Decreasing deer damage

May 4 2009

The nontimber forest products industry has been growing rapidly since the mid-1980s, contributing billions of dollars to the U.S. economy annually. Examples of nontimber forest products (NTFP) include edibles such as fruits and nuts, medicinal and herbal products, and specialty floral and decorative products. Standouts in the NTFP industry include U.S.-grown herbs used to satisfy increasing consumer demand for herbal medications. American ginseng, for example, accounted for $32 million in U.S. export revenue to Asia during 1996. The emerging economic industry has its share of challenges, including the impact of wildlife that naturally inhabit forests where NTFPs grow. Of particular concern are white-tailed deer, which can reduce the quality, quantity, and profitability of NTFPs by "browsing" twigs and rubbing the stems of shrubs, trees, and plants.

When deer browse, or nibble on buds, twig-ends, and leaves of woody plants, shrubs and trees can be deformed, stunted, or, in the case of young plants, eaten completely. Deer browse year-round, but are most destructive during the winter when alternative foods are less available. Male white-tailed deer also rub the stems of trees and shrubs during autumn to remove velvet from their antlers and to communicate with other deer. Deer rubbing reduces the plants' health and can kill vulnerable trees and shrubs.

The financial impacts of deer browsing and rubbing on NTFPs, particularly woody ornamental plants, can be considerable. Heavily browsed tips or rubbed stems are not marketable, and thus are a direct loss to the grower. Losses of trees and shrubs due to deer damage can

amount to over $2030/acre per year depending on the species.

To reduce damage and lessen economic losses, producers often turn to lethal and nonlethal techniques to control deer. Hunting is not always supported by the public, and may only be applicable in rural areas. Nonlethal techniques can be difficult to apply, expensive to implement, and are often temporary solutions; fences, repellents, and frightening devices provide varying degrees of success in reducing crop damage.

Researchers attempting to provide alternative solutions to deer damage to NTFPs are working to identify species of trees and shrubs that are not as attractive or even avoided by deer. Scott E. Hygnstrom from the University of Nebraska and research colleagues from New Mexico State University and the USDA National Wildlife Research Center published a study in the American Society for Horticultural Science journal *HortTechnology* that evaluated deer damage to 26 species of trees and shrubs.

"Our objectives were to determine the varying levels of deer damage sustained by 26 species of trees and shrubs; to relate morphological features of trees and shrubs to damage levels; and to evaluate the economic impacts of deer damage on the production of nontimber forest products", explained Hygnstrom.

The study was conducted at the University of Nebraska Agricultural Research and Development Center. The area included eight species of trees and 18 species of shrubs that produced commercially valuable nontimber forest products. The 40-acre complex was occupied by about 48 white-tailed deer per square mile during the study.

The team measured the frequency and intensity of browsing and rubbing by deer on various species of trees and shrubs after 1 year of growth. To assess the financial impacts of deer damage, the scientists recorded

numbers of stems rendered unmarketable by deer browsing or rubbing while harvesting and processing selected woody florals in February and December 2001. The results showed that pussy willow suffered the least economic impact of deer browsing and rubbing; less than 1% of the total number of stems produced were rejected for market. High levels of damage were documented for 'Blood-twig' dogwood (more than 21% of the stems were rejected). Losses per year due to combined damage by browsing and rubbing amounted to about $26/acre for pussy willow, $2031/acre for 'Blood-twig' dogwood, and $1595/acre for curly willow.

The research also revealed that leaving some NTFPs (especially dogwood) in the field until late winter considerably increases the percentage of stems rendered unmarketable due to deer browsing. Harvesting these products in late fall and early winter can substantially reduce the percentage of stems damaged by deer.

More information: The complete study and abstract are available on the ASHS HortTechnology electronic journal web site: horttech.ashspublications.org/ … nt/abstract/19/1/204

Source: American Society for Horticultural Science