

NEBRASKA FOREST SERVICE

UNIVERSITY OF
Nebraska

Windbreak & Shelterbelt Appraisal

Gary Naughton, David Mooter, Richard Woollen¹

Photo: Lynn Betts

Living windbreaks and shelterbelts are important assets in rural areas of the Great Plains that protect homes, crops and domestic animals from wind throughout the year. They offer a safe haven for wildlife and provide attractive visual barriers. Windbreaks and shelterbelts can have measurable monetary value, and if they are damaged or destroyed, a professional appraisal may be necessary to determine their value.

This publication is designed for professionals who are involved in windbreak and shelterbelt appraisal. It is also meant to show the complexity of appraisal work and the need to have professional help.

Who is Qualified to Do Appraisals?

An appraisal is the act of estimating or judging the value of something.

It requires thorough knowledge of the thing being appraised, along with training and expertise in the established methods of arriving at an *opinion of value*. Appraisals can be quite complicated, especially in cases where damages involve one person and the property of another.

It's very unlikely that an untrained individual would be able to appraise windbreak damage or loss accurately and be able to defend that opinion of value in court. If the damage or loss is significant, it's a job for a professional who is trained in the appraisal process and has extensive knowledge of the capabilities and limitations of windbreaks and shelterbelts. If the damage or loss is minor, a formal appraisal may not be necessary.

Tree appraisal involves the part of the real estate that is affected by the trees, and it is important to obtain current market

value appraisal data for that parcel from a certified secondary source. This information is usually available from the public records of the local property taxing authority.

Concept of 'Reasonable Value'

Regardless of the method used to appraise a windbreak or shelterbelt, the final value must be reasonable and justifiable in relation to the value of the property served. Some commonly accepted guides are: (1) an entire "perfect" farmstead windbreak will not likely exceed 15 percent of the total value of the structures protected; and, (2) an entire "perfect" shelterbelt will not likely exceed 5 percent of the total value of the protected portion of an agricultural field.

The initial estimate of the value of a windbreak or shelterbelt may have to be adjusted downward to be reasonable and justifiable. There are no set standards to make this decision, and the final appraisal will rely on the judgment, experience and expertise of the appraiser. The final opinion of the value of damages should always compare the value before and after the event.

Appraisal Methods

The Appraisal Institute (www.appraisalinstitute.org/) has established three independent approaches to estimating the value of real estate that should be the applicable standards for appraising windbreaks and shelterbelts. They are Comparable Market Sales, Income Productivity and Reproduction or Replacement Cost. To provide the fairest basis for the final opinion of value, every case should be evaluated by more than one of these approaches to the greatest extent possible. They are not to be added together or mathematically averaged, but should guide the final decision of value before and after a damage incident.

The following examples demonstrate the different approaches for appraising a partially damaged farmstead windbreak specifically located and designed to provide winter protection to a home. The entire windbreak unit is on the north side, properly designed, was in good (80 percent) condition before the incident and contains three rows that are each 150 feet long.



Photo: David P Mooter



Photo: NU/IARN



Photo: Tim McCabe

Top: Fire can cause partial or complete damage to a windbreak, destroying a valuable asset.

Center: A series of single-row shelterbelts provides an alternative to the traditional multi-row design.

Above: Growth and survival of new tree plantings are better with weed-free management.

Comparable Market Sales

Based on your examination of the location, position, structure and condition of the windbreak before the damage, you conclude that it had about 30 years' useful life remaining and was contributing approximately 8 percent of the appraised market value of the home. You further estimate that the windbreak has been permanently damaged to the extent of 25 percent of its contributory value. The public record of the latest market value appraisal of the home is \$120,000. This puts the value of the windbreak at: $\$120,000 \times 8\% = \$9,600$ before the incident, which makes the value of the loss $\$9,600 \times 25\% = \$2,400$.

Income Productivity

Considering that cost savings in heating bills is "income," you need to look at the owner's home utility cost records for the 12-month period prior to the incident. The local average heating season is 210 days with a 90-day peak in the center. The total cost of gas and electricity for the period was \$1,800, but looking at the remainder of the year you conclude that 30 percent of that amount is base load for the home and independent of the heating season, leaving $\$1,800 - 30\% = \$1,240$ for annual heating costs.

Research has shown that a "good" windbreak can save up to 15 percent of winter heating costs per year. This estimates the annual income from the windbreak at $\$1,240 \times 15\% = \186 before the damage, and $\$186 \times 25\% = \46.50 as the annual loss of value. Use the discounted capitalization formula to account for the lost 30 years' remaining useful life:

$$\text{Value} = a \frac{[(1+i)^n - 1]}{i(1+i)^n}$$

Where:

a = average net annual income (\$46.50 in this case);

i = the discount interest rate expressed as a decimal (30-year U.S. treasury bills, 0.043 in this case);

n = number of interest-bearing periods (30 years - 1 year = 29)

By calculation, this is $\$46.50 (2.39035) / .043 (3.39035) = \$111.15 / 0.145785 = \$770$ (rounded up to the nearest 10) as the estimated value of the loss.

Reproduction or Replacement Cost

The reproduction concept is developed on the idea that normal and accepted practices used in the original establishment of tree plantings should be followed, but with current applicable costs. These current costs are compounded forward for the appropriate number of years at the current best “secure” rate that fits the time frame for reproduction in the specific case. In this example, the U.S. treasury bill rate on a 30-year investment (4.3 percent compounded annually) is used to determine the lost value. Current local certificate of deposit rates also could be used, especially when shorter recovery periods are indicated.

Using the same case as in the above examples, you determine that 10 trees need to be replaced. Planted as seedlings (the most common practice for windbreak plantings), the estimated value lost is calculated as \$10/tree x 10 trees = \$100 for seedlings, site preparation, planting and three years’ weed control. Then, carrying the \$100 forward 29 interest periods (the remaining useful life of the old windbreak minus one year) at 4.3 percent interest compounded annually, the estimate of the value lost equals \$340 (rounded up).

The replacement concept is developed on the idea that the cost of a thing is a reliable estimate of its value. It can be used when the trees involved may be easily replaced with trees of the same size and species, and is especially useful for smaller damage claims. However, it has serious limitations because cost and value are not the same thing. In our example, the 10 dead trees could be replaced with 5- or 6-foot-tall saplings from a local retail nursery for a cost of \$250 each, planted and guaranteed. The total cost for the 10 trees is \$2,500. The condition of the destroyed trees before the fire was estimated to be 80 percent and the appropriate deduction is taken, suggesting a value of \$2,000. You also estimate that these new trees will become fully serviceable components of the windbreak in 15 years or less, so you carry the \$2,000 forward for n-1 years (14 periods) at 4.3% interest, which estimates of the value lost at \$3,610 (rounded up).

Resolution of the Three Approaches

The approaches to appraisal are mutually exclusive and are not to be added together or averaged to arrive at the final opinion of value. Listed in the order presented above, the calculated values are:

- | | | |
|-------------------------------------|---|---------|
| 1. Comparable Market Sales | = | \$2,400 |
| 2. Income Productivity | = | \$ 770 |
| 3. Reproduction or Replacement Cost | | |
| a. Seedling | = | \$ 340 |
| b. Sapling | = | \$3,610 |

This wide disparity suggests that a review of all of the evidence and decisions should be made before finalizing the appraisal. The very low cost of replacing the damaged area with seedlings shows why this planting method is preferred. The high cost of replacement with retail-priced saplings reflects costs for labor, transport and third-party profit. The low home heating savings with the income approach shows that windbreaks must receive significant “other” values not measured in the example. In this case, the appraiser would be justified to settle on a value of \$2,000 to \$2,500 for the damages.



Photo: PFRA



Photo: Erwin C. Cole



Photo: David P. Mooter

Top: Severe wind erosion can damage cropland that is not protected by shelterbelts.

Center: A windbreak of conifer trees provides year-round protection from wind erosion for this cropland.

Above: Well-located shelterbelts catch snow and add to soil moisture in the protected area.

'Cost of Cure'

This is not a recognized approach to appraisal of real property, but is a frequently used "add-on" when considering total damages caused at the hand of another (tort cases). It considers restoring the property, as nearly as possible, to its original condition. The factors considered are debris removal and cleanup costs. Cost of cure is used when damages are extensive and involve larger and older windbreaks and shelterbelts. There are no exact guidelines as to when extensive damage begins; it is the

responsibility of each appraiser to determine and justify the extent of this remedy.

For example: A windbreak was destroyed by fire and the trees were left standing dead. They need to be removed and disposed of before a new windbreak can be established. The cost of this work, sufficient to allow for replanting, is the cost of cure. It should be added to the final appraised value as a separately identified item of damages, and not confused with the value of the windbreak.

Conclusion

A good appraiser will look at every applicable approach before arriving at a final opinion of value. Appraisers must set aside emotion and advocacy, and rely on judgment, experience and expertise to determine the most reasonable value. Appraisers who always use the method that yields the highest, though not necessarily the most reasonable and defensible, value do a disservice to the profession and their clients.

References

- "Guide for Plant Appraisal," 9th Edition, Council of Tree and Landscape Appraisers and International Society of Arboriculture
- "NebGuide G1533, Landscape Tree Appraisal," University of Nebraska Extension and Nebraska Forest Service
- "Guidelines for Professional Tree and Landscape Appraisal in South Dakota," Dr. John Ball, South Dakota State University
- Appraisal Institute, Chicago, Illinois
- "Farm Forestry in the Northern Great Plains," U.S. Dept. of Agriculture, Soil Conservation Service, Washington, D.C., May 1, 1946 (3rd Edition, now out of print)

¹Gary Naughton, Professor Emeritus, Kansas State University and Certified Forester
David Mooter, Forester Emeritus, University of Nebraska, Nebraska Forest Service and Certified Forester
Richard Woollen, District Forester, University of Nebraska, Nebraska Forest Service

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit the authors and Windbreak & Shelterbelt Appraisal, a joint publication of Kansas Forest Service and Nebraska Forest Service.

Published jointly by:
Kansas Forest Service, through Kansas State University Agricultural Experiment Station & Cooperative Extension Service,
Manhattan, Kansas
and
Nebraska Forest Service, University of Nebraska–Lincoln, Lincoln, Nebraska