HAS ANYONE NOTICED THAT TREES ARE NOT BEING PLANTED ANY LONGER?[1]

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Abstract.--Trees provided the coal surface mining industry with a means of restoring the land's productivity at a minimum expense. Trees may still be included in the reclamation plan but tree planting in Ohio was drastically reduced by the 1972 Ohio Surface Mining and Reclamation Law. The basic reasons are categorized as technical, social and economic. The revegetation phase of coal surface mined land is most vital to successful reclamation and hopefully trees will continue to contribute to such success.

In Ohio, the historical relationship between the coal surface mining industry and trees has been of mutual benefit. Trees provided the industry with a means of restoring the land's productivity at a minimum expense. Where care was taken in the planting of the fragile tree seedling on the harsh, mined land environment, the small tree seedlings did wonders. Sometimes with the assistance of natural herbaceous cover but often times alone, the collective impact of the tree seedlings ameliorated the environment of the reclamation area to the point that a stranger to the site would speak only of the young forest that is growing there.

If you wish to plant trees in your reclamation operation, please do. Plant one thousand tree seedlings per acre. Plant a row of nitrogen-fixing tree species, i.e., black locust, black alder, and/or autumnolive. Plant a row, maybe two, of your favorite commercial deciduous and/or coniferous species, i.e., red oak, white oak, white or green ash, sycamore, silver maple, maybe black walnut, white pine, red pine, shortleaf pine, maybe Austrian pine and maybe Paulownia. Be site specific, more so than in the past. Plan your planting arrangements. And if you need further information, start with Chapman (1944); Limstrom (1948); Lowry (1956); Knudsen (1952); and later Funk (1961); and today Plass (1968) and Vogel (1973). For bibliography sources start with Limstrom (1953); Knabe (1958); Funk (1962); and today Czapowskyi (1976). Those references are just a very few of much valuable research conducted of yesteryear and continuing today.

Having been a direct party to the planting of some 19.4 million tree seedlings in fifteen years and observing the results of the total planting of thirty-eight million tree seedlings on both mined and unmined land over a thirty year period, I can look anyone in the eye and say that the trees will grow and produce forests on coal surface mined land.

But before you run out and type "tree planting" into your revegetation plan, look around. Has anyone noticed that we are not planting as many, if any, trees any longer? I categorize the basic reasons as TECHNICAL, SOCIAL and ECONOMIC.

The 1972 Ohio Surface Mining and Reclamation Law had many of the mining and reclamation provisions and most of the intent of Public Law 95-87. The effects of the law extinguished slowly but almost completely the use of trees in surface mined land reclamation revegetation operations. The Ohio law drastically altered the site conditions upon which the vegetation was to be established. The law with its mining-grading-topsoiling requirements brought about higher soil pH values with attendent improvement in the types, availability and amounts of nutrients and a decrease in toxicity levels. The topography became almost one hundred percent traversible by rubber-tired tractor vehicles and was complimentary to the undisturbed lands. The long, uninterupted slopes posed problems, especially erosion and consequently sedimentation, so herbaceous

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vegetation versus deciduous was required to combat these problems. Pollution abatement played a major role in the 1972 Ohio law.

The technical reasons trees were eliminated from the reclamation revegetation plan were (1) compaction, (2) herbaceous competition, and (3) erosion and survival repair work. The compaction problem voiced in the early 1950's by Deitschman (1950); Merz-Finn (1951); Finn (1952); and Limstrom (1952) were compounded by the grading requirements of the 1972 Ohio law. Compaction is a problem both from getting the tree seedling planted in the soil and in getting growth and survival.

Competition from herbaceous vegetation is fierce. Intense fertilization required to quickly establish herbaceous vegetation for soil surface protection from impact and rill erosion and consequently sedimentation prevents seedling establishment in at least the early phase of the revegetation effort. And finally there comes the reclamation supervisors nightmare -- repair work. Repair work of herbaceous vegetated areas is an anytime job. But tree planted areas can only be repaired each spring.

As an example, we planted in the spring of 1974 using herbicides and in the spring of 1975 using eighteen-inch diameter, fiber glass, weed chek discs, two hundred acres of 1972 Ohio law graded spoil banks to trees. In quick summary, the combined impacts of compaction, herbaceous competition and repair efforts, effectively stopped any tree planting on active, bonded licenses for Central Ohio Coal Company. In 1977, on bond-released but similarly reclaimed areas upon which the vegetation was now two to three years old, we band sprayed with herbicides and planted tulip poplar, red oak, white oak, white ash and red gum. Results were decent considering the species used but not acceptable. We have not planted another tree seedling from that date.

The social reason is more subtle but very much real. The approximate original contour grading requirement of the Ohio law coupled with the use of herbaceous vegetation made for land that was at least topographically better than the original. The slopes were less steep - they could not ever be steeper: were more uniform: and were easily traversible. To the private landowner, he liked what he saw and demanded that the revegetation plan state "grass cover for pasture and forage production" even if there had been trees growing on the site prior to surface mining. Central Ohio Coal Company is presently approaching ten thousand acres in surface mined grassland acreage. Much of it is presently under lease arrangement for livestock pasture and hay production. Travel eastward from Zanesville, Ohio, on I-70 to Wheeling, West Virginia, and view the various surface mining operations and observe the vegetation cover being used. It will be grass.

Economically speaking tree planting is now an additional expense to the operator, not a necessary expense. Tree planting is an additional expense in terms of the (1) original planting; (2) of repair planting; and (3) in delay-related expense associated with compliance time and bond release. To the operator, such delays have many implications. The multiplicity of standards which the operator must comply-with forces the operator to adopt those reclamation procedures that in this day of spiraling costs get the job done the most efficient and most effective.

Earlier this year I was somewhat optimistic that forestry and tree planting for reclamation purposes was on the upswing. I felt that land use statutes of Public Law 95-87 would have a positive impact on reclamation tree planting on prior forested areas. But now, for the short term, valid forces are at work which just prevent tree planting. For the long term, I am most concerned that the necessary and proper management of the grasslands will be implemented. Inadequate or improper management of the grasslands will impart a very negative impact to the public eye. The surface mining image is always at best tolerable.

In conclusion, some suggestions. It would appear at first glance that a tree seedling of greater than usual historical height and size, and one that had a self-contained growing environment that would last for at least the first to maybe three years of its life, would prove helpful to successful plantation establishment. Furthermore, plantings techniques necessary to overcome mined land soil physical problems may also require a seedling package that affords the seedling's roots and top greater protection from physical damage. I feel that given a "wooden" nickel out of every dollar spent on total reclamation compliance costs, tree planting on mined banks would become a viable enterprise.

If and whenever I return to the reclamation business, I would slowly but definitely install tree planting as an integral part of the reclamation plan. As the technical problems are solved with attendent enforcement agency edification, the economic problem will dissolve. In my opinion, tree planting costs would be the least expensive of all reclamation requirements for long term benefits received but the revegetation phase - both herbaceous and deciduous - if most vital to successful reclamation. The social problem will continue to exist and be influential. Forestry and tree planting have always played an important part in coal surface mining reclamation. Given this short intermission, it is my hope that the historical

beneficial relationship previously expressed would continue.

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