



Windbreaks

Field windbreaks are linear plantings of trees designed to reduce wind speed in open fields, and are typically planted in one or two rows at right angles to the prevailing wind. Farmstead shelterbelts are windbreaks planted to protect farm buildings and livestock, and usually consist of three or more rows of trees.

Field Windbreak Benefits

Controlling Wind Erosion

Windbreaks protect the topsoil from wind erosion to a distance 10 to 15 times the height of the trees. Reducing wind speeds prevents the loss of soil moisture, which binds soil particles together.

Improved Crop Quality and Yield

Windbreaks protect crops from wind damage and create a microclimate in the adjacent field by increasing soil temperature and improving moisture distribution. This can result in earlier germination and increase crop yields by 8-25%.

Wildlife Habitat and Other Benefits

Windbreaks provide shelter and food for wildlife and many other additional benefits including:

- Increased insect predation - birds using the windbreak for shelter will eat pests in the adjacent crops
- Improved wildlife habitat - windbreaks provide travel corridors that connect woodlots
- Improved spray applications and reduced spray drift
- Safer roads - windbreaks 15 or more metres from roads reduce blowing and drifting snow
- Recreational opportunities - windbreaks create sheltered corridors for walking, cross-country skiing and snowmobiling

A three row shelterbelt planted next to a hog barn consisting of both hardwood and softwoods.



Windbreaks protect crops from wind damage and enhance crop yield.



Machine planting a field windbreak

Farmstead Shelterbelt Benefits

- Livestock that are sheltered from the wind require less feed to maintain body temperature
- Dust and odour control around barns and houses
- Less snow accumulating around buildings means less time and effort needed for snow removal
- Increased property values and aesthetics
- Reduced building heating and cooling costs

Planning a Windbreak

Staff at your local conservation authority can assess your property and needs in order to design an effective windbreak. Plan for a windbreak one to two years in advance and consider the following:

- **Windbreak location**
 - Field windbreaks should be oriented at right angles to the prevailing wind direction. Field configuration will also influence the windbreak orientation.
 - Avoid planting over drainage tile.
 - Allow space for farm equipment to access the field area along the windbreak without damaging the trees.
 - Do not plant windbreaks under utility wires.
- **Tree species**
 - Select tree species that are adapted to your soil and climatic conditions.
 - Consider the height and crown as well as the root spread of the trees at maturity.
 - Use coniferous species that are winter hardy, fast growing and long living, such as spruce and cedar.
 - Avoid planting species that are toxic to livestock, such as Red Maple.
 - Some municipalities require that roadside windbreaks consist of hardwood species to maintain sightlines.
- **Tree height and density (spacing)**
 - Tree height determines how far into the field the windbreak will provide crop and soil protection. The taller the trees, the more protection they will offer.
 - A field windbreak should allow for about 40% porosity.
 - A farmstead shelterbelt with multiple rows and species varying in height provides greater wind protection.
- **Cost considerations**
 - The number of trees planted will depend on the length, number of rows, and spacing of the windbreak.
 - Seedlings are more cost effective than large stock trees, but will take longer to establish an effective windbreak.
 - Plastic mulch will eliminate weed competition, increase soil moisture, and create a longer growing season. Plastic mulch costs more upfront but offers significant returns in enhanced weed control and tree growth potential. Biodegradable plastic mulch is available.

Before You Plant

- Notify neighbours when planting next to property boundaries.
- Contact drainage superintendents when planting along a municipal drain for proper setback distances.
- Ensure buried utilities or infrastructure are not in your planting area; contact ON1Call (1-800-400-2255 or www.on1call.com) for a free locate.
- Check with your local municipality for proper setback distance from roads.



A spruce windbreak growing in plastic mulch

Windbreak Maintenance

To keep the windbreak healthy and functioning well, the following maintenance is recommended:

- Control weeds during the first few years as the trees become established. Mow, spray or manually remove weeds, or use wood mulch to reduce weed pressure and maintain soil moisture.
- Place a sign in the area of the windbreak to notify custom farm operators and snowmobilers of the presence of the trees.
- If plastic mulch is used, inspect the plastic periodically for holes and to ensure edges are secured.
- Place rodent guards around the trunks of hardwoods to protect them from mice and rabbits.
- Water trees during dry periods for the first three years.
- Do not broadcast fertilizer on the windbreak; these nutrients will be taken up by the surrounding vegetation and create competition for the new trees.
- Double leaders (forked tops) on conifers should be pruned to only one leader.
- Once the trees are several years old, prune low hanging branches to reduce the risk of damaging farm equipment.
- Replace dead or damaged trees.
- Remove nuisance species such as buckthorn and wild grape vines.
- Consider thinning the windbreak to allow remaining trees to grow healthy and strong.

Site Preparation

Site preparation is critical to a successful windbreak.

- Control competing vegetation by tilling the ground or applying herbicide in the fall before the windbreak is planted.
- Plant a cover crop to reduce soil erosion and weed pressure before the trees are planted.
- If using plastic mulch, a specialized piece of equipment is needed to lay the plastic mulch on the ground and secure it with soil. Contact your local conservation authority for more information.

For More Information

OMAFRA windbreak videos

<http://www.omafra.gov.on.ca/english/environment/facts/windbreaks.htm>

Establishing Tree Cover BMP publication

<http://www.omafra.gov.on.ca/english/environment/bmp/trecov.htm>