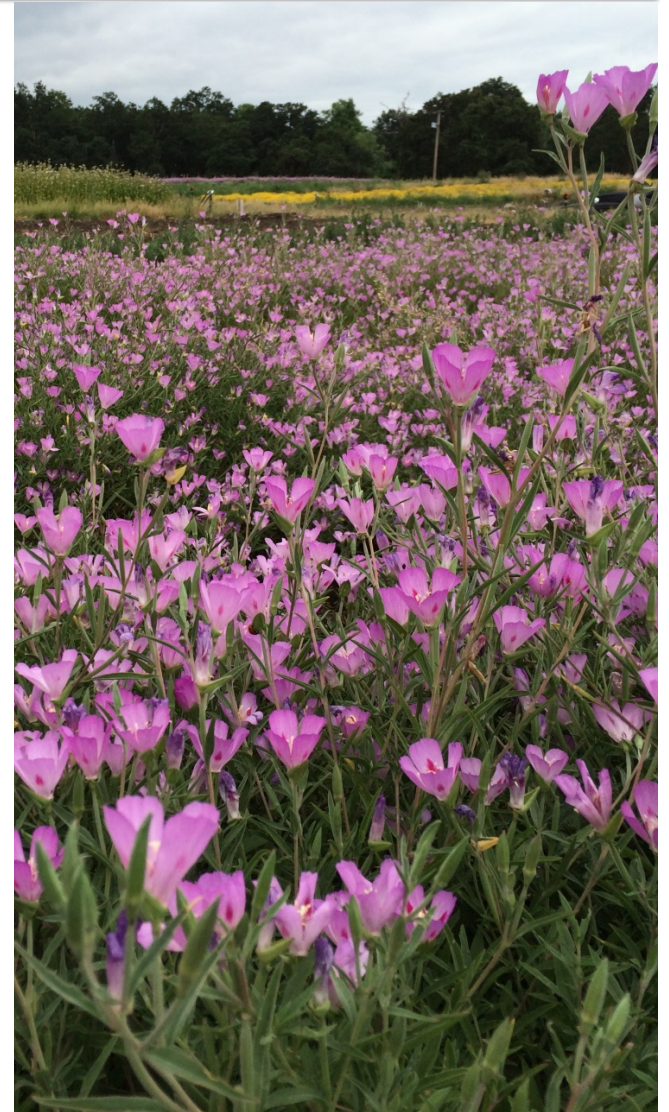
Conservation Nursery: Challenges

Insufficient Wild Seed for Annuals

- Direct sown (high foundation seed need)
- Low to no wild availability
- Short life span (greater opportunity for selection)

Current practice:

Incorporate as much wild seed as available into sowings each year (<5%)



Conservation Nursery: Challenges

Dwindling “untouched” populations

- Limited remnant populations
- Extensive restoration and seeding

Current practice:

Do not collect “wild” seed from sites where increased seed has been sown.



Questions/Discussion

Thank you to:

Conservation Partners

Wild Collection Volunteers

The Farm Crew

