



Center for Paper Business and Industry Studies

Newsletter of the Center for Paper Business and Industry Studies

A Sloan Foundation Industry Center ♦500 Tenth Street ♦Atlanta GA 30318 ♦<http://PaperStudies.org/>

Vol. I, No. 6

September 21, 2001

CPBIS Research Highlights

Beginning with this issue of the Newsletter, we will publish a series of brief articles on the CPBIS Research Program. Each article will provide information on one of the research projects in progress at CPBIS. To initiate the series, Dr. Gary Peter, Assistant Professor at the Institute of Paper Science and Technology (IPST), has provided the following summary of the project entitled **“Commercialization of Forest Biotechnology: Economic Targets for Enhanced Global Competitiveness of the U.S. Pulp and Paper Industry.”** The team of investigators leading this project also includes Dr. David White of IPST, Professor Rod Duncan of Georgia Tech’s School of Economics, and Professors Jeff Mayo and David Newman of the University of Georgia’s Warnell School of Forest Resources.

To put the need for this work in the context of current realities, it must be recognized that the U.S. no longer has the luxury of having the world’s lowest raw material costs. These costs now represent up to 40% of total production costs for some paper grades. Compounding the difficulties faced by the U.S. industry are the advanced age of its mills, their less efficient technologies, and high capital replacement costs. Combined, these factors place the U.S. industry at a strategic inflection point where manufacturing processes, equipment, and fiber supply all need to be improved simultaneously.

To be more globally competitive, total production costs must be dramatically reduced. Biological technologies offer a promising avenue toward decreased raw material costs. Such technologies may include cloning, enhanced selection methods,

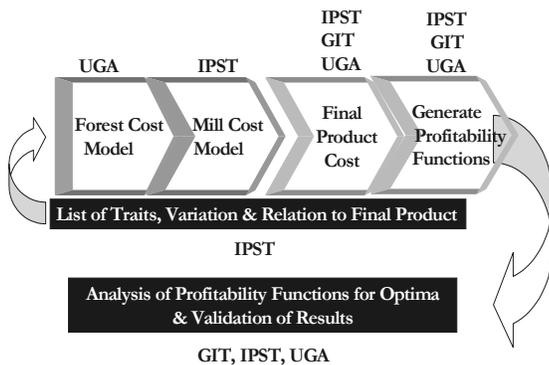
molecular breeding, and genetic engineering. All of these possibilities are the subjects of active research programs currently underway in the U.S. and elsewhere. The goals include producing trees that have higher growth rates and modified fibers with characteristics tailored to the needs of specific processing methods and products. Such research must be guided by knowledge of the value of specific individual traits and their effects on production economics at current product quality levels. Unfortunately, much of this knowledge is currently lacking.

The current CPBIS research effort will provide an in-depth economic assessment of new fiber sources and traits potentially achievable by biotechnology research. It will evaluate the impact of these advancements on the economics of production when using current papermaking technologies. A later phase of the research may explore potential co-evolutionary scenarios of new raw material supplies and production technologies. In summary, the objective is to investigate the most commercially rewarding ways to use genetics to develop trees with specific pulping, papermaking, and lumber-producing properties.

The approach will be to estimate changes in profitability of solid wood, slush kraft pulp, and linerboard production resulting from altered wood and fiber quality traits. In addition to growth rates, traits of interest are density, microfibril angle, stiffness, cellulose-to-lignin ratios, and fiber length. All of these, through their effects on product characteristics, can impact production economics, for example, by allowing changes in basis weight at equivalent quality levels. Their effects will be estimated using an integrated forest,

pulp and paper mill cost model. This model will contain trend pricing out to 20 years and is based upon a 1995 greenfield mill in the southeastern U.S. If warranted, a second stage will assess societal, policy, and intellectual property issues and risks for implementing biotechnology solutions.

Project Work Plan



These goals will be accomplished by combining the unique expertise of IPST (Gary Peter, Ph.D., Biotechnology; David White, Ph.D., Pulp & Paper Production and Economics); Georgia Institute of Technology, Ivan Allen College, School of Economics (Roderick Duncan, Ph.D., J.D., Natural Resource & Environmental Economics) and University of Georgia, Daniel B. Warnell School of Forest Resources (Jefferson Mayo, Ph.D., Forest Business & Finance; David Newman, Ph.D., Forest Economics & Policy; Raphael de La Torre, Ph.D. Student).

Research: The Year in Review

It is now almost a year since the October 3, 2000 decision by the Alfred P. Sloan Foundation to create CPBIS. Although our work did not begin in earnest until the funds became available some weeks after that date, we have accomplished much in the months since then. One of our earliest tasks was to establish a set of metrics by which our performance would be measured. In the research arena, for example, the following is the record of our performance in relation to the goals we set for ourselves at the beginning of the year:

- ❑ Research projects in progress: 7 (goal: 3-5)
- ❑ Graduate students involved in research: 10 (goal: 6-10)
- ❑ Faculty involved in research: 24 (goal: 7-10)
- ❑ Research faculty workshops: 1 scheduled for Oct. 30, 2001 (goal: 1-2)

- ❑ Research conferences: 0 (goal: 1)
- ❑ Seminars: 6 (goal: 4-6)
- ❑ External conference presentations: 1 (goal: 2-3)
- ❑ Research-based course modules made available to other campuses: 0 (goal: 1-2)

In summary, our research program is larger than we had originally envisioned, and getting it fully underway has taken somewhat longer than anticipated. In retrospect, this is not surprising, given the magnitude and complexity of the processes for establishing the procedures and workgroups needed to ensure equitable solicitation, review, and selection of a portfolio of high-quality projects. Special thanks go to Steve Vallas, Jim McNutt, and the Research Operations Committee.

Seminar Rescheduled

Amid the tragic events of September 11, we elected to cancel the seminar presentation by Jim McNutt that had been scheduled for that day. Jim's presentation, entitled "The Paper Industry—Will We Ever Learn?" has been re-scheduled for Tuesday October 9, 11:00 a.m., location TBA.

Other Upcoming Events

CPBIS/IPST Seminar: "The Cost of Price Uncertainty on Shareholder Value," Gary Helik, Director, North America Pulp and Paper Division, Tradition Financial Services, 11:00 a.m., Friday, September 21, IPST.

Mill Tour: Carastar Industries, Austell, GA, Tuesday, September 25.

Research Workshop: Tuesday, October 30, IPST.

CPBIS/IPST Seminar: Professor A. Giebelhaus, Topic TBA, Friday, November 2, IPST. ■