

ANNOTATED BLACK WALNUT LITERATURE

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Many of the publications on establishment, management, and utilization of black walnut and other high-value hardwoods are printed in university reports, conference proceedings or scientific journals. These publications usually are not readily available to our members at most public libraries or on the internet. As Chair of the Education Committee, I have tried to summarize the findings from the following technical articles or books. If available, I have also indicated where to write for reprints or given an address where the articles can be downloaded if on the internet. As an additional service, I have placed copies of these materials in the Walnut Council Library. Members of the Walnut Council can borrow these materials for two weeks by sending a written request or email to the above address.

TREE ESTABLISHMENT AND GROWTH USING FORAGE GROUND COVERS IN AN ALLEY-CROPPED SYSTEM IN MIDWESTERN USA

by Kathleen Delate, Eric Holzmüller, DeAnn Davis Frederick, Carl Mize, and Charles Brummer in *Agroforestry Systems* (2005): 65(1): 43-52.

The objective of this study was to evaluate the benefits of integrating forage crops in an alley-cropping system to increase farm income, improve soil quality, improve forage quality, and enhance biodiversity. Seven weed control treatments (seeding hairy vetch, red clover, red clover and tall fescue, or red clover and orchard grass; mowing; herbicides; and no weed management) were evaluated on an upland site and a bottomland site in Iowa. Both sites were formerly pasture ground of medium to high fertility that had been plowed to kill existing vegetation and prepare a suitable seedbed for the forages. Forages were seeded in May with oats as a nurse crop before trees were planted. Half of each site was planted with fast-growing trees (2 clones of hybrid poplar and silver maple) and the other half with high-value, slow-growing trees (seed and seedlings of black walnut and northern red oak). The herbicide treatment consisted of a 4 foot wide strip along tree rows using combinations of pendimethalin with either oxyfluorfen or simazine for four years. All plots, except herbicide and no weed management plots were mowed in July, August, and November for the first four years to reduce weed competition and promote forage growth. After four years, black walnut and red oak were the tallest in the herbicide treatment (5 feet) followed by the red clover with and without grasses (4 feet). The shortest trees were in the mowed or hairy vetch treatment followed by the no weed management treatment (3 to 3.5 feet). It appears hairy vetch, a winter annual, failed to establish either because it was spring planted or the late spring mowing destroyed seed crop needed for reseeding. Survival of walnut and oak seedlings averaged over 90 percent

after the first growing season while only 15 to 37 percent of the planting spots had seedlings when direct seeded in water-saturated soils. After the fourth year, few oak and approximately 10 percent of the black walnut planting spots still had a surviving sapling. Survival of the hybrid poplar and silver maple seedlings averaged 76 to 97 percent after the first growing season. After four years, hybrid poplar was two to three times taller than the silver maple partially in response to the heavy browsing of maple by deer. After four years, the hybrid poplar trees in the mowed and no weed management treatment on the upland site were shorter than the trees in other five treatments. On the bottomland site, the hybrid poplar trees in the herbicide treatment were taller (19 feet) than in the other six treatments (14 to 16 feet). Although observed in other studies with grass ground covers, deficiencies in tree foliage nitrogen was not observed possibly because grass forages were seeded with the legume red clover. Authors conclude mowing of weeds around trees provided minimal benefit in terms of tree growth and may even be detrimental around slow-growing tree seedlings.

PHYTOPHTHORA CITRICOLA CAUSES A STEM CANKER IN BLACK WALNUT (JUGLANS NIGRA)

by Janna Beckerman and Gail Ruhl as a 2007 online publication *Plant Health Progress* doi:10.1094/PHP-2007-0420-01-BR. 4 pages with 6 color illus.

Although *Phytophthora citricola* has been isolated as causal agent of root rots and trunk cankers on over 45 general of plants, this is the first report of this pathogen producing cankers and stem dieback on black walnut. Pathogen was isolated from cankers on the scionwood of both grafted 1 to 2-year-old container-grown nursery stock and field-planted grafts. Cankers are often associated with leaf scars and branch stubs. Cankers first appear as shrunken areas exhibiting gummosis and black tissues beneath the canker. As cankers expand, the can girdle the stem causing dieback and death of the stem above the canker. The isolated pathogen could be grown on V-8 juice agar and used to inoculate healthy seedlings through either wounds or direct contact on green wood, petioles, or leaflets. Symptoms developed within 36 hours at point of inoculation. Three months after inoculation, all seedlings showed significant stem dieback and most had died back to the graft. It is unclear from the report if this canker-causing pathogen is the same pathogen regularly found in plantation-grown walnut during a 1989 survey of 189 plantations in the Midwest.

Plant Management Network members can view and download a PDF from the following address: <http://www.plantmanagementnetwork.org/sub/php/brief/2007/walnut/>.



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TREE OWNER'S MANUAL FOR THE NORTH-EASTERN AND MIDWESTERN UNITED STATES

by Jill R. Johnson, Gary R. Johnson,
Maureen H. McDonough, Lisa L. Burban,
and Janette K. Monear published
in November 2008 as NA-FR-04-07 by the
USDA Forest Service, Northeastern Area State
and Private Forestry.

This 40-page manual was created to answer common questions about tree care much like an owner's manual for a new appliance or automobile would do. Recommend practices are tailored toward the urban environment, but most of the recommended practices apply equally to hardwood plantings, especially those established with container-grown planting stock. Just like an owner's manual for automobiles and appliances, this manual includes a parts list, instruction for installation, tips for trouble shooting common issues, recommended service, and more. The manual provides guidelines for planting bare-root and containerized stock and their watering, fertilization, and pruning. Essential readings are the pages on preventing and correcting encircling roots and how to prune young trees. The section on protecting trees from construction damage defines the Protected Root Zone (PRZ) as the area under a tree with a radius expressed in feet calculated as the product of the diameter at breast height in inches times 1 or 1.5 for young health trees and for mature or stressed trees, respectively. Trees are severely injured and probably should be removed if soil compaction or digging must occur within the PRZ and roots cannot be protected. The booklet also provides guidelines for trouble shooting signs of damage, injury, and disease. The manual also lists numerous organizations and sources of more information for keeping trees healthy and growing. The booklet is available in a simple black and white format with drawn illustrations making it inexpensive to reproduce with the hopes that it will be copied and handed out to customers who purchase tree seedlings at garden centers and nurseries and by landscapers and arborists.

This booklet is available online as a PDF file at <http://na.fs.fed.us/urban/treeownersmanual/>. The PDF can be printed as a 5.5 x 8.25 inch booklet (10 sheets of paper folded in half) on printers with the option for 2-sheets per page or as 8.5 x 11 inch (20 sheets of paper printed double-sided). If requested, Jill Johnson (651-649-5253) will help organizations or businesses customize the cover of the manual with their own logo for printing and distribution.



THE TREE FARMER

by Chuck Leavell and Nicholas Cravotta
and published in 2005 by VSP Books, Inc.,
Lorton, Virginia.

For anyone managing walnut and other hardwoods for timber production, this 32-page children's book is a must read to your children or grandchildren. In this book, the grandfather explains to his grandson the importance of trees and how essential it is we use and actively manage our forest resources. The Tree Farmer is based on the forestry practices used at the Charlane Plantation--a historic 2,200-acre tree farm in Georgia cared for by Chuck and Rose Lane Leavell, National Outstanding Tree Farmer of the Year Awardees. Rebecca Bleau has beautifully illustrated the story line with numerous full-page watercolor paintings that are sure to aid in holding the attention of young children. In his review of the book, Robert Williams, a certified professional forester, says all who read this book learn the basics of what is sound forest management. In addition, he says this book is more than just a children's book because grownups who read it to their children also get the essential message -- we need to use and actively manage our forest resources.

The hard-backed 8.5 x 12 inch book with dust jacket (ISBN-10: 1-893622-16-9) is available through <http://www.thetreefarmer.org> or for \$16.95 from <http://www.vspbooks.com/>, Amazon.com, or most book stores.

EAB UPDATE

In May 2009 EAB was found in St. Paul, Minnesota. It is now located in Michigan, Ohio, Indiana, Illinois, Missouri, Wisconsin, West Virginia, Virginia, Pennsylvania, Maryland, Minnesota and Canada.

To halt the spread of this and a number of other diseases, it is highly recommended you DO NOT move firewood of any species across county lines.

The USDA has a new campaign to help halt the movement of firewood. At www.stopthebeetle.info you can make the following promise:

I PLEDGE TO STOP THE BEETLE

- *I promise to keep firewood in the county where I buy it.*
- *To know where it comes from and not accept it from EAB infested states.*
- *I promise never to bring along firewood when I go camping or hunting.*
- *To buy it at my destination.*
- *I promise to burn it where I buy it.*
- *I promise to tell others not to move firewood.*



Landowner Representative SW

True Scarborough,
Choudrant, LA

I have had the opportunity to speak to several different local people (in Louisiana) about growing black walnut. My parish has claimed two state co-champion black walnut trees so I know that black walnut can be grown there, but not of the quality of the Midwestern states. I have been in contact with Dr. John Meriweather from Jackson, TN and we both would like to get something going for the South. I also know several other 'nuts' that are growing black walnut trees in the south. Therefore, we might still be able to get several folks interested in forming a southern multi-state chapter.

I have been experimenting with methods of controlling an outbreak of Asian Ambrosia Beetle (AAB). I have determined that a 45% solution of pymrethin spray every couple of days on infected trees seems to help but this is time consuming and costly. I have also experimented with diesel fuel as an attractant, stringing a rope around the plantation and attaching plastic jugs (cutting out the sides but keeping the top to keep out rain). This method did catch several AAB but I was not able to determine overall effectiveness. I plan to continue experimenting with different techniques but noted that AAB infection varies from year to year and is mostly a problem in trees under ten years old. I sure wish I knew where they hibernate over the winter. Does anyone know of any research as to their whereabouts during the winter?

Annotated Black Walnut Literature

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Lower Midwest Community Tree Guide: Benefits, Costs, and Strategic Planting

by Paula J. Peper, E. Georgory McPherson, James R. Simpson, Kelaine E. Vargas, and Qingfu Xiao published in March 2009 as a 115 page General Technical Report PSW-GTR-219 by the USDA Forest Service, Pacific Southwest Research Station, Albany, California.

This report describes the procedures and estimated values for the benefits and costs of maintaining small, medium, and large deciduous trees in an urban environment within the Lower Midwest region (lower half of Kansas, Missouri, Illinois, Indiana, and Ohio and the upper half of Oklahoma, Arkansas, and Kentucky). With the assistance of the Indiana Department of Natural Resource's Urban Forestry Program and the Indianapolis Department of Parks and Recreation, the authors developed growth models for the most common trees species in Indianapolis to establish the relationships between tree age, size, leaf area, and biomass for nine diameter-at-breast-height

classes ranging from 0 to 3 inches up to greater than 42 inches. After inspecting the data from 19 species including black walnut, the authors selected redbud (*Cercis canadensis* L.), little leaf linden (*Tilia cordata* Mill.), and northern hackberry (*Celtis occidentalis* L.) as representing the typical small, medium, and large tree species for Lower Midwest communities. A series of appendices describes the procedures for estimating benefits and costs associated with trees planted on residential sites (yard trees) and trees planted along streets or in parks (public trees). Benefits include inputs such as estimates for energy saved from shade and neighborhood tree coverage, carbon storage in above and below ground biomass, pollutant uptake, rainfall interception by tree canopies, reduced water runoff, and aesthetics. Costs include inputs such as carbon emissions from decomposition and fuel consumption for maintenance, tree planting and maintenance, irrigation, control of pests and disease, and removal. Average annual net benefits range from \$4 (public) to \$12 (yard) for a small tree, from \$12 (public) to \$24 (yard) for a medium tree, and \$47 (public) to \$60 (yard) for a large tree. Benefits are primarily from reduced

storm water runoff (41%), increased property values (35%), and reduced energy costs (16%). When summed over 40 years (life expectancy for an urban tree assuming a 50% annual survival rate), net benefits are \$58 for a small tree, \$367 for a medium tree, and \$1,668 for a large tree. The report concludes with a chapter on general guidelines for selecting and placing trees for maximizing energy saving, reducing carbon dioxide, reducing storm water runoff, improving air quality benefits, reducing infrastructure conflicts, and maximizing long-term benefits.

This publication is available online as a 5.6 MB PDF file at www.fs.fed.us/psw/publications/documents/psw_gtr219 or in printed format by sending your mailing information in label form along with publication title and series number in an email to rschneider@fs.fed.us or written correspondence to the Publications Distribution, Mountain Research Station, 240 West Prospect Road, Fort Collins, CO 80526-2098.

Relative Susceptibility of Woody Landscape Plants to Japanese Beetle (*Coleoptera:Scarabaeidae*)

by David W. Held published in *Journal of Arboriculture* (2004) 30(6): 328-334.

The Japanese beetle (*Popillia japonica* Newman) continues to spread across the United States and Canada after introduction in 1916 in infested nursery stock. This paper summarizes the data about the insect and plant susceptibility of woody plants to the Japanese beetle. Adult beetles are metallic green in color with coppery-brown wing covers and approximately 0.5 inches long. Adult beetles are known to attack the foliage, flowers, and fruit of more than 300 species of plants with a larval stage spent underground feeding on plant roots. The author uses an adaption of a system



designed by Fleming to indicate plant susceptibility where a plant designated as resistant is either never fed on or rarely fed on while a plant designate as susceptible is commonly fed on resulting in moderate to extensive feeding damage. Within the Juglandaceae and Fagaceae,

black walnut is listed as susceptible while butternut, the hickories, and most oaks are moderately resistant indicating light feeding has been occasionally observed on the latter species. Both white and green ash are listed as resistant while elms and lindens are considered preferred hosts and very susceptible. Within a species, cultivars within a species can range from susceptible to resistant. Author provides tables listing relative susceptibility of different cultivars of crapemyrtle, crabapple, and lindens. Control of adults is primarily by repeat application of short-residual insecticides such as pyrethroids or systemic insecticides applied to the soil.

Annual Fundraisers

Each year at the annual meeting we hold auctions as the primary fundraiser for the Walnut Council Foundation. Proceeds from this year's silent auction were \$1481 plus \$1150 from the live auction. These funds go toward the Foundation's mission of supporting education and research and other projects for the benefits of walnut, walnut tree growers, and the walnut industry. As part of its mission the Foundation provides support to the Walnut Council for their annual meeting educational program.

Many members contribute to make the auctions a success, from donating, to making products, to encouraging businesses to provide support. We thank everyone, but especially John Katzke, who is extraordinary at generating donations and running the auction/sales room each year. We couldn't do it without him!

Thanks to this year's donors:

Paul Christofferson
Forrest Keeling Nursery
Larry Frye
Bill Hammitt
Heartland Nuts
Cindy Heisdorfer
Bill Hoover
Illinois Walnut Council
Indiana Division of Forestry
Jasper Desk Company
Kansas Chapter Walnut Council
John Katzke

Barbara & Peter Luchsinger
Bill McKarns
Missouri-Pacific Lumber
Hugh & Judy Pence
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