



EXTENSION SERVICE
NORTH DAKOTA STATE UNIVERSITY
FARGO, NORTH DAKOTA 58102

TREES

for livestock protection

(away from headquarters)

JOHN J. ZAYLSKIE
FORESTER



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Livestock needs protection from the weather, particularly from winter blizzards in the northern plains states.

Properly arranged windbreaks of trees, fences or sheds, or a combination of these, can protect your cattle from wind and blowing snow.

Most farmsteads usually have shelter of this kind for animals nearby. However, away from the farmstead adequate protection often is lacking and it is here that a properly arranged planting of trees can provide the needed protection.

COMPOSITION OF THE PLANTING

To do a good job, the tree planting must have density, height and width.

Density of planting: The planting must be dense to slow up the wind and divert it from the ground. By slowing down the wind you force it to drop the snow it is carrying in the tree area. By diverting the wind upwards, you attempt to have it by-pass the area being protected.

Wind intensifies the effect of cold on people as well as animals. A thermometer reading of 0 degrees has the same effect as -39 degrees if the wind is blowing at 20 miles per hour. Reducing this chilling effect of the wind can mean better weight gains on your cattle.

Height of planting: A planting gives wind protection in distance from the planting in direct proportion to its height. A tree planting 20 feet high will reduce wind velocity 20 per cent or more to a distance of 20 times the height of the trees, or 400 feet. Even at 40 times the height of the trees (800 feet) the wind reduction is 5 per cent.

Width of planting: Snow drift measurements after severe blizzards have shown that a dense, tall planting will trap and hold the snow within a band 185 feet wide to the down wind side of the first dense row of trees or shrubs. By having a wide planting, you can trap and hold the snow in among the trees.

CHILL TEMPERATURE CHART

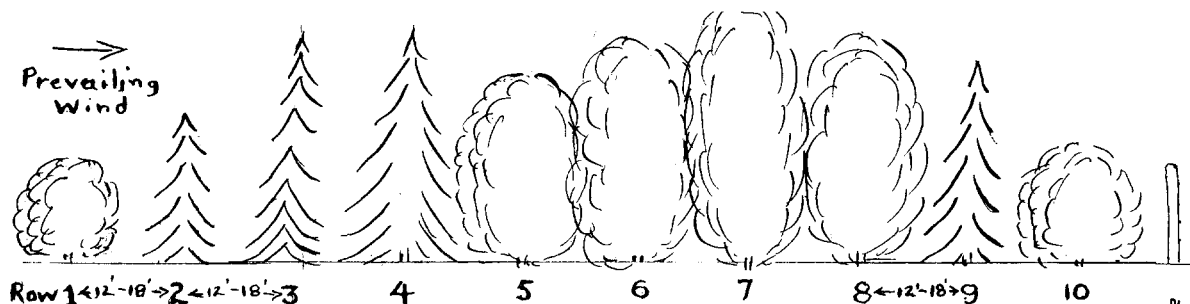
Wind speed	Thermometer reading									
	50	40	30	20	10	0	-10	-20	-30	
Calm										
5 mph	48	37	27	16	6	-5	-15	-26	-36	
10 mph	40	28	16	4	-9	-21	-33	-46	-58	
15 mph	36	22	9	-5	-18	-36	-45	-58	-72	
20 mph	32	18	4	-10	-25	-39	-53	-67	-82	
25 mph	30	16	0	-15	-29	-44	-59	-74	-88	
30 mph	28	13	-2	-18	-33	-48	-63	-79	-94	
35 mph	27	11	-4	-20	-35	-49	-67	-82	-98	
40 mph	26	10	-6	-21	-37	-53	-69	-85	-100	

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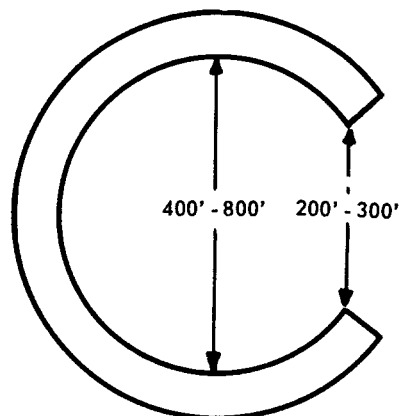
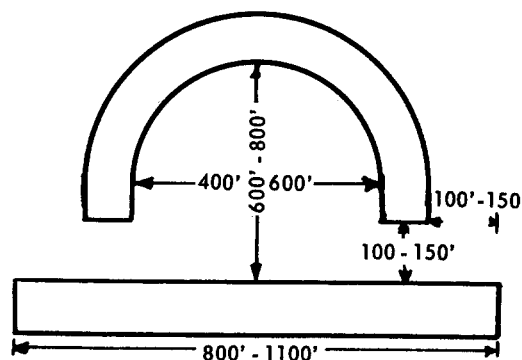
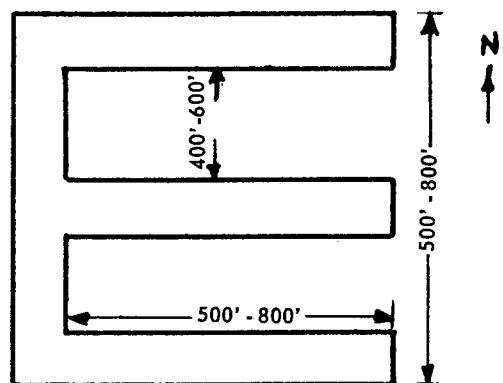
CROSS-SECTION OF A MODEL WINDBREAK

The planting should be dense enough to trap the drifting snow and wide enough to hold most of this snow.

- Row 1 Tight small to medium shrub such as caragana, lilac or honeysuckle, spaced 3 to 4 feet apart in the row.
- Row 2 Medium to tall shrub such as plum, or Siberian crabapple, or an evergreen such as redcedar spaced 4 feet apart.
- Rows 3 & 4 Evergreens preferred. Either a row of pine and a row of spruce or both of pine or spruce, depending on soil and sub-soil moisture. Trees spaced 6 feet apart.
- Row 5 Medium tree such as green ash, spaced 6 feet apart.
- Rows 6 & 7 Tall trees such as Siberian elm or American elm spaced 6 to 8 feet apart.
- Row 8 Medium tree such as green ash, spaced 6 feet apart.
- Row 9 Spruce, if soil will permit, otherwise a redcedar or tall shrub. Spruce at 6 feet, others at 4 feet apart.
- Row 10 Medium shrub, spaced 3 to 4 feet apart.

SIZE AND SHAPE OF PLANTING

The planting should be of such size that cattle can fit into the protected area comfortably. This may mean a protected area 400 to 600 feet across. Its shape should be such so that maximum protection can be had from various wind directions. It should protect from at least three sides. More would be better.



Summer livestock feeding behind field windbreak.

(Pictures courtesy SCS.)