

RENOVATION PROJECT AT DICKINSON EXPERIMENT STATION

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SOUTHEAST WINDBREAK

North 1/2: Natural Regeneration Demonstration

Species: Green ash and Caragana

Evaluation every 3 years and thinning as needed.

- Allow natural thinning to occur
- Do not remove too much cover that will allow weed competition into the windbreak
- The end product trees should be straight, healthy stock possible seed trees for future regeneration

SOUTH 1/2: INTERPLANTING PINE FOREST STAND DEMONSTRATIONS (SEE ENCLOSED MAP)

- Thinning and removal of diseased and dead spruce, any broadleaf tree or shrub species
- Interplanting of Douglas-fir (Flathead Lake, Montana Seed Source), White fir and Fraser fir (source Mountain Home Nursery), Ponderosa Pine
- Weed control - use Roundup to control bromegrass
- Possible supplement pine mulch with wood chips

ROCKY MOUNTAIN JUNIPER - EASTERN RED-CEDAR COMPARATIVE DEMONSTRATION

- Evaluate by observation growth of each species in weed barrier.
- Evaluate by observation growth of each species as an interplanting under canopy cover
- Replanting dead trees - make note of survival/replacement rate by species

ROCKY MOUNTAIN DOUGLAS-FIR TRIAL DEMONSTRATION

- Planted Douglas-fir (Idaho Seed Source), Douglas-fir (Montana Seed Source), White fir and Fraser fir (Mountain Home Nurseries)
- Trees that survive may be a future seed orchard
- Observe and evaluate survival
- Data collected will provide base-line data for NDSU researchers.

AGROFORESTRY DEMONSTRATION - FRUIT PRODUCTION

- Evaluate species survival
- Demonstration of use of 3 species in alternate planting design: Nannyberry Viburnum (Lincoln-Oakes source), American cranberrybush (Lincoln-Oakes source), Juneberry (N.D. Forest Service source)
- Evaluate weed barrier performance in tree/shrub establishment

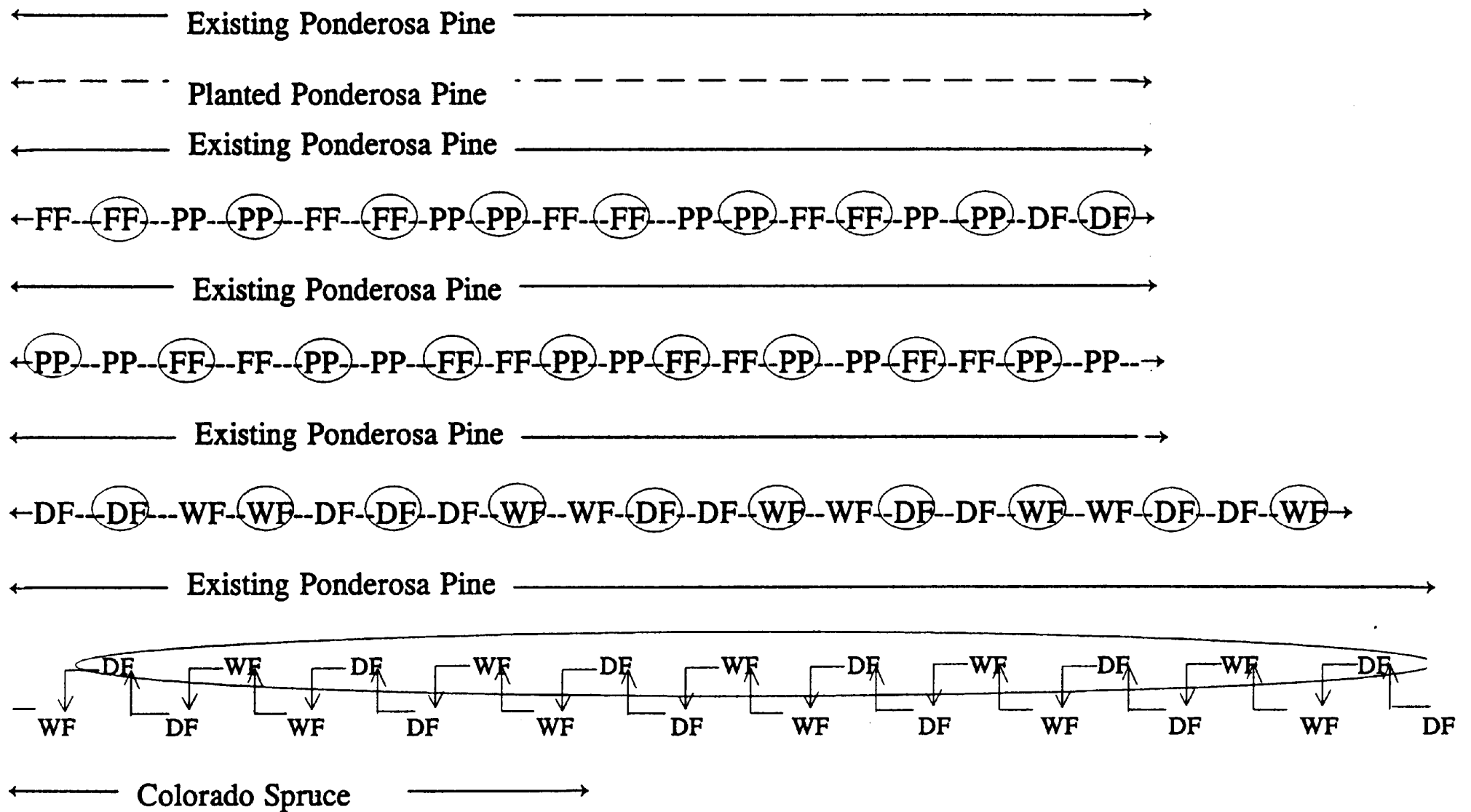
EXISTING SPRUCE/PINE WINDBREAKS DEMONSTRATIONS ON WEST SIDE

- Weed control - Roundup control of perennial weed competition (brome grass)
- Thinning and removal of suppressed, diseased and dead trees
- Evaluate tree establishment and survival of interplanted species in add on row Ohio buckeye, Black walnut
- Demonstration of use of 2 species in alternate planting design - Ohio Buckeye (Lee Nursery source), Black Walnut (Lincoln-Oakes source)

EXTENDED TREE ROW DEMONSTRATION

- Evaluate growth and time protection is achieved
- Evaluate establishment and survival on various weed barrier products
- Evaluate economic costs of the weed barrier products company installation, longevity and follow-up maintenance
- Evaluate use of 2 species per row design Douglas-fir (Denbigh Seed Source) and Siberian Larch (ND Forest Service source) in weed barrier

Example of Alternative Thinning 8 - 10 Years After Planting

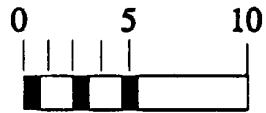


After thinning circled trees (rows 4, 6 and 8), 50:50 species diversification is left in the row. A staggered design within the 3 rows is left, increasing growing space without sacrificing density for wind protection.

Staggered win-row design (row 10) increases growing space without sacrificing density for wind protection. As trees in staggered win-row grow into each other the whole circled tree row can be removed without decreasing 50:50 species diversification left in adjacent tree row.

Reasons for understory planting:

1. Start the next forest cover.
2. Maintain ground level density to decrease potential weed competition.
3. Take advantage of pine needle mulch for seedling establishment.
4. Alternative tree crop: Christmas trees, transplant nursery, small timber, firewood



Feet

North ➤➤

Legend

PP = Ponderosa Pine

FF = Fraser Fir

DF = Douglas Fir (Montana Source)

WF = White Fir

Planted 6 feet between pine and fir

Planted 6 feet between fir and fir

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