

HYBRID POPLARS

After 70 years, scientists have found a niche for hybrid poplars. It may soon be heating and lighting your home, providing gas, or even turn up in your pantry.

“How fast will it grow?”

People have asked foresters this question for years. Trees never grow fast enough to satisfy the grower. “Fast” growing trees now are commercially available in the form of hybrid poplars, however. But what is their real value?

Hybrid poplars have been around since 1910. In recent time, the U.S. Forest Service has developed several clones and made them available to state and private nurseries. It has been known for years that the hybrid poplars have the ability to successfully establish themselves in hostile soils. In the last 15 years, in excess of 500 hybrid poplar clones have been developed that can thrive in soils with pH levels of 3.0 to 9.0, meaning the soil ranges from strongly acidic to alkaline. These trees have been tested for various characteristics including rooting ability, growth, site adaptability, and disease resistance.

Miles W. Fry & Son, Inc., Ephrata, Pa., has propagated and tested hundreds of poplar clones to establish desirable characteristics. Resulting from these tests, eight desirable clones have been selected and are marketed to over 100,000 purchasers annually.

Why the big interest in hybrid poplars? Some poplar clones average eight feet of vertical growth per year over a four year period. It isn't just an odd-ball here and there; the growth is consistent acre after acre. In four years, average diameters of five inches are common. There is, of course, always a catch. One must do some testing of the best available clones to find out which ones will produce best with given site conditions. Some variables influencing growth include length of growing season, soil texture and fertility, available moisture, and competition from other vegetation.

Prior to the 1970's, the interest in hybrid poplars was in the area of pulp and sawlog production on submarginal lands. Today, this interest still exists, but the birth of another idea in utilization has put that research on the back burner.

The current interest of research that actually goes hand-in-hand with pulp-wood is in energy production. A tree is nature's perfect and natural way of storing solar energy. Trees store solar energy and make it available in concentrated form.

Wood is one of the front runners in the race to find an alternative source of energy. If wood is to play a vital part as an energy alternative, many acres of marginal and sub-marginal farmland will be growing trees, and those trees most likely will be hybrid poplar clones because of their ability to produce in such soils. Hybrid poplars are capable of storing solar energy at a much higher efficiency than any native tree known to the eastern United States. Hybrid poplars store 150 percent of the BTU's per acre per year stored by oaks, 185 percent of hickories, and 127 percent of maples.

ENERGY PLANTATIONS

Actual field management practices at the Fry & Son Nursery have proven that 15 air dried tons of wood can be produced per acre per year from several hybrid poplar clones. An energy plantation of trees simply is another farm crop. Rooted cuttings are planted on a 42 x 24 inch spacing giving a population of

6,200 trees per acre. After four years, the trees are harvested in a manner similar to harvesting corn silage. Sprouts grow from the stumps with the established root systems and are again harvested - this time in two years. This cycle continues for about seven generations, or until coppice sprouting is unsatisfactory. The ability of a hybrid poplar clone to resprout is a major requirement when selecting a clone for an energy plantation.

Converting raw wood to energy can take several forms. It can be bulk fed directly into combustion chambers for steam generation (approximately 150 power plants in New England burn wood to generate electricity for power and steam for heating), it can be converted to wood gases (known as wood gasification), and it can be digested and distilled into ethanol and butanol.

Morton Fry, the son in Fry & Son, Inc., estimated that 122 million acres can supply enough alcohol from hybrid poplars to satisfy current annual consumption of gasoline and fuel oil in this country. And unlike biomass derived from grain, the hybrid poplar regenerates itself year after year.

WOOD GASIFICATION

The gasification of wood probably is the most practical application of the several energy conversion forms mentioned. It is simple, with very little, if any, pollution problems. Gasification technology has been with us a long time — prior even to the discovery of electricity. It was used during World War II in Europe when petroleum was impossible to get for cars and tractors. Wood gasification has not become a permanent energy source in the past because of the convenience and availability of low cost petroleum. However, there is reason to believe that petroleum costs will continue to rise and may be three to four times most costly within the next 20 years. If this happens, there is no question that wood gasification will be commonplace in this country. It will become the transitional stage in our search for direct solar energy conversion from the sun.

Wood is gasified by controlled, limited combustion, to release volatile gases. These gases are mainly hydrogen, carbon monoxide and a little methane. Wood gasifiers have their greatest benefit in stationary applications, such as fueling boilers and furnaces, as well as fueling reciprocating engines for powering electrical generators. Wood Power Energy Corp. was organized to engineer, develop and test systems for converting wood into usable forms of energy. They built two prototype downdraft wood gasifiers for Fry & Son, and these gasifiers currently supply fuel to heat a 16,000 square foot green house and operate a 70 kilowatt generator.

POPLAR BURGERS

Dibyendu Roy, a faculty member of the forestry department at the University of Toronto, has been extracting protein from trees for some time. The scientist contends that poplar protein can be used as a meat extender in hamburgers and as a protein booster in bread and other food items. Hybrid poplars may show up in our breakfast cereal within 12 years.

“A poplar tree is the only plant we know that contains most amino acids essential to the human diet,” he said. “The leaves contain about 20 percent protein, slightly less than soybeans or meat, but more than eggs.”

In recent years, there has been much research in converting cellulose from trees to cattle feed. Muka, an animal feed and vitamin supplement, is made of finely ground leaves, bark and

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Four-year old poplars are planted 6,200 to the acre.

small branches. Muka is a pelletized supplement currently used in the USSR, and which shows promise in this country as traditional supplements continue to rise in cost.

Hagerstown, Md., currently is committed to a 1.5 megawatt power plant to supply energy for a sewage treatment facility. Hybrid poplars from a 500-acre energy plantation will be the fuel (in the form of wood gas) to generate this electricity. Plans currently are being prepared which may lead to producing 25 megawatts of electricity to service 50,000 people in this eastern community. If this becomes a reality, eight to nine thousand acres will be leased on contract with local farmers to grow hybrid poplars.

This country has approximately 500 million acres of marginal land according to the U. S. Department of Agriculture. Much of it is capable of growing hybrid poplars. When and if the going gets tough, the hybrid poplar is showing that there are alternatives.

**By George Poe, District Forester
Credit: Outdoor Highlights 10/17/83**

“TRANSITION”

It's sad to lose another Year,
To push it in the past.
Though even from the start we knew,
Just how long It would last.
Now We'll have a Brand New Year,
To live with every day,
To fulfill Our dreams of progress,
In work, in life, in pay.
It's worth a sincere effort,
To try to spend time better,
And improve each day of the New Year,
Regardless of the weather.

Kenneth R. Zanzig

WILSON'S PHILLIPS ELECTED NGF CHAIRMAN OF THE BOARD

Joe F. Phillips, who has spent 35 years in various capacities with the Wilson Sporting Goods Company, has been elected chairman of the National Golf Foundation's board of directors.

Also elected to serve on the executive committee were Robert F. MacNally, of PGA Golf Co., as 1st vice chairman; Dr. John Jepson, Titleist Golf Division, 2nd vice chairman; W. Morris Walton, Burton Manufacturing Co., secretary; and Jack J. Curran, Mizuno Golf Company, treasurer.

Phillips, 55, replaces Jerry Martin, of Hillerich & Bradsby, as chairman.

“Being involved with the Foundation this past year has been both challenging and rewarding,” Martin said. “I'm confident that I'm leaving the board in good hands. And you can be sure that I'll be assisting Joe Phillips as a continuing board member in any way I can so we can keep the NGF moving forward in its quest to serve the industry.”

Phillips joined Wilson in 1948 as a salesman in the Philadelphia area. In 1974 he moved to the home office in Chicago to become director of golf promotion. In addition to his current title of vice president of golf promotion, which he's held since 1979, he's also served as vice president, sales, for Walter Hagen, a division of Wilson.

“I'm certainly pleased to be a part of the NGF,” Phillips said. “It's a necessary vehicle to promote golf.”

“One of the main things I'll focus on is that we make the proper selection of the next president. And we must continue our efforts on fundraising, and get every company in the business of golf-related products to be part of the NGF.”

Phillips has also been president of the National Golf Club Manufacturers, the Golf Ball Manufacturers, and the Golf Manufacturers & Distributors Association.

Phillips lives with his wife Janice in Glen Ellyn, Ill. and is a member of Glen Oak C.C. in Glen Ellyn. The Phillipses have four children and five grandchildren. One son, 32-year-old Joe Jr., is a vice president in Wilson's retail sales division.

“We want to move the Foundation ahead,” he remarked. “We have to get the additional funds to complete the Foundation's projects for the betterment of golf.”

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