
Short-Rotation Woody Crops Operations Working Group NEWSLETTER

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UPDATE- SRWC-OWG CONFERENCE

October 10-13, 2000
Wyndham Syracuse Hotel
Syracuse, New York

Hosted by
State University of New York
College of Environmental Science and Forestry

Sponsored by
NCASI
US DOE Oak Ridge National Laboratory
USDA Forest Service
Electric Power Research Institute
New York Center for Forestry Research and Development
Short-Rotation Woody Crops Program at SUNY-ESF
IUFRO Working Unit 1.09.00

Preliminary Agenda

Registration and Reception
Tuesday October 10, 4:00 - 6:00

Technical Session: Overview of SRWC Programs
Wednesday October 11, 8:00 - 12:00

- *The Short Rotation Woody Crops Cooperative Research Program* - Mark D. Coleman
- *Short Rotation Woody Crops Cooperative Research Program Experiment A: Fundamental Controls of Growth and Productivity* - David R. Coyle and Mark D. Coleman

- *Plantation and Management of Short Rotation Woody Species for Biomass Production for Wood Energy in Bangladesh* - M. Faizuddin

- *Production and Use of Short Rotation Willow in Sweden* - Gustav Melin

- *Willow Biomass Production in Southern Quebec: Potential, Problems and Future Perspective* - Michel Labrecque, T.I. Teodorescu, and V. Vujanovic

- *The Salix Consortium's Willow Biomass Program: A Status Report* - Timothy Volk and Larry Abrahamson

- *Short Rotation Woody Crops for Florida* - James A. Stricker, Gillian R. Alker, Donald L. Rockwood, Gordon M. Prine, Douglas R. Carter, and Stephen A. Segrest

Technical Session: Management and Economics of SRWC
Wednesday October 11, 1:00 - 5:00

- *Poplar Silviculture: Converting From Pulp Logs to Saw Logs* - James A. Eaton

- *Hybrid Poplar Establishment and Production on CRP Land in Minnesota* - Dean A. Schmidt, Amy K. Shogren, and Mark Downing

- *Regional Costs of Production of SRWC: Southeastern, Northeastern and Pacific Northwest Regions of the United States* - Mark Downing

- *Problems Of Rust (Melampsora epitea Var. epitea) on Short Rotation Coppice (SRC) Willow* - Alistair R. McCracken and W. Malcolm Dawson

- *Yield Responses of Growing Inter and Intra Species Mixtures of Willow in Short Rotation Coppice (SRC)* - Alistair R. McCracken and W. Malcolm Dawson

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- *Sustainability of High Intensity Forest Management with Respect to Water Quality and Site Nutrient Reserves* - Virginia R. Tolbert, Carl C. Trettin, Dale W. Johnson, John W. Parsons, Allan E. Houston

- *Herbicide Screening Trial for Willow Biomass Crops: Applied At Pre-Emergence and Post-Emergence* - Jason Wagner, Chris Nowak, and Larry Abrahamson

Field Tour

Thursday October 12, 8:00 - 5:00

- Tour of willow biomass research trials including breeding and selections trials, herbicide trials, cover crop establishment trials, and clone site trials.
- Planting equipment for willow and poplar biomass crops
- Biomass co-firing at electric power plant in the Finger Lakes Region
- Wine tasting in the Finger Lakes Region

Dinner in the Scenic Finger Lakes Region

Thursday October 12, 6:00 - 9:00

Technical Session: Uses for SRWC

Friday October 13, 8:00 - 12:00

- *Delimiting Hybrid Poplar Prior To Processing with a Flail/Chipper* - Bruce R. Hartsough, Raffaele Spinelli, and Steve J. Pottle
- *Phytoremediation of TCE in a Shallow Alluvial Aquifer: A Field Demonstration* - Gregory J. Harvey
- *Establishing Willow and Poplar on a Brownfield Site in Utica, NY (Tentative)* - Sam Jackson and Chris Nowak
- *Alternative Scenarios on SRWC as a Fiber Source for Pulp* - Alexander N. Moiseyev and Peter J. Ince

Posters

- *The Development of a Small Scale Combined Heat And Power Plant Using Down Draft Gasification* - W. Malcolm Dawson and John Gilliland
- *The Effect of Clonal Mixing And Planting Density on Herbivory by the Blue Willow Beetle *Phratona vulgatissima* (Coleoptera: Chrysomelidae)* - Alan C. Bell, Sam Clawson, and Alistair R. McCracken

There are still opportunities for people to submit abstracts for posters and a couple of slots for papers. Interested individuals should contact Tim Volk (315 - 470 - 6774, tavolk@mailbox.syr.edu) as soon as possible.

Further updates to the agenda will be posted on the conference website:
<http://www.esf.edu/outreach/conted/conferences/woodycrops.htm>

Accommodations

A block of rooms at the Wyndham Syracuse Hotel have been reserved at a \$99 rate. You must request the Short-Rotation Woody Crops Group rate when you register. A \$75 per night rate is available for government employees. The block of rooms reserved at the Wyndham Syracuse hotel will be held until September 19, 2000. For reservations call (315) 432-0200.

Registration and Fees

Preregister by returning the attached registration form with your registration fee. Or you may register by phone by calling ESF Continuing Education at (315) 470-6891 or by faxing the form to (315) 470-6890.

The conference fee is \$160 if submitted by September 26 and \$195 afterward. The conference fee is payable to: Research Foundation of SUNY. VISA or Mastercard accepted. Employer ID#141 368 361. The conference fee includes \$20 membership fee in the SRWC-OWG, the technical sessions and the field tour.

QUESTIONS AND COMMENTS

Questions and comments are sought. Your questions and comments will be addressed at the next meeting of the Steering Committee. Questions and comments can be submitted to Bob Perlack at the following:
PerlackRD@ORNL.Gov

VANDALISM TO RESEARCH FACILITIES AND POPLAR PLANTINGS

Over the past year and a half several research facilities and sites were vandalized at the hands of a group called Earth Liberation Front (ELF). The FBI believes this is splinter group from Earth First that undertakes ecoterrorism to achieve their goals.

Recently, hybrid poplar plantings were targeted under the guise of objections to genetically modified trees (note that hybrid poplars are not genetically modified, but rather are developed using classic species selection methods). After each event a statement is usually left indicating that ELF is protecting the world from corporate forestry, genetic pollution, and "sheer genocide." ELF is claiming responsibility for burning-down the Boise Cascade regional research office in Portland (October 1999), destroying the University of Washington's poplar clone bank, and vandalizing the U.S. Forest Service greenhouses and vehicles on the University of Minnesota-St. Paul campus. Recently (July 25, 2000), a remote clone site trial in Milo, Maine was vandalized. Cuttings were girdled and anti-genetic modification language was sprayed on buildings and vehicles. Millions of dollars have been lost collectively and individually as a result of these acts. The following website contains some additional information on ELF:
<http://abcnews.go.com/sections/us/DailyNews/elf981022.html>

Impact to ORNL Research

ELF also claimed responsibility for girdling the poplar-breeding orchard at the U.S.F.S. Rhinelander Experiment Station in Wisconsin (See the news release issued by ELF: <http://www.enviroweb.org/ALFIS/news/00/000720c1.html>). These trees were planted and are maintained by the USDA/Forest Service. However, ORNL collaborates with the Rhinelander Station to support sampling, analyses, data interpretation, and publication for the Bioenergy Feedstock Development Program (BFDP). If the trees do not re-sprout and flower, eight years of growth (the time to flowering for these poplars) will be lost. If they do survive and re-sprout, it will take two years for flowering. The Forest Service estimates their potential loss at about \$750,000. The loss of data hurts both Forest Service and ORNL programs. In addition, ORNL was relying on this trial to supply a highly desirable pedigree for an ORNL research project (internal funding) dealing with the utility of carbon allocation and partitioning. While another pedigree can be used, it is a disappointment to the researchers.

Following is the text of a "fact sheet" on poplars prepared by the ORNL Bioenergy Feedstock Development Program for distribution to anyone requesting general information about the research being supported by the DOE program. Your review and comments on the fact sheet are welcome. Since it is generated on an "as needed" basis, it can be revised.

POPULAR POPLARS - TREES FOR MANY PURPOSES

Poplar pedigree

Hybrid poplars (*Populus* spp.) are among the fastest-growing trees in North America and are well suited for the production of bioenergy (e.g., heat, power, transportation fuels), fiber (e.g., paper, pulp, particle board, etc.) and other biobased products (e.g., organic chemicals, adhesives). With the exception of the more arid regions, hybrid poplars can be produced throughout most of the continental U.S.

Members of the willow family, hybrid poplars are closely related to cottonwoods and aspens; the hybrids themselves represent crosses among various cottonwood species. Early French explorers in North America brought home eastern cottonwood (*Populus deltoides*), which crossed naturally with poplars in Europe (*P. nigra*). Poplars were used as windbreaks around fields, and fast-growing varieties were selected by farmers. Hand-pollinated poplar hybrids were first produced in Britain in 1912, and many European countries established plantations after the Second World War, in response to shortages of timber. Some of the European varieties were reintroduced to North America during the early 20th century. Commercial planting of hybrid poplar did not commence until the 1970s although commercial plantings of cottonwoods can be traced to the 1960s.

Work initiated in the early 1970s by the U.S. Department of Agriculture Forest Service in Wisconsin became a cornerstone of the hybrid poplar research coordinated by the U.S. Department of Energy's Bioenergy Feedstock Development Program (BFDP) beginning in 1979. Since then, the task of improving hybrid poplar has been conducted by a national consortium that involves government researchers from several agencies, universities, and the private sector. Research has focused on reducing costs by improving yields, increasing pest and disease resistance, and developing efficient management systems. The program also seeks to document production costs and determine environmental impacts associated with hybrid poplar production. Favorable market conditions together with improved clones and knowledge has resulted in successful planting of approximately 90,000 acres (36,400 hectares) of hybrid poplar and cottonwoods in the U.S. for fiber use. Commercial plantings have been established in the Pacific Northwest, the Midwest, the Lake States, and the southeastern U.S.

Hybrid poplar silviculture

Hybrid poplars, when grown under short-rotation silviculture, can produce between 4 and 10 dry tons of wood per acre per year (8-22 metric tonnes per hectare per year) and achieve a height of 60 feet (20 m) in as little as six years. This compares to yields of less than 1 ton/ac/yr for native forests and 2.5 ton/ac/yr for managed pine plantations. Hybrid poplar stands are typically planted at wide spacings ranging from 8 x 8 feet to 12 x 12 feet (300-700 trees/acre; 750-1700 trees/ha) and depending on geographic location, soil type, and end-use needs, allowed to grow for 6-12 years before harvest. Although hybrid poplars are capable of resprouting from their rootstocks after harvest, reestablishment is recommended to take advantage of improved hybrids and to minimize potential insect and disease problems.

In order to grow at their maximum potential, hybrid poplars need careful management. Hybrid poplars are expected to be grown on agricultural cropland using standard production methods. As with any agriculturally produced crop, proper site preparation and preplanting weed control are essential. Sites with adequate water supply and well-drained, slightly alkaline soils (pH 5-7.5) such as medium-textured, sandy-loam soils are recommended for the production of hybrid poplars. Sites are plowed to a depth of 10 inches (25 cm) and either manually (3 acre/person/day) or mechanically (20 acre/day with three people) planted with 10 inch cuttings. Cuttings are pushed into the ground with just the top bud showing, according to a predetermined grid pattern.

In the first year, weeds must be controlled using herbicides and/or mechanical methods. Additional weed control may be needed in years 2 and 3, but once the canopy closes, weeds are shaded out and further weed control is generally not needed. Insecticides are applied if necessary to control cottonwood leaf beetle during the rotation. Fertilizer applications are minimal and are called for only if nitrogen levels in the leaves fall below 3 percent on a dry weight basis. Typically this means that one or two applications of nitrogen of up to 50 lbs/acre (56 kg/ha) are required during the entire production cycle. Harvest utilizes standard forestry equipment widely available in the U.S.

As perennial crops, production of hybrid poplars can offer substantial environmental benefits compared to annual row crop production. Chemical and fertilizer applications are considerably lower, lessening the potential for chemical runoff and leaching. Hybrid poplars, as buffer strips, also intercept runoff of nutrients from fields near streams, rivers and wetlands. As perennial cover, wind and water erosion over the life of the rotation is less than that with annual crops. Hybrid poplars also provide increased year-round habitat for birds and small mammals compared to annual row crops.

Preplanting planning

Hybrid poplars offer a new opportunity to diversify income and production on agricultural croplands. However, as a new crop, there are new risks and challenges compared to continued production of traditional agricultural crops. Before undertaking

large-scale production, farmers should understand how hybrid poplar production will fit into their farming operations and what potential markets exist in their production regions. Farmers should consult with local county extension personnel or others knowledgeable about hybrid poplars to identify appropriate hybrids for the area, determine appropriate management practices, and estimate expected yields, production costs and market value for the crop.

With the pressing need for diversification and stability in U.S. agriculture, and the demand for new domestic sources of clean energy, poplars are a new crop whose time has come.

For more information: <http://bioenergy.ornl.gov/>

FOREST SERVICE SRWC BUDGET REQUEST

The USDA Forest Service Research & Development had a \$5.5 million dollar increase in the FY2001 President's Budget for short-rotation woody crops research. This was part of the Biobased and Bioenergy initiative, a collaborative effort between USDA and DOE to develop new uses and feedstock production for renewable products. The funds were in support of expanded collaborative research programs in the north central and southern U.S., and new research in the pacific northwest. Research areas included productivity and processes, management, pest and disease, harvesting, new products, economics and other aspects of growing and using fast growing plantations. At this time, neither the House or Senate has supported the increase and it appears that the increase will not be funded. However, it represents a significant milestone in having a President's budget in support of SRWC research in the Forest Service.

Bryce Stokes; USDA Forest Service Research and Development; P.O. Box 96090, Washington, DC 20090 Phone: (202) 205-1147; Fax (202) 205-2497 or -6207; bstokes@fs.fed.us

DEPARTMENT OF ENERGY'S BUDGET REQUEST FOR BIOENERGY FEEDSTOCK DEVELOPMENT

The Department of Energy requested FY 2001 funds to support Bioenergy Feedstock Development at a total level of \$8.5 million. This is a \$2.5 million increment over the \$6 million actually received in FY 2000. This increased feedstock request is close to being proportional to the overall increase in Bioenergy funding request by our two sponsors, the DOE Fuels and Biomass Power Programs.

The House Appropriations committee has recommended funding the DOE Fuels and Biomass Power programs at levels similar to last year with no earmarks for feedstock research (or any other research). Disappointing but okay. A draft of the Senate full committee report indicates that higher total bioenergy program levels may be supported (close to DOE requests) but Bioenergy

Feedstock Development Funds are potentially being earmarked at \$3 million (from Fuels) and \$2 million (from Biopower). These numbers reflect the DOE requested levels for "base feedstock development program" but eliminate ongoing elements of the program described under other titles. The worst case scenario is that congress will approve a funding level that is less than last year under the Biomass Power program. Currently all woody crop research is funded by the Biopower Program, so a loss of \$1 million in funds could adversely affect SRWC efforts at ORNL and among several collaborators at universities and the Forest Service.

DOE has been negotiating with the Senate Appropriations Committee staffers, requesting modifications in the language, including deletion of the restrictive amounts for the feedstock program funding. The best case scenario is that the Bioenergy Feedstock Program managed by ORNL may be able to maintain approximately level funding in FY 2001.

A major new budget element in the DOE Biomass request was for a total of \$18 million in funds under a category called the Bioenergy Initiative. There is much talk that some of that money should support feedstock research, however the vehicle for doing so has not been identified. It is possible that there will be targeted solicitations for certain types of bioenergy feedstock research not currently funded by the ORNL feedstock program. We are recommending topics relevant to operations and equipment development. ORNL will attempt to keep SRWC Operations Working Group members informed of these opportunities through this newsletter and website.

Lynn Wright; Biofuels Feedstock Development Program, PO Box 2008; Oak Ridge, TN 37831, Phone: (865) 574 - 7378; wrightll@ORNL.Gov

INFORMATION

SRWC - OWG Web Page:

<http://www.woodycrops.org/>

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