Assessment of Windbreak Condition & Indicators to Renovate

Great Plains Windbreak Renovation & Innovation Conference

July 24-26, 2012

Steve Rasmussen, NFS District Forester

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1. Renovation –

- restore to an earlier condition
- to revive / make "new"
- improve by repairing

Compare windbreak renovation to re-furbishing a building on a farm

Windbreak renovation entails more than just periodic management or maintenance work, it addresses a major need.

Unfortunately, many windbreak renovations are initiated years after work should have been done to sustain the health and condition of the planting.

Renovation should be started when the windbreak condition moves from fair toward poor.*

Windbreak Condition:
Good..**Fair**......**X**...................................**Poor**
            Management needed   **Renovation needed**

Renovation should be started when the windbreak condition moves from fair toward poor.*
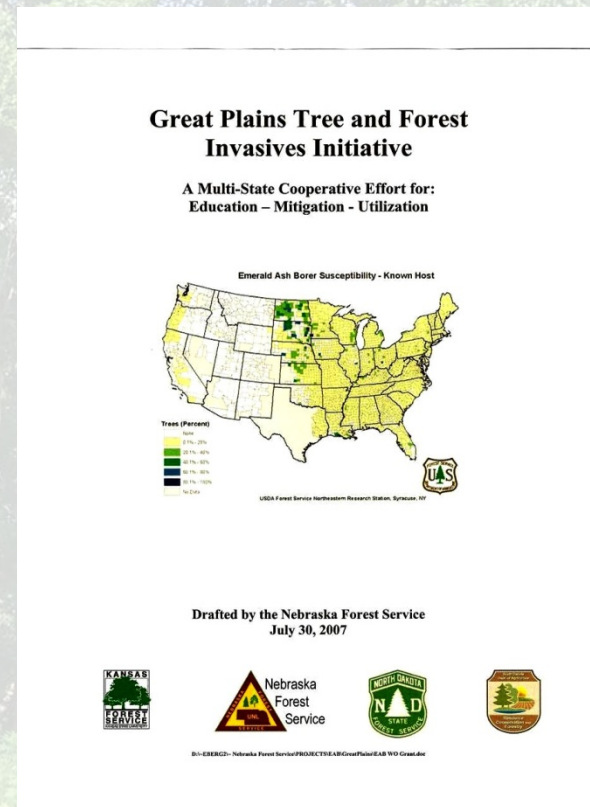
Windbreak Condition:
Good.....................................Fair......**X**....................................Poor
     Management needed   Renovation needed

*   If delayed, windbreak function is compromised and less renovation options are available.

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2. Great Plains Initiative Inventory:

The 4 – state, Great Plains Initiative conducted rural tree inventories during the summers of 2008 & 2009 with windbreak condition being one assessment.

Great Plains Tree and Forest Invasives Initiative

A Multi-State Cooperative Effort for:
Education – Mitigation – Utilization

Emerald Ash Borer Susceptibility - Known Host

Drafted by the Nebraska Forest Service
July 30, 2007

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   ND utilized NDSF staff
   SD contracted with professional inventory crews

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➢ **USFS Northern Research Station helped with data collection protocol and provided multi-state training each spring prior to field work**

GPI inventory crews visited treed locations that did not qualify for USFS Forest Inventory Analysis (FIA)* and recorded tree information and made observations to determine general condition of the windbreak.

*less than 1 acre, or less than 120' wide or less than 10% stocking density

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Windbreak Condition criteria:

Good Condition had at least 7 of 8 attributes;

Fair Condition ranked with at least 5-6;

Poor Condition had 4 or less.

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1.   Less than 25% of the trees are dead.

Dead trees could be related to age; "wrong" trees for the site; lack of owner attention to management or could reflect past problems not currently evident (herbicide, pests, weather, etc).

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2.   Continuous barrier, no gaps (missing trees).

Most important for field windbreaks; living snowfences and farmstead windbreaks.

* May not be necessary for some plantings (wildlife habitat for example).

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3.   50% or greater density.

Desired density is dependent on the windbreak function.

Time of year makes a difference on density.

4.   No sod forming grasses (smooth brome, fescue, etc.).

Sod forming grasses will stress and severely challenge young tree survival, growth and vigor.

This vegetation is generally considered "undesirable" for wildlife habitat.

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5.   Majority of the tree crowns are healthy and less than 25% show insect or disease problems.

Severely infested trees may require row removals and replanting to regain the function of the planting.

* Pine wilt in eastern Nebraska is requiring complete row removals.

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6.   None to very little livestock activity in the planting.

Livestock can cause immediate and long-term damage to tree plantings; lower the wildlife habitat use; and eliminate regeneration.

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7.   Tree regeneration is present.

Renovation options are increased if there is good tree and shrub regeneration for a sustainable plant community.

7.   Tree regeneration is present.

⭐ = hackberry trees

7.   Tree regeneration is present.

Sidenote:

Bur oak regeneration ON TOP of conservation fabric under 15 year old bur oak.

8.   Trees are expected to live another 20 years.

A windbreak will be less likely in need of renovation when the trees are not declining due to old age.

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Other indicators that could be considered to assess the need for renovation:

1. Lack of diversity

* Not applicable for some windbreak systems like single row field windbreaks.

80% Siberian elm

Owner wanted more wildlife, so we need to add shrubs, evergreens and better hardwoods.

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Other indicators that could be considered to assess the need for renovation, (cont.):

2. Original row spacing too close and trees stagnated or declining due to crowded conditions.

Green ash planted at six foot spacings

Other indicators that could be considered to assess the need for renovation, (cont.):

3. Aesthetics ??????

4. Ownership change

5. Expanding farmstead & area use

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Northeast NE windbreak "decoration"

3. Findings of the windbreak condition evaluations during the GPI rural tree inventory:

GPI - KS,NE,ND.SD combined estimate: Total-Area of nonforest treed land – (total area sampled, no denied access)*

	Total Acres	Good	Fair	Poor
Planted and/or managed tree unit providing a primary function (top 3 of 10)	1,224,510	378,394 (31%)	622,425 (51%)	223,690 (18%)

* nonforest treed land = less than 1 acre or less than 120 feet wide or less than 10% stocking density

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3. Livestock windbreak	**370,918**	**48,285 (13%)**	**238,826 (64%)**	**83,809 (23%)**

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There is a need for windbreak renovation

GPI - KS,NE,ND.SD combined estimate: Total-Area of nonforest treed land – (total area sampled, no denied access)*				
	Total Acres	Good	Fair	Poor
All treed areas providing some type of function (farmstead; field; livestock; wildlife habitat; abandoned farmstead; living snowfence; home acreage; natural riparian buffer; planted riparian buffer; narrow wooded strip)	**1,956,127**	**547,825 (28%)**	**967,389 (50%)**	**440,913 (22%)**

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Questions / Discussion

Nebraska rain gauge for 2012

Contact Information:

Steve Rasmussen, CF

Nebraska Forest Service

510 North Pearl Street, Suite C

Wayne, NE 68787

402.375.0101

srasmussen2@unl.edu

www.nfs.unl.edu

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