Windbreaks

Strips of trees and shrubs designed to enhance crop or livestock production while providing conservation benefits.

**BENEFITS**

**Economic**

**ENERGY COST REDUCTION:** Reduces heating and cooling needs for living and working space by reducing indoor air exchange caused by wind.

**HIGHER CROP YIELDS:** Protects wind-sensitive crops and can increase total yields and crop quality.

**SHADE PROVISION AND WIND PROTECTION FOR LIVESTOCK:** Trees shade during the heat of the summer and provide protection from the wind.

**DIVERSIFIED INCOME/FOOD SECURITY:** Trees and shrubs planted in windbreak can be cultivated as food, fiber, and fodder to be marketed or used for subsistence purposes.

**Ecological**

**SOIL HEALTH:** Reduces soil loss caused by wind.

**GREATER WATER AVAILABILITY** to nearby crops due to lower evapotranspiration rates via reduced wind speed and the effects of catching snow.

**ODOR AND POLLUTANT BLOCKAGE:** Trees filter and block dust, drifting pesticides, and odors from nearby farms and homes.

**WILDLIFE HABITAT AND CORRIDORS:** Provides resources for pollinators and refuge for beneficial insects that control pests on farm.

**CHALLENGES**

**FINANCIAL INVESTMENT:** Requires farm to take area out of commodity crop production. Incorporating tree and shrub crops into windbreak helps to offset loss in acreage.

**POTENTIAL TRADEOFFS:** If windbreak design is intended to meet a combination of economic and ecological objectives, there may be tradeoffs in performance and/or cost among potential designs.

**HIGH INITIAL INVESTMENT, SLOW RETURN:** Including crop-producing trees and shrubs can require high maintenance (pruning, herbivory prevention, and weed control) in initial years when there are not yet returns via harvest.
Frequently Asked Questions

**DESIGN CONSIDERATIONS?**

**HEIGHT AND LENGTH:** height determines how far downwind protection will reach and length determines total area protected.

**DENSITY:** can be managed by plant species chosen. Higher windbreak density provides greater wind speed reduction.

**ORIENTATION:** windbreaks are most effective when oriented at right angles (L or U shapes).

**PLACEMENT:** windbreaks should be placed on windward sides of fields. Both summer and winter wind directions should be considered.

**WHAT TO PLANT?**

Species composition can greatly impact the effectiveness of a windbreak. Species may include fruit and nut producing shrubs and trees for an edible windbreak. Recommended planting plan with rows listed windward to leeward.

- **ROWS 1-2:** Short, dense shrubs. (e.g. willow, hazelnut, brambles, currants, elderberry)
- **ROWS 3-4:** Tall shrubs or short broadleaf trees. (e.g. plum, persimmon, serviceberry)
- **ROWS 5-6:** Dense, mixed conifers.
- **ROWS 7-8:** Tall broadleaf hardwoods. (Can also be mixed with fast growing trees, such as hybrid poplar, for a quick windbreak that will transition to the hardwoods over time.)

**MANAGEMENT?**

Proper care for windbreaks is critical for long-term functioning. Weeding, pest and disease monitoring/control, protection from livestock and wildlife damage, pruning or replanting, and supplemental watering may be needed on a continuing or periodic basis.

**FUNDING AND PLANNING ASSISTANCE?**

Connect with the local conservation district and extension offices to learn about federal and state cost-share programs such EQIP, CRP, and CSP. These offices can also provide connections with regional consultants and technical service providers.