Production of Native Seed of Known Genetic Origin at Hedgerow Farms

Pat Reynolds
Hedgerow Farms Inc.
March 16, 2021
Hedgerow Farms

- Started in 1980’s by John Anderson
- 350+ acres in production
- 100+ acres in restoration
- 120+ species of grasses, sedges, rushes and forbs
- Native plug nursery
- Native certified straw
Collecting Wildland Seed

- Locate sites
- Permits
- Correct species identification
- Contract seed collectors
- Seed provided for contract grows
Collection Site Documentation

- Location coordinates
- Elevation
- Soils
- Associated vegetation
- Aspect and exposure
- Access/permission
Seed Collection Time Windows

• Cool season grasses
  • needle grasses, wildryes, melics, etc.
  • Spring and early summer
• Warm season grasses
  • deer grass, three awns, alkali Sacaton, salt grass
  • Late summer and fall
• Native wildflowers
  • Varies with species and locations
• Calflora lists flowering periods of native species
Field Placement

- Complicated endeavor
- Cross-contamination
  - Distance
  - Prevailing winds
  - Barriers (hedgerows)
  - Crop history
  - Time
- Grasses/forbs
- Selfing vs crossing sp.
- Field size considerations
- Weed history
Planting Native Ecotypes

- Most species planted in fall via seed drill
- Plug planting when stock seed is limited
- Spring planting possible with wildflowers and plugs
Planting Native Ecotypes

- Most species planted in fall via seed drill
- Plug planting when stock seed is limited
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Weed Control
Determining Seed Maturity/ Harvest Windrows

• Many considerations
• Harvest too early seed is not viable
• Harvest too late and seed will have shattered
Harvesting Techniques

- Mechanical strippers
  - Tractor mounted strippers (Flailvac)
- Cutting whole plants or culms and allowing to dry or cure
  - Swather
Swathing and windrowing Festuca (Vulpia) microstachys

Combining Elymus multisetsus
Hand harvesting milkweed

Milkweed pods revealing seeds
Hand harvesting milkweed

Milkweed pods revealing seeds
Sickle Bar Harvest for Tar Plants

- Resins clogged swather - sickle bar mower work around
Curing and drying

- Dried on tarps until dry (less than 10% moisture)
- If a large amount of seed, turn on a regular basis for even and rapid drying
Seed Cleaning
Seed Testing

- Purity, Other Crop, Weed Seed, Germination
Seed Storage

- Insulated storage warehouse
  - Breathable packaging
  - Away from:
    - Heat
    - Moisture
    - Rodents
    - Insects

- Shelf life varies by species
  - Hard seed usually longest
  - Grasses usually 3-6 years

- Testing within 8, 12, 15 or months
Native Seed Species and Ecotypes
Commercial Availability

- Many species and ecotypes available at Hedgerow Farms

www.hedgerowfarms.com
Sortable Database by Species
Ecotypes/origins

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Ecotype/Origin</th>
<th>General Seed Availability</th>
<th>General Plug Availability</th>
<th>Plant Type</th>
<th>Life Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Butte County: Llano Seco Ranch</td>
<td>ask</td>
<td>ask</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Contra Costa County: Los Vaqueros Watershed</td>
<td>yes</td>
<td>ask</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Marin County: Bodega Bay</td>
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<td>Grass</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Marin County: Nicasio</td>
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<td>ask</td>
<td>Grass</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
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<td>Marin County: Oak Hill Park</td>
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<td>ask</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Napa County: Napa/Sonoma Marsh</td>
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<td>ask</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Sacramento County: Cosumnes River</td>
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<td>yes</td>
<td>Grass</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>San Benito County: Hwy 101</td>
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<td>Grass</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
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<td>San Benito County: Pinnacles Nat Park</td>
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<td>ask</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
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<td>San Mateo County: Crystal Springs Reserve</td>
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<td>ask</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
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<td>Santa Clara County: Arastradero Preserve</td>
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<td>yes</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Solano County: Benicia</td>
<td>yes</td>
<td>ask</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Solano County: Jepson Prairie</td>
<td>ask</td>
<td>ask</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Tehama County: Inks Creek</td>
<td>yes</td>
<td>yes</td>
<td>Grass</td>
<td>perennial</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Nevada County: Grass Valley</td>
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<td>ask</td>
<td>Grass</td>
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<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Tehama County: NW of Red Bluff, NRCS release</td>
<td>yes</td>
<td>ask</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Yolo County: Fiske Creek</td>
<td>yes</td>
<td>yes</td>
<td>Grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Yolo County: Stone Ranch</td>
<td>yes</td>
<td>yes</td>
<td>Grass</td>
<td>perennial</td>
</tr>
</tbody>
</table>
### Sortable Database by Origin
### Species by County

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<th>General Plug Availability</th>
<th>Plant Type</th>
<th>Life Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deschampsia danthonioides</td>
<td>annual hairgrass</td>
<td>Yolo County: North of Winters</td>
<td>ask</td>
<td>ask</td>
<td>grass</td>
<td>annual</td>
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<tr>
<td>Distichlis spicata</td>
<td>salt grass</td>
<td>Yolo County: Road 102</td>
<td>no</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
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<tr>
<td>Elymus glaucus</td>
<td>blue wildrye</td>
<td>Yolo County: &quot;Anderson&quot;</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Elymus glaucus</td>
<td>blue wildrye</td>
<td>Yolo County: Yolo Bypass</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Elymus multisetus</td>
<td>big squarrelltail</td>
<td>Yolo County: Lynch Creek</td>
<td>ask</td>
<td>ask</td>
<td>grass</td>
<td>perennial</td>
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<tr>
<td>Elymus trachycaulus</td>
<td>slender wheatgrass</td>
<td>Yolo County: Willow Slough</td>
<td>yes</td>
<td>ask</td>
<td>grass</td>
<td>perennial</td>
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<tr>
<td>Elymus (L. triticioides)</td>
<td>creeping wildrye/beardless wild rye</td>
<td>Yolo County: Yolo Bypass</td>
<td>yes</td>
<td>ask</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Elymus (L. triticioides)</td>
<td>creeping wildrye/beardless wild rye</td>
<td>Yolo County: Yolo Bypass-Short Variety</td>
<td>no</td>
<td>ask</td>
<td>grass</td>
<td>perennial</td>
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<tr>
<td>Festuca (Fulgia) microstachys</td>
<td>small fescue/three weeks fescue</td>
<td>Yolo County: Fiske Creek</td>
<td>yes</td>
<td>ask</td>
<td>grass</td>
<td>annual</td>
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<tr>
<td>Hordeum brachyantherum</td>
<td>meadow barley</td>
<td>Solano/Yolo County: Glide Ranch</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Hordeum brachyantherum</td>
<td>meadow barley</td>
<td>Yolo County: Yolo Bypass</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Hordeum depressum</td>
<td>alkali barley</td>
<td>Yolo County: Davis Grasslands</td>
<td>yes</td>
<td>ask</td>
<td>grass</td>
<td>annual</td>
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<tr>
<td>Leersia oryzoides</td>
<td>rice cutgrass</td>
<td>Yolo County: Putah Creek Watershed</td>
<td>no</td>
<td>ask</td>
<td>grass</td>
<td>perennial</td>
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<td>Melica californica</td>
<td>California oniongrass</td>
<td>Yolo County: Fiske Creek</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Poa secunda ssp secunda</td>
<td>one sided blue grass</td>
<td>Yolo County: Upper Fiske Creek</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) lepida</td>
<td>foothill needle grass</td>
<td>Yolo County: Stone Ranch</td>
<td>ask</td>
<td>yes</td>
<td>grass</td>
<td>perennial</td>
</tr>
<tr>
<td>Stipa (Nassella) pulchra</td>
<td>purple needle grass</td>
<td>Yolo County: Fiske Creek</td>
<td>yes</td>
<td>yes</td>
<td>grass</td>
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</tr>
</tbody>
</table>
Contract Growing / Seed Increases

- Stock seed tested
- Wildland stock seed provided
- Grow outs to maintain genetics
- Seed planted directly in field (best) or grown out in plugs and installed
- Planting, irrigation, fertilization, Weed control, cleaning, testing
- Minimum ½ acre best
- All seed produced is clients
Contract Growing / Seed Increases

- Frequent means of getting new species and ecotypes to market
- Can be used as a tool to mitigate impacts to special status plant species
- Hedgerow currently has more than 25 items under contract
Native Grass Straw

- Harvested from our fields
- Great for erosion control
- Noxious weed free
- Generally contains native grass seed
Thank you...

Questions?

preynolds@hedgerowfarms.com
530-662-6847