Windbreak

**FACTSHEET SERIES:** Field Windbreaks, Farmstead Shelterbelts & Living Snow Fences

Field Windbreaks

Farmstead Shelterbelts

Living Snow Fences

# Field Windbreaks

Since 1954, the GRCA has worked with private landowners to achieve their environmental goals and enhance their property by planting trees. The GRCA has helped thousands of landowners plant more than 26 million trees.

Landowners in the watershed with more than one hectare (2.5 acres) of land exclusive of buildings are eligible to participate in the tree planting program. The trees are grown for their naturalization qualities and not their looks. They are available in a variety of sizes, ranging from seedlings through to bare root tall stock.

A Forestry Specialist from the Grand River Conservation Authority is available to help plan your tree planting project.

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- A site visit for consultation and an assessment of the site characteristics.
- A planting plan outlining site preparation, species composition, design/layout, and future tending requirements.
- Assistance in accessing grant programs.
- Coordinating the planting of trees during the spring planting season.
- Follow up technical advice as needed.

For more information or to arrange a site visit contact one of the GRCA forestry specialists:

**1-866-900-4722** (519) 621-2761
ruralwater@grandriver.ca

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Field Windbreaks

# Field Windbreaks

Strategically plant rows of trees adjacent to your farm fields to increase crop yields by slowing the wind and reducing moisture loss in plants and soil. You will also prevent erosion, increase pollinator habitat, provide wildlife corridors, increase snow deposition for added soil moisture, provide perching sites for raptors to decrease rodent populations and supplement farm income through forest products.

## Single Row Spruce Windbreak


### OBJECTIVES

- Improve crop yield.
- Shelter farmstead from harsh winds.
- Use a row of trees to define property line.

### STRATEGY

- Install plastic mulch prior to planting for weed control and moisture retention.
- Hand plant a single row of white spruce seedlings at 2m spacing.


Planting


Year 3

## Single Row Hardwood Windbreak


### OBJECTIVES

- Aesthetics.
- Wildlife enhancement.
- Improve crop yield.

### STRATEGY

- Hand plant a single row of hardwood saplings (5-6 foot, bare root stock).
- Alternate between green ash and sugar maple at 2m spacing.
- The faster growing green ash will eventually be thinned out, to allow for a well spaced row of sugar maple. The initial planting of ash trees between the maples allows the crowns to touch and achieve the desired porosity sooner. Once the ash trees are removed, shrubs can be planted between the maples to attain desired windbreak porosity from top to bottom.


Year 2


Year 5

## Three Row Conifer Windbreak


### OBJECTIVES

- To protect against GMO contamination and spray drift from neighbouring farms for organic farm certification.
- Improve crop yield.
- Provide wildlife corridor.

### STRATEGY

- Hand plant a three row windbreak at a spacing of 2m between trees and 3m between rows.
- The two outside rows consist of cedar. The middle row consists of a mix of pine and spruce.
- The middle row of spruce and pine will have every second tree removed and transplanted to other areas on the farm when crowns begin to touch.


Year 2


Year 20

## Double Row Conifer & Hardwood Windbreak


### OBJECTIVES

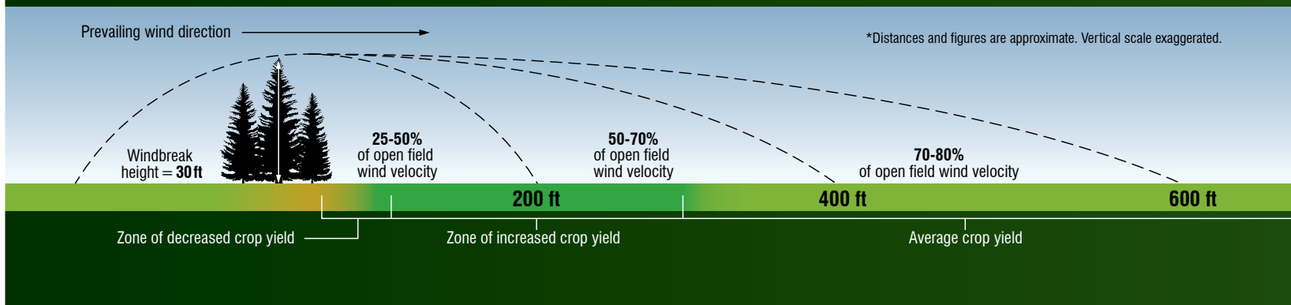
- Aesthetics.
- Improve crop yield.
- Provide wildlife corridor.

### STRATEGY

- Hand plant a double row windbreak at 2m spacing between trees and 3m spacing between rows.
- The first row on the west side consists of spruce.
- The second row consists of a mix of maple and oak.
- The row of spruce will serve the function of providing wind protection while the second row will add more wildlife and aesthetic value.


Year 7

## Windbreak protection zones and crop yields*



Windbreak

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# Farmstead Shelterbelts

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Grand River Conservation Authority

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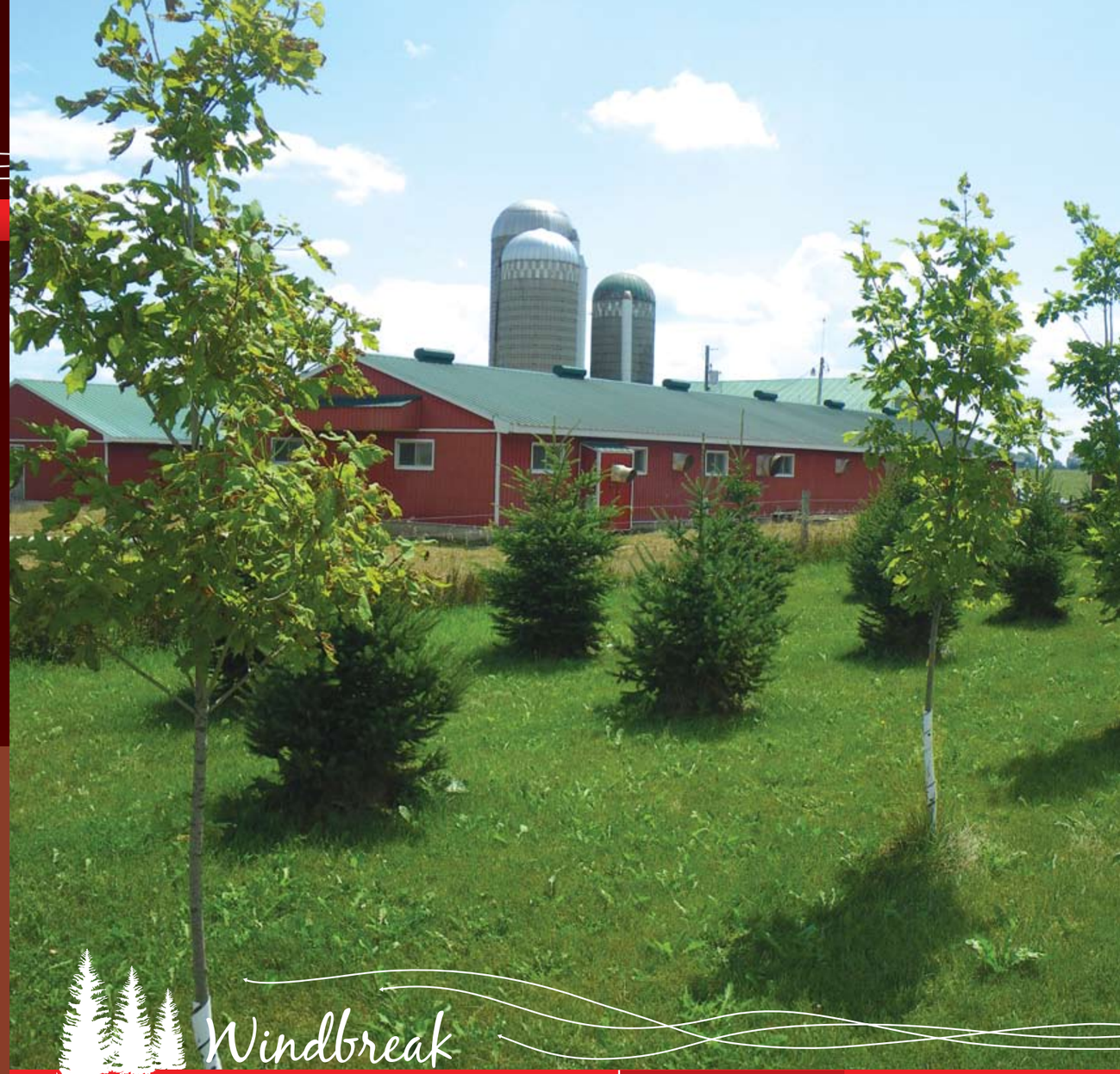

Windbreak

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# Farmstead Shelterbelts

# Farmstead Shelterbelts

Surrounding your farmstead with trees is a good investment, reducing energy costs and improving livestock health.

## Three Row Mixed Species Shelterbelt


### OBJECTIVES

- Decrease barn heating costs.
- Reduce odour from hog barn.
- Aesthetics.

### STRATEGY

- Install plastic mulch prior to planting for weed control and moisture retention.
- Hand plant a three row windbreak at 3m spacing.
- The outside row consists of spruce.
- The middle row consists of poplar.
- The inside row consists of a mix of hardwoods and shrubs.
- The faster growing poplars will provide wind protection sooner in the life span of the shelterbelt. The middle poplar row may be thinned out once the spruces are large enough to provide wind protection for the barn. The mixed hardwood and shrub row provides aesthetics and biodiversity.


Planting Day


Planting Day


Year 3

## Three Row Conifer & Hardwood Shelterbelt


### OBJECTIVES

- Decrease barn heating costs.
- Aesthetics.

### STRATEGY

- Hand plant a three row windbreak of 2 foot potted spruces and 5 foot sapling maples.
- The two inside rows consist of white spruce at 3m spacing. Spacing is staggered to optimize wind protection for the barn.
- The outside row consists of sugar maple at 5m spacing.
- The spruce rows are to provide optimal wind protection while the maple row provides enhanced aesthetics.


Planting Day


Year 2


Year 4

## Single Row Hardwood Shelterbelt


### OBJECTIVES

- Decrease barn heating and cooling costs.
- Aesthetics.

### STRATEGY

- Hand plant a single row of hardwood saplings (5-6 foot, bare root stock).
- Alternate between soft maple and polar at 2m spacing.
- The faster growing poplars will eventually be thinned out, to allow for a well spaced row of maples. The initial planting of poplar trees between the maples allows the crowns to touch and achieve the desired porosity sooner.
- Once the trees reach maturity, their crowns will provide shade to cool the poultry barn from the hot sun and decrease cooling costs.


Year 1


Year 5

## Double Row Conifer and Hardwood Shelterbelt


### OBJECTIVES

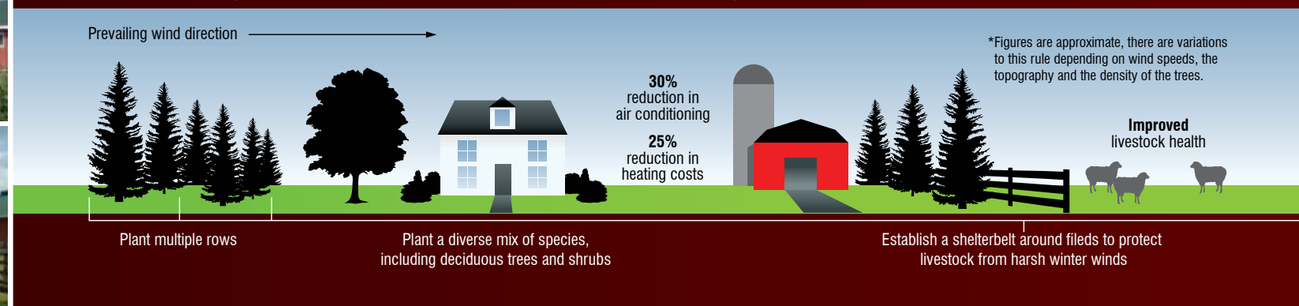
- Protect livestock from harsh winds.
- Aesthetics.

### STRATEGY

- Hand plant a double row windbreak at 4m spacing between trees and 4m spacing between rows.
- The inside row consists of white spruce.
- The outside row consists of sugar maple.
- The spruce row will protect the livestock from harsh winds, while the maple row provides enhanced aesthetics.


Year 3

## Windbreak protection to reduce heating cost and protect livestock*



Windbreak

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Field Windbreaks

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Living Snow Fences

# Living Snow Fences

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Windbreak

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# Living Snow Fences

# Living Snow Fences

Improve winter driving safety and reduce snow removal costs by using a strip of trees to trap the snow blowing across open fields.

## Double Row Cedar Living Snow Fence


### OBJECTIVES

- Decrease snow drifts on the road.
- Improve winter driving safety.
- Improve crop yields.

### STRATEGY

- Hand plant a double row of 1m tall, balled and burlapped cedars spaced 1.5m apart.
- The first row on the windward side is set back 35m from the road.


## Three Row Spruce Living Snow Fence


### OBJECTIVES

- Decrease snow drifts on the laneway.
- Decrease snow removal costs.

### STRATEGY

- Hand plant three rows of white spruce seedlings at 2m spacing between trees and 2m spacing between rows.
- The first row on the windward side is set back 30m from the laneway.
- Leave a 10m gap on both ends for equipment access.


## Single Row Spruce Living Snow Fence


### OBJECTIVES

- Decrease snow drifts on the road.
- Improve winter driving safety.
- Improve crop yields.

### STRATEGY

- Hand plant one row of 2 foot potted white spruce at 2.5m spacing.
- The row of trees is set back 40m from the road.
- Leave a 10m gap on both ends for equipment access.


## Five Row Mixed Species Living Snow Fence


### OBJECTIVES

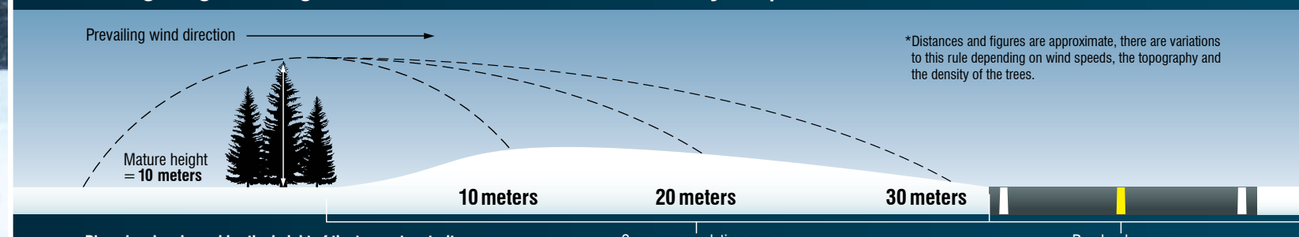
- Decrease snow drifts on the laneway.
- Decrease snow removal costs.

### STRATEGY

- Hand plant five rows of seedlings at 2m spacing between trees and 3m spacing between rows.
- The outside two rows consist of poplars.
- Row three consists of a mix of green ash and silver maple.
- Row four consists of white spruce.
- Row five consists of red oak.
- The first row on the windward side is set back 35m from the laneway.



## Designing a living snow fence that will effectively trap snow*




*Distances and figures are approximate, there are variations to this rule depending on wind speeds, the topography and the density of the trees.

**Plan ahead and consider the height of the trees at maturity.**
As a general rule of thumb, the snow will be deposited on the leeward side of the row of trees for a distance of **3 times** the height of the trees.