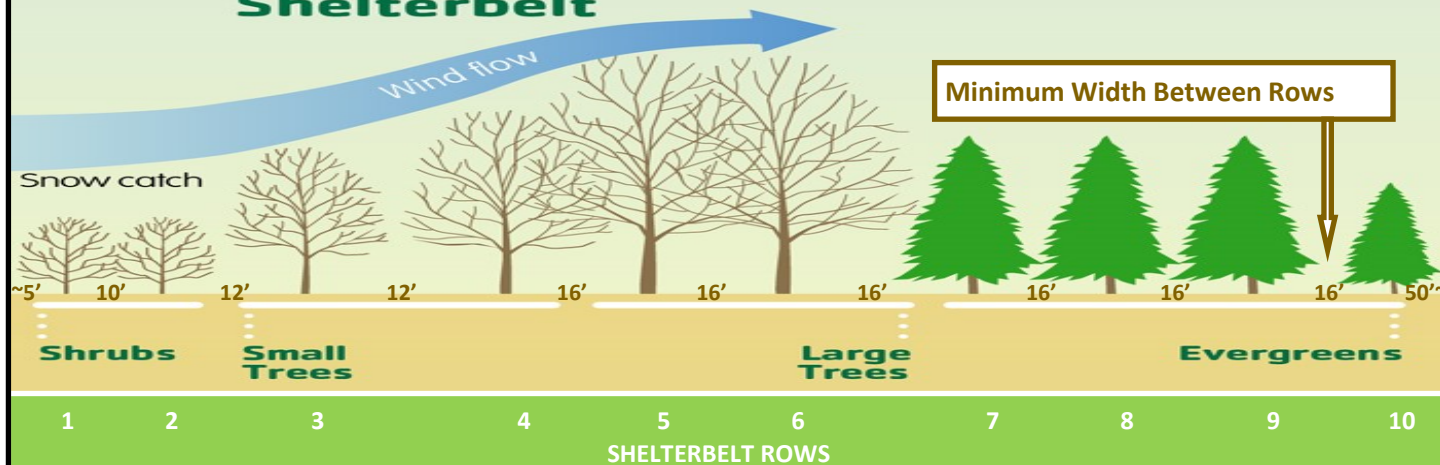


Cross-Section Of a 10-Row Shelterbelt



Shelterbelt Layout Strategy

Rows 1-2—Shrubs: Plants in these first rows are planted 3 to 6 feet apart within the row and 10 to 15 feet between the rows. (Lilac, Dogwood, Flame Willow)

Rows 3-4—Tall Shrub/Small Tree: Seedlings are planted 5-16 feet apart (Tall Shrubs)/8-16 feet apart (Small Trees) in the row and 12 to 16 feet from the shrub row. Row four should be 12 to 16 feet from row three. (Flame Willow, Cherry, Hazelnut, Poplar)

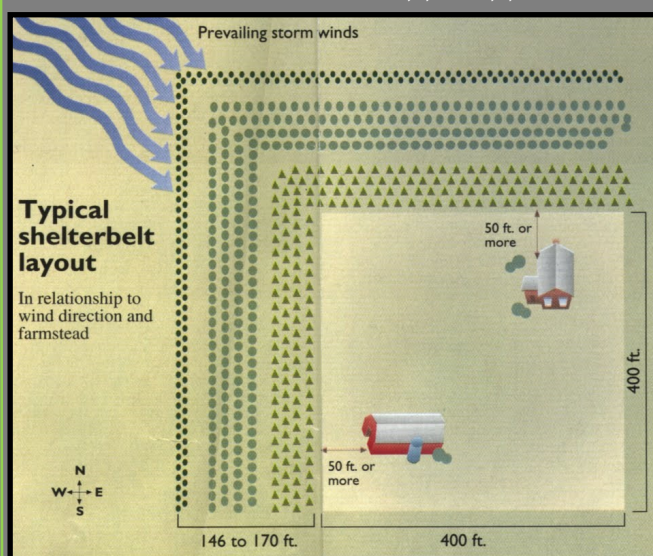
Rows 5-6—Tall Deciduous Tree: Row five should be spaced 16-20 feet behind row four. Row six should be spaced 16 to 20 feet behind row five. Trees should be planted 10 to 20 feet apart within the row. (Walnut, Maple, Oak)

Rows 7-8—Tall Conifer: Row seven should be spaced 16 to 20 feet behind row six, and row eight, 16 to 20 feet from row seven. Trees should be planted 10 to 20 feet apart within the row (Norway Spruce, White Pine)

Rows 9-10—Medium Conifer: These last rows are both located 16 to 20 feet from the previous row and trees are planted 10 to 20 feet apart within the row. (Black Hills/Colorado Spruce, Scotch Pine, Arborvitae)

Recommended Windbreak Designs by Width:

# of Rows	Min. Width	Rec'd Combination:
10 Rows	185 feet	1,2,3,4,5,6,7,8,9,10
9 Rows	169 feet	1,2,3,4,5,6,7,8,10
8 Rows	153 feet	1,2,3,4,5,7,9,10
7 Rows	137 feet	1,2,3,4,7,8,9 or 1,2,3,5,7,8,9
6 Rows	121 feet	1,2,3,7,8,9 or 1,3,5,7,8,9
5 Rows	109-111 feet	1,2,4,7,8 or 1,3,7,8,9
4 Rows	93-99 feet	1,2,7,8 or 1,4,7,8
3 Rows	83-90 feet	1,7,8 or 7,8,9



Species	Type	Height	Width	Preferences	Species	Type	Height	Width	Preferences
Black Hills Spruce	Conifer	30-60'	15-25'	Variety of soils	Red Maple	Broadleaf	40-60'	30-40'	Variety of soils
White Spruce	Conifer	40-60'	10-20'	Well drained soils	Sugar Maple	Broadleaf	60-75'	40-50'	Loamy soils
Colorado Spruce	Conifer	50-75'	10-20'	Well drained soils	Sw. White Oak	Broadleaf	50-80'	50-80'	Variety of soils
Norway Spruce	Conifer	60-90'	20-30'	Variety of soils	Red Oak	Broadleaf	60-75'	35-45'	Variety of soils
White Pine	Conifer	80-130'	20-40'	Well drained soils	Am. Hazelnut	Broadleaf	15-18'	10-12'	Loamy soils
Scotch Pine	Conifer	30-60'	30-40'	Loamy soils	Common Lilac	Broadleaf	8-15'	6-12'	Variety of soils
Arborvitae	Conifer	15-35'	6-20'	Variety of soils	Nanking Cherry	Broadleaf	6-10'	12-15'	Loamy soils
Black Walnut	Broadleaf	50-75'	50-70'	Variety of soils	Redosier Dogwood	Broadleaf	7-9'	8-12'	Variety of soils
Norway Poplar	Broadleaf	40-60'	20-35'	Variety of soils	Flame Willow	Broadleaf	15-20'	5-15'	Variety of soils