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The Investment/Replacement Way to Find the Value of a Shelterbelt/Windbreak

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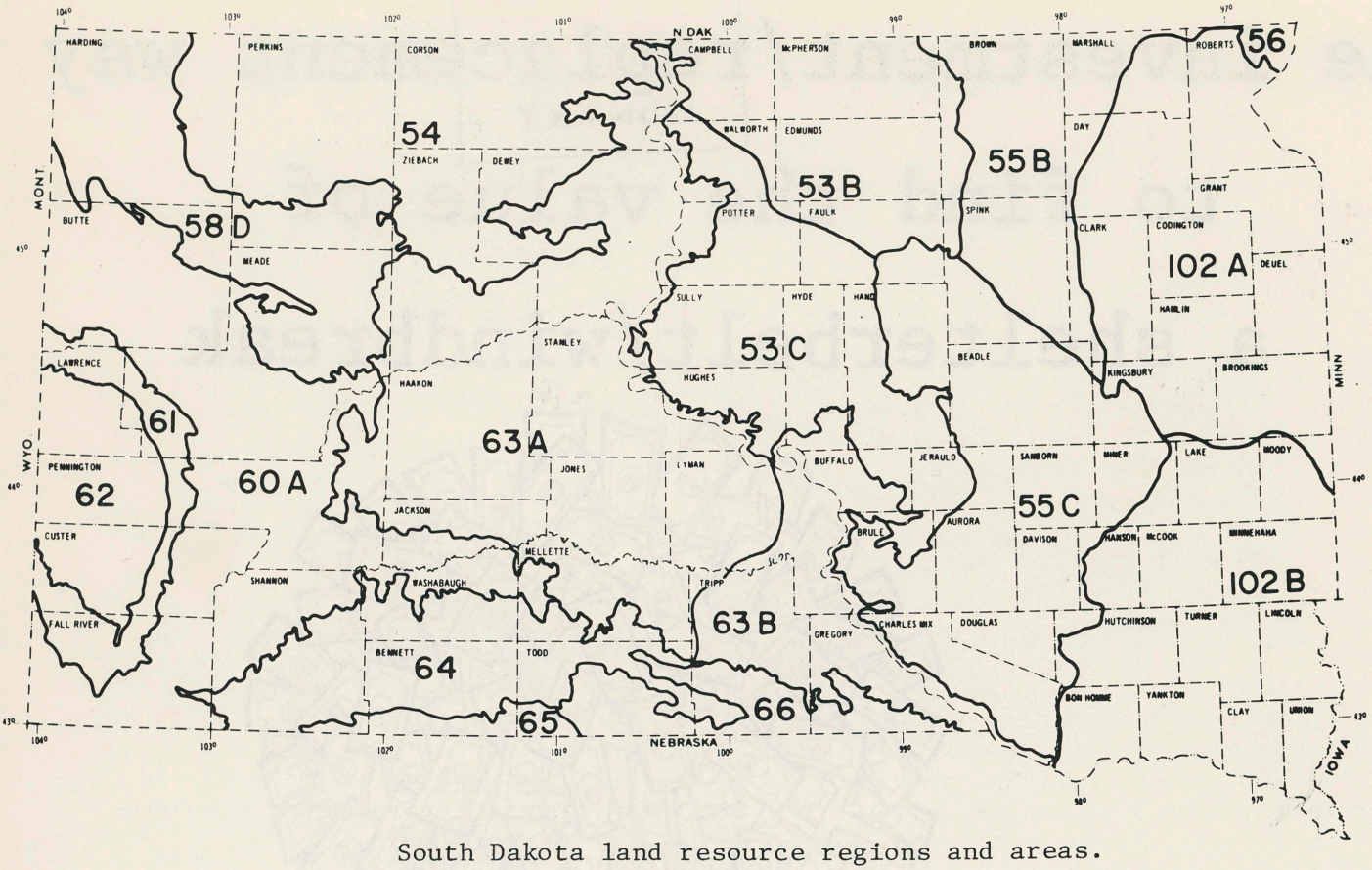

South Dakota land resource regions and areas.

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The investment/replacement way to find the value of a shelterbelt/windbreak

Larry Helwig, Norman W. Baer, Sheridan Dronen*

For the last several decades, South Dakota landowners annually have planted about 5,000 acres of shelterbelts and windbreaks. Such plantings are a way of life on the windswept plains.

But professionals and landowners alike are stumped when asked, "What is a shelterbelt or windbreak worth?"

Sometimes, as in damage suits or eminent domain proceedings, this question must be answered, and a monetary value--usually the cost of replacement--must be determined.

Benefits such as wildlife habitat, scenic beauty, and soil and water conservation all make tree plantings valuable to the public. However, these benefits are intangible, making it difficult to determine the monetary value. For that reason the valuation method presented here is based on the cost of replacement and does not attempt to use intangible benefits.

OTHER METHODS

There are methods that use the "benefits derived" approach. The protection afforded by trees does increase crop yields and does reduce livestock feed and heating costs. However, such methods introduce new sets of circumstances with each situation, and in the end arbitrary figures are used. Unfortunately, litigants are reluctant to accept arbitrary figures. A method that will work across the state, in many situations, and that deals in measurable items and is fair to all parties will be much more acceptable to both sides of a dispute.

A UNIFORM PROCEDURE

This guide gives a method of determining the value of trees in windbreaks and shelterbelts. Worksheets showing the step-by-step procedures for determining tree values of each species at any point in its life, in any part of the state, and under most existing conditions are included.

THE "INVESTMENT/REPLACEMENT" METHOD

A landowner who plants trees is willing to set aside acreages on which he will raise no cash crops for years to come, yet taxes on this land must still be paid. In addition there is an actual money investment in the trees and the planting of them and there are commitments to pest control programs for many years.

Since there are such tangible investments, it seems reasonable to assume that the worth of the tree planting can be determined. We know the costs involved in establishing and managing a tree planting to a serviceable age and size. If the tree planting is damaged or destroyed, we can then use those investment costs in determining replacement value.

The "investment/replacement" method simply places the dollars invested in a planting in a savings account at an established interest rate. The compound interest factor is then used to determine the value of the invested dollar at any point in the life of the tree.

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EMPLOYING THE CAPITALIZATION FORMULA

Two kinds of investments are made in a windbreak or shelterbelt: (a) Initial one-time investments, such as planting costs, and (b) annual investments, such as cultivation, which continue each year until intensive management is completed.

All these investments draw interest until the peak year of the life span of the tree. The peak year is the mid point of the tree's life span.

For instance, a honeylocust's life span is 40 years; its mid point or peak year is 20 years(Table 1). Monies invested in the tree draw interest for 20 years.

There will be years before and after the mid point in a tree's life span when the tree has a plateau of peak worth (Fig 1). For example, for a tree with a 40-year life span the plateau of peak worth may start at age 12 and extend to age 28. The tree during that 16-year period is worth its maximum value because it is vigorous and dense and tall enough to provide maximum service.

If the tree's computed worth is $37 at 20 years of age, it worth $37 from the 12th year through the 28th year (Table 2).

In the years before the 12th and after the 28th year the tree's worth is lower than the $37. In year 7 it will be worth 7/12ths of $37; in year 31 it will be worth 9/12ths of $37.

Table 3 shows how the investments for each class of trees were computed. The costs in each of the seven categories (A-G) are average costs. If local costs differ greatly, use them and re-figure according to the procedure used in the work-sheets.

An interest rate of 10% is used in the example. The figure is used in both the capitalization formula and in determing the compound interest factor. If another interest rate is used, secure the compound

Table 1. Trees and shrubs grouped according to life spans, years when species is most useful, average years of weed control, and number of years the isolation strip is maintained. Information is used when determining base value in Table 3.

Species groups (life span)	Weed control (average)	Years when most useful	Midpoint when most useful	Isolation strip maintenance
	(no. of years)	(age in years)	(age)	(no. of years)
Class I* (30 yrs) all elm, poplars, willow, Russian olive, all shrubs	5	10-20	15	10
Class II (40 yrs) crabapples, pear, honeylocust	8	12-28	20	12
Class III (50 yrs) black walnut, firs, larches	10	15-35	25	15
Class IV (60 yrs) green ash, hackberry, oak, boxelder, spruces	10	20-40	30	20
Class V (70 yrs) ponderosa pine, junipers	14	20-50	35	21

*When Class I trees grow in soil suitability groups 1 and 2, they become Class II trees. Shrubs remain Class I.

Fig 1. A sample "value per tree at a glance" in a shelterbelt with values obtained by the investment/replacement method.

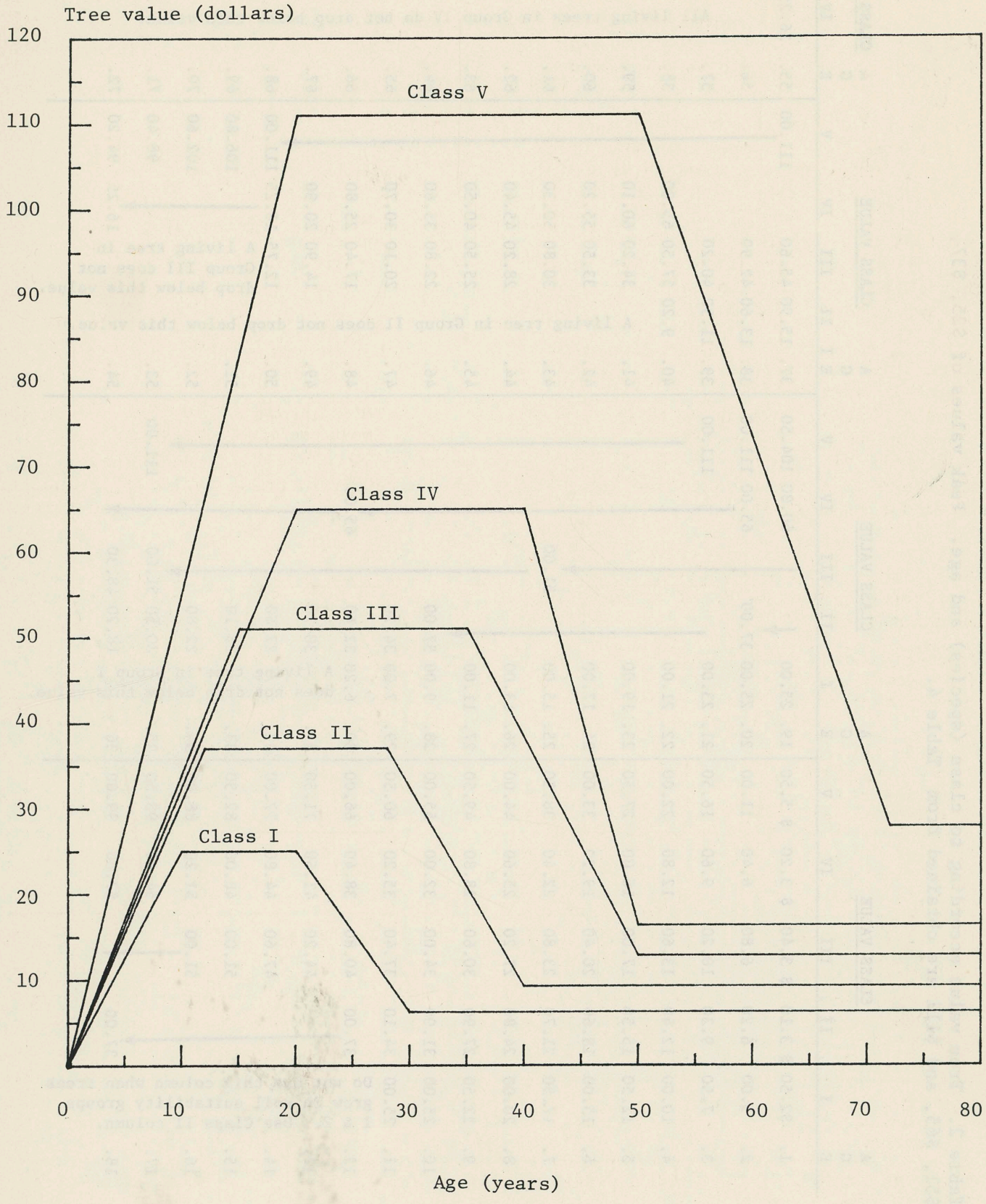

Table 2. Tree value according to class (species) and age. Peak values of $25, $37, $51, $65, and $111 are obtained from Table 4.

AGE	CLASS VALUE I	II	III	IV	V
1.	$2.50	$ 3.10	$ 3.40	$ 3.20	$ 5.50
2.	5.00	6.20	6.80	6.40	11.00
3.	7.50	9.30	10.20	9.60	16.50
4.	10.00	12.40	13.60	12.80	22.00
5.	12.50	15.50	17.00	16.00	27.50
6.	15.00	18.60	20.40	19.20	33.00
7.	17.50	21.70	23.80	22.40	38.50
8.	20.00	24.80	27.20	25.60	44.00
9.	22.50	27.90	30.60	28.80	49.50
10.	25.00	31.00	34.00	32.00	55.00
11.	25.00	34.10	37.40	35.20	60.50
12.		37.00	40.80	38.40	66.00
13.			44.20	41.60	71.50
14.			47.60	44.80	77.00
15.			51.00	48.00	82.50
16.			51.00	51.20	88.00
17.				54.40	93.50
18.		37.00		57.60	99.00

Do not use this column when trees grow in soil suitability groups 1 & 2. Use Class II column.

AGE	CLASS VALUE I	II	III	IV	V
19.	25.00			60.80	104.50
20.	25.00	37.00		65.00	111.00
21.	23.00				111.00
22.	21.00				
23.	19.00				
24.	17.00				
25.	15.00		51.00		
26.	13.00				
27.	11.00				
28.	9.00	37.00			
29.	7.00	34.70			
30.	6.20	32.40		65.00	
31.		30.10			
32.		27.80			
33.		25.10			
34.		22.80			
35.		20.50	51.00		111.00
36.		18.20	48.30		

A living tree in Group I does not drop below this value.

AGE	CLASS VALUE I	II	III	IV	V
37.	15.90	45.60			111.00
38.	13.60	42.90			
39.	11.30	40.20			
40.	9.20	37.50	65.00		
41.		34.20	60.10		
42.		33.50	55.20		
43.		30.80	50.30		
44.		28.20	45.40		
45.		25.50	40.50		
46.		22.80	35.60		
47.		20.10	30.70		
48.		17.40	25.80		
49.		14.90	20.90		
50.		12.75	16.25		111.00
51.					106.80
52.					102.60
53.					98.40
54.				16.25	94.20

A living tree in Group II does not drop below this value.

A living tree in Group III does not drop below this value.

AGE	CLASS VALUE IV	V
55.	16.25	90.00
56.		85.80
57.		81.60
58.		77.40
59.		73.20
60.		69.00
61.		65.80
62.		61.60
63.		57.40
64.		53.20
65.		49.00
66.		44.80
67.		40.60
68.		36.40
69.		32.20
70.		27.80
71.		27.80
72.		27.80

All living trees in Group IV do not drop below this value.

Table 3. Determining the base value of the tree classes when costs are as follows: Land value is $500/A; planting costs are $160/A; weed control is $50/A; isolation strip maintenance is $15/A; pest control is $5/A; taxes are $5/A; and interest rate is 10%. Calculations are for 15, 20, 25, 30, 35 years.

	PROCEDURE USED FOR DETERMINING VALUE			
Class I trees having a 30 Yr. Lifespan	Class II trees having a 40 Yr. Lifespan	Class III trees having a 50 Yr. Lifespan	Class IV trees having a 60 Yr. Lifespan	Class V trees having a 70 Yr. Lifespan
Siberian Elm $(1.10)^{15}$	Crabapple $(1.10)^{20}$	Honeylocust $(1.10)^{25}$	Green Ash $(1.10)^{30}$	Ponderosa Pine $(1.10)^{35}$
A. Land = $500/acre $500 x .10 = $50/yr. interest accrual				
$\frac{50}{.10} \times (4.18-1)$	$\frac{50}{.10} \times (6.73-1)$	$\frac{50}{.10} \times (10.34-1)$	$\frac{50}{.10} \times (17.45-1)$	$\frac{50}{.10} \times (28.10-1)$
$500 x 3.18 = $1,590	$500 x 5.73 = $2,865	$500 x 9.84 = $4,920	$500 x 16.45 = $8,225	$500 x 27.10 = $13,550
B. Planting Costs = $160 per acre				
$160 x 4.18 = $669	$160 x 6.73 = $1,077	$160 x 10.84 = $1,734	$160 x 17.45 = $2,792	$160 x 28.10 = $4,496
C. Cultivation and Chemical Weed Control = $50 per acre per year				
5 Years $(1.10)^5$	8 Years $(1.10)^8$	10 Years $(1.10)^{10}$	10 Years $(1.10)^{10}$	14 Years $(1.10)^{14}$
$\frac{50}{.10} \times (1.61-1) = ($305)$ (Do not total)	$\frac{50}{.10} \times (2.14-1) = ($570)$	$\frac{50}{.10} \times (2.59-1) = ($795)$	$\frac{50}{.10} \times (2.59-1) = ($795)$	$\frac{50}{.10} \times (3.80-1) = ($1,400)$
D. The Cost of Weed Control Invested to Peak Years				
(1) 10 Years $(1.10)^{10}$	12 Years $(1.10)^{12}$	15 Years $(1.10)^{15}$	20 Years $(1.10)^{20}$	21 Years $(1.10)^{21}$
$305 x 2.59 = $790	$570 x 3.14 = $1,790	$795 x 4.13 = $3,323	$795 x 6.73 = $5,350	$1,400 x 7.40 = $10,360
E. Maintenance of Isolation Strips after Cultivation Stopped = $15 per acre per year				
$\frac{15}{.10} \times (2.59-1)$	$\frac{15}{.10} \times (3.14-1)$	$\frac{15}{.10} \times (4.18-1)$	$\frac{15}{.10} \times (6.73-1)$	$\frac{15}{.10} \times (7.40-1)$
$150 x 1.59 = $238	$150 x 2.14 = $321	$150 x 3.18 = $477	$150 x 5.73 = $860	$150 x 6.40 = $960
F. Pest Control (Rodents, Disease and Insects) = $5 per acre				
$\frac{5}{.10} \times (4.18-1)$	$\frac{5}{.10} \times (6.73-1)$	$\frac{5}{.10} \times (10.34-1)$	$\frac{5}{.10} \times (17.45-1)$	$\frac{5}{.10} \times (28.10-1)$
$50 x 3.18 = $159	$50 x 5.73 = $287	$50 x 9.84 = $492	$50 x 16.45 = $823	$50 x 27.10 = $1,355
G. Taxes on Land = $5 per acre				
$\frac{5}{.10} \times (4.18-1)$	$\frac{5}{.10} \times (6.73-1)$	$\frac{5}{.10} \times (10.34-1)$	$\frac{5}{.10} \times (17.45-1)$	$\frac{5}{.10} \times (28.10-1)$
$50 x 3.18 = $159	$50 x $5.73 = $287	$50 x 9.84 = $492	$50 x 16.45 = $823	$50 x 27.10 = $1,355
TOTAL $3,605	$6,627	$11,438	$18,873	$32,076

interest factor from a local bank or use a calculator.

A. Land Value--When a landowner decides to devote land to a tree planting, the land is committed only to that use. If land values are $500/A, the formula recognizes that the landowner has invested $500/A in the tree planting.

B. Planting Costs (including site preparation)--Planting costs include the costs of the trees and vary from area to area. Any charges by linear measurement need to be converted to acreage to use the evaluation process. A figure of $160/A was used in the basic example.

C. Vegetation Control--There is nothing as important to the life span and health of a tree planting as weed and grass control. The cost of a weed control program will vary with species and other factors such as spacing, soils, and methods.

Expect about a $50/A weed control cost annually, at least until the crowns of the trees close to shade out the vegetation below. See Table 1 for the average number of years that cultivation is required for each class of trees.

In older plantings, even though the crowns do shade the surface below, there will always be a few weeds. Ignore this sparse plant growth because usually they will not be competitive. However, a planting with sod forming grass has or soon will have problems. A planting with wide spacing must be cultivated for a long time, perhaps for the entire life of the planting.

All of these situations are recognized in the valuation process.

D. Vegetation Control Monies Re-invested--When shading of the ground is attained, cultivation can be stopped. The money used in the weed control program is then invested until the peak year for each species. When totalling entire costs (Table 3) include only the re-invested money (Item D, Table 3), since this already contains the initial costs of vegetation control.

E. Isolation Strip Maintenance--An isolation strip approximately 14 feet wide is maintained for the life of the planting. It is a strip kept vegetation-free by cultivation to keep weeds from slowly making their way into the planting. It also provides a source of moisture for the outside rows and reduces the chance of fire destroying the planting.

F. Pest Control--Management includes pest control. The example shows $5/A per year. This will very likely not be used every year, but one application of a pesticide could amount to $50-$100/A, using up the entire portion for 10 to 20 years.

Pest control is included in the example to show it is part of a good management program. If larger sums are used they should be recognized in a new computation.

G. Taxes--The taxes are usually about 1% of the value of the land. A $500/A piece of ground will have about $5 tax levied per acre annually.

RECOGNIZING THE VARIABLES

Depending on design, management, and site, tree plantings have varying values. Factors have been assigned by professionals to recognize these different situations and are known as increasers and reducers.

THE INCREASERS

Most windbreak systems have a mixture of species. Then a disease or insect attack will not destroy the entire planting. A combination of species will have trees that grow fast and serve early along with trees that grow slowly but serve a long time.

The fast growers usually start to lose their effectiveness in about 25 years and will need replacing or removal. The removal and replanting jobs are added costs.

A formula based only on time does not recognize the true worth of the fast growing trees, nor does it recognize a wind-

break as a unit. The fast growers provide just as much protection during their peak years as do the slow growers later on in a windbreak's life.

To compensate fast growing trees for early service, a factor is applied based upon comparisons of the earliest years of service (Table 4). For instance, green ash and ponderosa pine start useful service at 15 to 20 years while the Siberian elm begins its service at 8 to 10 years, or twice as early. Consequently, a contributory factor of 2 is allowed to Siberian elm or other fast growers for their contribution to the unit.

SOILS

The Soil Conservation Service has classified the soils in South Dakota by their suitability to support tree growth. The soil can be a reducer or increaser in value. A tree on some soils may have a life span of 15 to 30 years, but the same tree if planted on a more suitable soil would have a life span of double or triple the 15 to 30 years.

Table 5 gives the windbreak suitability group factors. Check with the local SCS or district forester to find out which soil group your planting is on. The adjustment figures range from 1.5 to .6 and must be included in the worksheet.

THE REDUCERS

Competing vegetation will reduce the life and performance of a planting. The worth will be reduced by the following situations.

Sod forming grasses--Grass is one of the worst competitors for moisture in a tree planting. It will reduce the life and performance of a planting by 35%. Research shows dramatic increases in growth and vigor of tree plantings when grass is removed.

Grazing--As indicated in Fact Sheet 746, "No place for livestock," grazing is slow death for a shelterbelt. If grazed, the value of the tree planting is reduced by 50%.

Table 4. The dollars per acre investments are taken from Table 3. The species value factor is based on professional opinion when service by growth rate is considered. The per tree value is based on a 10 x 15 ft spacing. If spacing differs the value per tree will differ.

Class	$/A invested		Species value factor		Value/A with 290 trees		value/ tree
	$				$		$
I	3,605	X	2	=	7,210	=	25
II	6,627	X	1.6	=	10,603	=	37
III	11,438	X	1.3	=	14,869	=	51
IV	18,873	X	1.0	=	18,873	=	65
V	32,076	X	1.0	=	32,076	=	111

Table 5. Windbreak/soil suitability rating. (You can get it from the SCS.) When Class I trees are growing in soil groups 1 & 2, they automatically become Class II trees.

Windbreak suitability group	Eastern & East Central LRA*	West & West Central LRA**
1 & 2	1.25	1.50
3 & 5	1.00	1.00
4	.85	.75
6,7,8,9	.60	.60

* 102, 53, 55, 56, 63B, 66
** 54, 58D, 60A, 63A, 64, 65

CERTAIN CONSIDERATIONS

It is professional opinion that a living tree's value should not decline below 25% of its peak value. Even though the crown is sparse, it will still have

limited value in wind and snow control plus environmental benefits.

American elm is considered a high risk tree in all South Dakota tree plantings. Dutch elm disease can wipe out an entire row in one growing season. American elm is no longer being recommended in new tree plantings. Therefore, it is considered to have only Class I value when using this formula.

DETERMINING THE VALUE (Example problem)

A west river rancher who has land valued at $250/A wishes to know the monetary replacement value of his windbreak system established during the last 25 years. The records show the following acreages of trees and shrubs:

Class	Acres	Average Age
I (elm, olive, shrubs)	11	12
II (crabapple)	3	15
III (black walnut)	.5	3
IV (ash, spruce)	6	22
V (pine, cedar)	2.5	20

Planting costs	$160/A
Weed control costs	100/A
Isolation strip maintenance	30/A/yr
Pest control	10/A/yr
Taxes	2.50/A/yr
Spacing	20 x 10 feet

The land resource value is 54 and 63A planted upon a windbreak group 9. It is estimated that one half of all plantings are grassed and grazed. The other half is cleanly cultivated. The values are computed in the enclosed worksheets (long form). The bank indicates money can be invested at 10%.

WORKSHEET 1A FOR CALCULATING YOUR LAND, TAX AND MAINTENANCE COSTS AND ADJUSTING SPACING VARIATION (PER ACRE)

	Class I	Your Value	Class II	Your Value	Class III	Your Value	Class IV	Your Value	Class V	Your Value
A. Land Value										
(250) Your Land Value = % $500	.50 $ Your x 1590 = %	795	$ Your x 2865 = %.50	1432	$ Your x 4920 = %.50	2460	$ Your x 8225 = %.50	4112	$ Your x 13,550 = %.50	6775
B. Planting Costs										
(160) Your Plntg Costs=% $160	1.00 Your x 669 = %	669	Your x 1077 = % 1.00	1077	Your x 1734 = % 1.00	1734	Your x 2792 = % 1.00	2792	Your x 4,496 = % 1.00	4496
C. Weed Control Costs (Do not total for "H". Transfer to "D".)										
(100) Your Costs/ac/yr = % $50	2 Your x 305 = %	610	Your x 570 = % 2	1140	Your x 795 = % 2	1590	Your x 795 = % 2	1590	Your x 1,400 = % 2	2800
D. Weed Control Costs Invested (Take figures from "C")	Your value (above) from "C" x 2.59 =	1580	Your value (above) from "C" x 3.14 =	3580	Your value (above) from "C" x 4.18 =	6646	Your value (above) from "C" x 6.73 =	10700	Your value (above) from "C" x 7.40 =	20720
	610		1140		1590		1590		2800	
E. Maintenance of Isolation Strips										
(30) Your Costs/ac/yr = % $15	2 Your x 238 = %	476	Your x 320 = % 2	640	Your x 477 = % 2	954	Your x 860 = % 2	1720	Your x 960 = % 2	1920
F. Pest Control										
(10) Your Costs/ac/yr = % $5	2 Your x 159 = %	318	Your x 287 = % 2	574	Your x 492 = % 2	984	Your x 823 = % 2	1646	Your x 1,355 = % 2	2710
G. Taxes										
(2.50) Your Taxes/acre = % $5	.50 Your x 159 = %	80	Your x 287 = % .50	143	Your x 492 = % .50	246	Your x 823 = % .50	411	Your x 1,355 = % .50	677
H. TOTAL MONEY		$3918		$7446		$13024		$21381		$37298

(GO TO LINE "J")

Worksheet 2A (Continued)

J. The Species Value Factor	Total from (above) Line "H" 3918 x 2 = 7836	Total from (above) Line "H" 7446 x 1.6 = 11914	Total from (above) Line "H" 13024 x 1.3 = 16931	Total from (above) Line "H" = 21381	Total from (above) Line "H" = 37298
K. Maximum Per Tree Value: (15 x 10 spacing = 290/ acre)	218	7836	11914	16931	21381	37298
	43,560 / Your Spacing (150) = Trees/ Acre (290)	"J" Total Trees/Acre = $36 (218)	"J" Total Trees/Acre = $55 (218)	"J" Total Trees/Acre = $78 (218)	"J" Total Trees/Acre = $98 (218)	"J" Total Trees/Acre = $171 (218)
L. Percentage Maximum Worth of Trees in Your Area	36	55	78	98	171
	Max value from "K" / Max value from Age Chart	Max value "K" $25.00 = 1.44%	Max value "K" $37.00 = 1.49%	Max value "K" $51.00 = 1.53%	Max value "K" $65.00 = 1.51%	Max value "K" $111.00 = 1.54
M. Value per tree for age group,	1.44	1.49	1.53	1.51	1.54
	% from "L" x value for age =	Above (L) % x value for age (from chart) = $36 ($25)	Above (L) % x value for age = $55 ($37)	Above (L) % x value for age = $15.61 ($10.20)	Above (L) % x value for age = $98 ($65)	Above (L) % x value for age = $171 ($111)

(Transfer figures from line "M" to column "A" in 2nd worksheet.)

WORKSHEET FOR DETERMINING WORTH OF SHELTERBELT

Column "A"	Column "B"	Column "C"	Column "D"	Column "E"		Column "F"
Group Age Adj. Value For Corson (County)	Tree/Soil Suitability Rating For Corson (County)	Weed Control History	Condition History	Number of Trees Evaluated		Total Group Value For Corson (County)
Take value from first worksheet.	Select rating from Chart II, or secure from SCS office. Multiply this .6 factor times value column "A" and enter below.	If shelterbelt has grass, multiply figure in Col. "B" by .65. If clean retain same figure as "B" (enter below).	If shelterbelt has evidence of grazing, multiply Col. "C" figure by .50. If not, retain same figure in "C" (enter below).	Count number of trees and shrubs affected. Multiply by figure in Col. "D" and enter in Col. "F". If windbreak soil suitability is 1 or 2, add number of Class I trees to Class II trees.		
Class I (Trees and Shrubs) Adjusted Value $ 36	.6 x 36 = #21.60	.65 x 21.60 = 14.04 21.60	.50 x 14.04 = 7.02 21.60	1199	=	8,416.98
				1199	=	25,898.40
Class II Adjusted Value $ 55	.6 x 55 = #33.00	.65 x 33 = 21.45 33.00	.50 x 21.45 = 10.73 33.00	327	=	3,508.70
				327	=	10,791.00
Class III Adjusted Value $ 15.61	.6 x 15.61 = #9.37	.65 x 9.37 = 6.10 9.37	.50 x 6.10 = 3.05 9.37	54.5	=	166.20
				54.5	=	510.70
Class IV Adjusted Value $ 98	.6 x 98 = #58.80	.65 x 58.80 = 38.22 58.80	.50 x 38.22 = 19.11 58.80	654	=	12,497.90
				654	=	38,455.20
Class V Adjusted Value $ 171	.6 x 171 = #102.60	.65 x 102.60 = 66.69 102.60	.50 x 66.69 = 33.35 102.60	272.5	=	9,087.88
				272.5	=	27,958.50

Adjusted Total Worth Of Planting For Corson County - $ 137,291.46

WORKSHEET 1A FOR CALCULATING YOUR LAND, TAX AND MAINTENANCE COSTS AND ADJUSTING SPACING VARIATION (PER ACRE)

	Class I	Your Value	Class II	Your Value	Class III	Your Value	Class IV	Your Value	Class V	Your Value
A. Land Value										
Your Land Value / $500 = %	$ Your x 1590 = %	_____	$ Your x 2865 = %	_____	$ Your x 4920 = %	_____	$ Your x 8225 = %	_____	$ Your x 13,550 = %	_____
B. Planting Costs										
Your Plntg Costs / $160 = %	Your x 669 = %	_____	Your x 1077 = %	_____	Your x 1734 = %	_____	Your x 2792 = %	_____	Your x 4,496 = %	_____
C. Weed Control Costs (Do not total for "H". Transfer to "D".)										
Your Costs/ac/yr / $50 = %	Your x 305 = %	_____	Your x 570 = %	_____	Your x 795 = %	_____	Your x 795 = %	_____	Your x 1,400 = %	_____
D. Weed Control Costs Invested										
(Take figures from "C")	Your value (above) from "C" x 2.59 =	_____	Your value (above) from "C" x 3.14 =	_____	Your value (above) from "C" x 4.18 =	_____	Your value (above) from "C" x 6.73 =	_____	Your value (above) from "C" x 7.40 =	_____
E. Maintenance of Isolation Strips										
Your Costs/ac/yr / $15 = %	Your x 238 = %	_____	Your x 320 = %	_____	Your x 477 = %	_____	Your x 860 = %	_____	Your x 960 = %	_____
F. Pest Control										
Your Costs/ac/yr / $5 = %	Your x 159 = %	_____	Your x 287 = %	_____	Your x 492 = %	_____	Your x 823 = %	_____	Your x 1,355 = %	_____
G. Taxes										
Your Taxes/acre / $5 = %	Your x 159 = %	_____	Your x 287 = %	_____	Your x 492 = %	_____	Your x 823 = %	_____	Your x 1,355 = %	_____
H. TOTAL MONEY		$_____		$_____		$_____		$_____		$_____

(GO TO LINE "J")

Worksheet 2A (Continued)

J. The Species Value Factor

Total from (above) Line "H" x 2 = _____	Total from (above) Line "H" x 1.6 = _____	Total from (above) Line "H" x 1.3 = _____	Total from (above) Line"H" = _____	Total from (above) Line "H" = _____

K. Maximum Per Tree Value: (15 x 10 spacing = 290/ acre)

43,560 / Your Spacing (150) = Trees/ Acre (290)	"J" Total Trees/Acre = _____	"J" Total Trees/Acre = _____	"J" Total Trees/Acre = _____	"J" Total Trees/Acre = _____	"J" Total Trees/Acre = _____

L. Percentage Maximum Worth of Trees in Your Area

Max value from "K" / Max value from Age Chart =	Max value "K" $25.00 = _____%	Max value "K" $37.00 = _____%	Max value "K" $51.00 = _____%	Max value "K" $65.00 = _____%	Max value "K" $111.00 = _____

M. Value per tree for age group,

% from "L" x value for age =	Above (L) % x value for age = _____ (from chart)	Above (L) % x value for age = _____	Above (L) % x value for age = _____	Above (L) % x value for age = _____	Above (L) % x value for age = _____

(Transfer figures from line "M" to column "A" in 2nd worksheet.)

WORKSHEET FOR DETERMINING WORTH OF SHELTERBELT

Column "A"	Column "B"	Column "C"	Column "D"	Column "E"	Column "F"
Group Age Adj. Value For _____ (County)	Tree/Soil Suitability Rating For_____ (County)	Weed Control History	Condition History	Number of Trees Evaluated	Total Group Value For_____ (County)
Take value from first worksheet.	Select rating from Chart II, or secure from SCS office. Multiply this _____factor times value column "A" and enter below.	If shelterbelt has grass, multiply figure in Col. "B" by .65. If clean retain same figure as "B" (enter below).	If shelterbelt has evidence of grazing, multiply Col. "C" figure by .50. If not, retain same figure in "C" (enter below).	Count number of trees and shrubs affected. Multiply by figure in Col. "D" and enter in Col. "F". If windbreak soil suitability is 1 or 2, add number of Class I trees to Class II trees.	
Class I (Trees and Shrubs) Adjusted Value $_____					
Class II Adjusted Value $					
Class III Adjusted Value $					
Class IV Adjusted Value $					
Class V Adjusted Value $					

Adjusted Total Worth Of Planting For _____ County - $_____

WORKSHEET 1 (Follow Steps 1 and 2)

SHELTERBELT/WINDBREAK PER TREE VALUES BASED UPON INVESTMENT/REPLACEMENT COSTS

Cost Categories	POINT DISTRIBUTION 11	13	14	15	16	17	20	Insert Points For Each Class of Trees/Shrubs I	II	III	IV	V
Land Values per acre $	Below 150	150 to 299	300 to 449	450 to 599	600 to 749	750 to 899	Above $900					
Planting Costs/ acre $	Below 100	120	140	160	180	200	Above 200					
Intensive Care Years	Below 5	5	6	7	8	10	Over 10					
Taxes/acre	Below 1.00	1.50	3.00	4.50	6.50	8.00	Over 8.00					

Step #1: Add points given to each class of trees and multiply total by the class value factor(s).

Peak Value Per Tree $_____

Class I value/tree		x .43 =
Class II value/tree		x .64 =
Class III value/tree		x .88 =
Class IV value/tree		x 1.13 =
Class V value/tree		x 1.9 =

Step #2: Calculate Age Value

Class	When Trees Are Younger Than (Yrs.)	Reduce By %/yr.	When Trees Are Older Than (Yrs.)	Reduce By	100% - % =	WHEN TREE IS PAST LIFE SPAN AND LIVING DO NOT REDUCE LOWER THAN 25%. % of Value Remaining	X From Step #1 =	Age Adj. Value $
I	10 yrs.-___=___ age	x10%/yr.=___%	___-20=___	x8%/yr=___%	____ - ____ =	_____	X $_____	= $_____
II	12 yrs.-___=___ age	x 8%/yr.=___%	___-28=___	x6%/yr=___%	____ - ____ =	_____	X $_____	= $_____
III	15 yrs.-___=___ age	x 7%/yr.=___%	___-35=___	x5%/yr=___%	____ - ____ =	_____	X $_____	= $_____
IV	20 yrs.-___=___ age	x 5%/yr.=___%	___-40=___	x7%/yr=___%	____ - ____ =	_____	X $_____	= $_____
V	20 yrs.-___=___ age	x 5%/yr.=___%	___-50=___	x4%/yr=___%	____ - ____ =	_____	X $_____	= $_____

(Transfer to Worksheet #2B)

WORKSHEET FOR DETERMINING WORTH OF SHELTERBELT

Column "A"	Column "B"	Column "C"	Column "D"	Column "E"	Column "F"
Group Age Adj. Value For _____ (County)	Tree/Soil Suitability Rating For_____ (County)	Weed Control History	Condition History	Number of Trees Evaluated	Total Group Value For_____ (County)
Take value from first worksheet.	Select rating from Chart II, or secure from SCS office. Multiply this _____factor times value column "A" and enter below.	If shelterbelt has grass, multiply figure in Col. "B" by .65. If clean retain same figure as "B" (enter below).	If shelterbelt has evidence of grazing, multiply Col. "C" figure by .50. If not, retain same figure in "C" (enter below).	Count number of trees and shrubs affected. Multiply by figure in Col. "D" and enter in Col. "F". If windbreak soil suitability is 1 or 2, add number of Class I trees to Class II trees.	
Class I (Trees and Shrubs) Adjusted Value $_____					
Class II Adjusted Value $					
Class III Adjusted Value $					
Class IV Adjusted Value $					
Class V Adjusted Value $					

Adjusted Total Worth Of Planting For _____ County - $_____