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Conference Imparts Reforestation Knowledge

By Linda Keene
Photos by Gail Smith

The 2007 Mined Land Reforestation Conference was held August 7-8 at the Southwest Virginia Higher Education Center in Abingdon, Virginia. The conference had over 200 attendees.

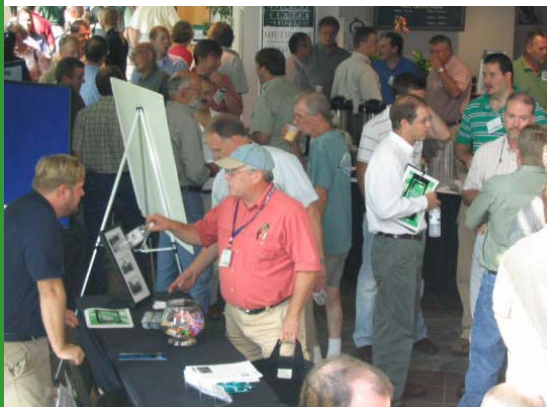
The conference began with Dr. Carl Zipper from Virginia Tech moderating the morning session and opening it with "Why Better Mine Reforestation?"

Next, Brent Wahlquist, Director of the Office of Surface Mining Reclamation and Enforcement (OSMRE), discussed "OSMRE's Commitment to Better Mine Reforestation."

Bob Zic, TECO Coal, Corbin, KY, followed with "A Coal Miner's Perspective on Mine Reforestation."

Les Vincent, Virginia Division of Mined Land Reclamation, spoke on "The Appalachian Regional Reforestation Initiative and the Forestry Reclamation Approach: A State-Federal Reforestation Initiative."

"Advances in Scientific Knowledge and the Forestry Reclamation Approach," was the topic of Dr. James Burger's, Department of Forestry, Virginia Tech, talk and slide presentation.



Conference participants enjoyed mingling amongst the vendors .

Mary Beth Adams, US Forest Service was the moderator of the mid-morning presentations.

Becky Hatmaker, OSMRE, continued the morning presentations with "Federal and State Regulations, Bond Release and the Forestry Reclamation Approach."

"Overburden, Topsoil Substitutes, Topsoil Handling: Influence on Tree Growth," was Patrick Angel's, University of Kentucky and OSMRE, talk.

Dr. Jeff Skousen, Plant and Soil Sciences, West Virginia University, spoke on "Influence of Herbaceous Groundcover Vegetation on Reforestation Success."

Dr. Christopher Barton, Department of Forestry at the University of Kentucky, ended the morning session with a discussion on

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OSMRE Director, Brent Wahlquist presents Jimmy Adkins with the 2006 ARRI Regional Award.

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“Carbon Sequestration by Forests on Reclaimed Mines.”

Wahlquist was the featured speaker at lunch. He presented Paramount Coal Company, LLC with the 2006 Regional Reforestation award. The award winning reclaimed site was Black Bear #4 Surface Mine.

The conference continued with a panel discussion, “Coordination to Achieve Reforestation Success.”

The panel addressed strategies for coordination among parties who are involved in the mining-reclamation process that is essential to reforestation success. Members of the panel were: Keith Horton, landowner, Penn Virginia Resource Partners, Kingsport, TN; Jeff Emmons, Ohio Department of Natural Resources, Steve Gardner, consultant/ permit writer, Lexington, KY; Marcie Moore, coal operator, Oxford Mining Co, Cadiz, OH; and Rick Williams, Williams Forestry & Associates, Calhoun, GA.

The panel discussion followed with an interactive discussion with the audience.

The afternoon presentations were moderated by Bill Kittrell, The Nature Conservancy, Charlottesville, VA.

Barton made a presentation in place of Dr. Richard Warner, University of Kentucky. It was entitled “Mining and Mine Reforestation: Influences on Watershed Hydrology.”

“The Joys and Challenges of Producing Forest Products on Mined and Reforested Lands” was the topic Tim Probert, Forestry Consultant from Bluefield, WV, spoke about.

The next speaker of the day was Jay Sullivan, Department of Forestry, Virginia Tech. He spoke on the “Economics of Mine Reforestation: Mine Operator and

Landowner Perspectives.”

Mike Isabell, Fola Coal, Bickmore, WV gave the industry perspective of “The Forestry Reclamation Approach at Fola Coal.”

The second day of the event was an all day field tour. The tour visited Virginia coal mining operations that use the Forestry Reclamation Approach during reclamation.

The field tour also visited long-term reforestation plantings on mine sites at the Powell River Project Research and Education Center, where planted softwoods and native hardwoods have been monitored for survival and growth, potential to produce forest products and other indicators of reforestation success.

Tour leaders were: Chris Stanley and Richard Davis, Virginia Department of Mines, Minerals and Energy; Burger and Zipper, Virginia Tech; Jon Rockett, Powell River Project; and mining company personnel.



(Wearing red cap) Dr. James Burger described the reclamation done on the sites during the field trip portion of the conference.



(From left) Rick Williams, Keith Horton, Steve Garner, Jeff Emmons, and Marcie Moore participated in the afternoon panel.

Pennsylvania Shares Reforestation Efforts

By David Hamilton

During the past year David Hamilton, Office of Surface Mining Reclamation and Enforcement’s (OSMRE) Pennsylvania representative to the Appalachian Region Reforestation Initiative (ARRI) program has been crisscrossing Pennsylvania promoting the use of ARRI and the Forest Reclamation Approach (FRA) on mined lands. The goals of ARRI are to plant more high value hardwood trees on mined lands, adopt reclamation techniques that enhance the survival and growth of the trees and promote return of forest habitat through natural succession.

This initiative began in 2004 with the recognition of 30 years of reclamation under the Surface Mining Control and Reclamation Act and comparable state laws may have unintentionally promoted the conversion of thousands of acres of forest land to grass land.

Regulators, together with the mining industry, have done a pretty good job in Pennsylvania of assuring mine lands are returned to a stable condition, with few off site erosion and sedimentation issues. However, in doing that, we wind up creating a highly unfavorable environment for growing trees, even when the post mining land use is forest land.

In Pennsylvania there is a 70% vegetation coverage requirement for stage II bond release. The standard reclamation practice for controlling erosion and sedimentation is to pack down the soil, and plant a fast growing and dense ground cover. When trees are planted, or seeded into this environment, the double whammy of compaction (inhibits root growth) and competition (for sunlight, nutrients and water) often means high tree mortality, and very slow growth.

Intuitively, one would think, when you want to grow trees on a mine site, you leave the top layer of material loose, and minimize the vegetation. No problem right? Well, not so fast my little sapling. There are three groups of people with a stake in whether or not a mine site is successfully returned to forest land.

First, the property owners, who have 30 years of mining history dictating the appearance of reclaimed mine lands.

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To them the humpy, lumpy look of a site reclaimed using the FRA is visually unsettling, even though it may more closely resemble the pre mining look, than the “golf course” look currently promoted.

Second, mining operators are justifiably anxious to get their stage II bond released and they are hesitant to try something new, and possibly upset this proven formula.

Third, the regulatory authority is bound to the 70% revegetation requirement, and field people can be resistant to changes.

Hamilton has been meeting with the three groups presenting information on the ARRI program, trying to build understanding and acceptance.

He has met with PADEP’s permitting and inspection staffs and the Abandoned Mined Lands program staffs at the various offices around the state.

He has met with individual landowners where there are opportunities for using the FRA on their mined lands.

He has presented information to the Pennsylvania Mining and Reclamation Advisory Board regarding the limitations of the 70% rule and asked for consideration of possible changes in the regulations and or program to become more tree friendly.

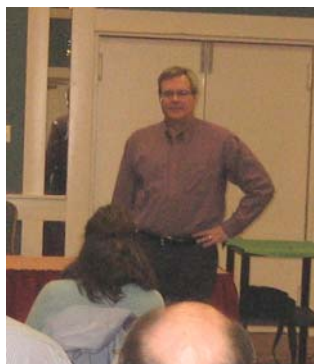
He has gained the support of several organizations including the Western Pennsylvania Coalition for Abandoned Mine Reclamation, the Susquehanna River Basin Commission, and the Pennsylvania Bureau of Forestry. He has been in discussions with individual coal mining companies regarding setting aside some acreage for ARRI purposes.

What is the result? Well, Hamilton is hoping that from a tiny acorn, a mighty oak will grow (sorry, that was pretty sappy).

Several upcoming AML reclamation projects have been identified for reclamation using the FRA. The Government Financed Construction Contract (GFCC) program seems to hold promise, and one GFCC project on Presbyterian Church property has been identified for reclamation using the FRA. There are several active mine permits that are possible candidates and efforts are being made to bring the landowners and operators on board. It is hoped that the ARRI program in Pennsylvania will grow significantly over the next few years.



David Hamilton, OSMRE, gives a presentation about ARRI.



Ohio Representatives Host Booths

Story by Mike Hiscar



Mike Hiscar answers questions at a recent ARRI event.

On September 15, 2007, ARRI Core Team members Michael Hiscar, OSMRE, and Jeff Emmons, Division of Mineral Resources Management participated in the Conservation Expo, in Carrolton, Ohio. Landowners, coal companies and conservation groups attended the expo.

Demonstrations included posters and a power point presentation on the use of Forestry Reclamation Approach (FRA) on mine sites as well as discussions of what landowners can expect from planting of trees on the increased site index using un-compacted soils and the planting of high value hardwood trees such as red oak, white oak, tulip popular and black cherry.

On October 5, 6 and 7, 2007 Hiscar, Emmons and Scott Stiteler, Division of Mineral Resources Management (DMRM) hosted a booth at The Paul Bunyan Show at the Guernsey County Fairgrounds in Cambridge Ohio. Approximately 13,000 people attended the three-day event.

(Booths continued on page 6)



(From left) Jeff Emmons and Mike Hiscar work at an ARRI booth in Ohio.

Ohio Announces Excellence in Reforestation Awards

Story and Photos by Mike Hiscar

Surface mining permit D-2122 was issued in July of 2001. Oxford Mining continues to mine coal on this permit, although a portion of the mined area was completed in October 2005 and graded by spring of 2006.

For several years, the company has worked cooperatively with the Barnesville Area Reforestation Kommittee, (BARK) planting trees on mine sites in Belmont County, Ohio. In an effort to implement the techniques of the Forestry Reclamation Approach (FRA), Oxford Mining worked with the Division, ARRI representatives, and Jeremy Scherf of the Division of Forestry to prepare a planting site for BARK's 2007 planting. The process involved changing the way the company was accustomed to performing mineland reclamation.

Although tree planting is not a requirement on Permit D-2122, approximately 5.5 acres were re-soiled using the FRA. Rather than grade the surface layer material and then plant trees, the re-soiling material was end-dumped in 6 foot deep piles and not graded. The re-soiling material purposefully contained existing tree stumps, roots and other woody species to take advantage of any possible re-growth of vegetation and seed germination.

Tree seedlings were then planted directly in the piles of non-compacted material allowing increased water penetration to the root zone and deeper rooting, and ultimately increasing seedling survival. Despite an extremely dry spring and summer, more than 90% of the seedlings survived.

The second recipient of the Excellence in Reforestation Award was awarded to Cravat Coal Company, Permit D-2235, Jockey Hollow East.

When reclamation began, standard reclamation practices were employed with the spoil being compacted into place with repetitive dozer passes. The permit area had been previously mined in the 50s and 60s and was left with little or no available topsoil. Cravat Coal Company was aware of the reforestation requirements in the permit and met with the Division, ARRI representatives, and the property owner (ODNR's Division of Wildlife) to discuss reforestation options prior to the placement of re-soiling materials.

A decision was made to include the FRA into the reclamation plan. The company began reclaiming the property by end-dumping the best available re-soiling material in piles up to 8 feet deep. Due to the materials small particle size and potential to compact with even the slightest amount of grading, the material was left untouched by any additional equipment.

The Division of Wildlife provided a variety of tree species suitable for wildlife as well as valuable hardwoods. A total of 33,000 seedlings were planted on 55 acres in April of 2007. Students from Ohio University planted an additional 200 American chestnut (15/16) trees and will monitor them in hope of harvesting the nuts in the future.

Facts show the FRA increases the survival and productivity of trees planted on reclaimed mine sites. Although 2007 was a drought year, more than 70% of the planted trees survived as did numerous volunteer species.

The efforts of Cravat Coal Company established the first mine site in Ohio to be reclaimed using the FRA. The company has shown their commitment to the reforestation initiative and to improved forestry reclamation practices for the future of Ohio's forests.



(Center) Nate Leggett, Oxford Mining, accepts the ARRI award while (From left) John Puterbaugh and John Husted, DMRM, look on.



(From left) John Husted, DMRM Chief, Michael Puskarich, President of Cravat Mining, and Jeff Fomenko, mine inspector, pose for the camera with the Cravat Mining's new awards.



Jockey Hollow East Mine in Harrison County, Ohio after reclamation using the FRA.

Reforestation Effort is Breaking New Ground

Published by [Jane Beathard](#) December 28th, 2007 in [Programs/Projects](#).

Story by Beth Wilson

No one is working harder to breathe new life into reclaimed mine sites in Ohio than Jeff Emmons, environmental specialist with the Division of Mineral Resources Management. Emmons is leading an effort to advance the planting of trees on active coalmines under the [Forestry Reclamation Approach \(FRA\)](#), an unconventional reclamation method that improves reforestation success.

Historically, the vast majority of Ohio's mine land was returned to pasture — not to forests — largely because successful reforestation has been difficult to achieve. Typically, once an area has been mined, soils are left compacted, severely limiting the ability of tree seedlings to grow and survive when traditional planting methods are used.

As Ohio's representative to the [Appalachian Regional Reforestation Initiative \(ARRI\)](#), a cooperative effort that encourages reforestation on reclaimed coalmines in the Eastern United States, Emmons is working with ODNR's mining regulators to reevaluate mining methods in order to promote tree planting.

Reevaluation has allowed mine operators to reclaim mine sites without compacting soil and to benefit from cost-effective regulatory compliance. Through the willingness of landowners and the cooperation of mine operators, the FRA creates productive forests that generate value for landowners and provide watershed protection, wildlife habitat and other environmental services.

On a recent field trip, officials from the Office of Surface Mining, Cravat Coal Company and ODNR toured the Jockey Hollow East Mine in Harrison County. It is the first mine site in Ohio where the FRA was used to reclaim a coalmine to a forest.

"It is encouraging to see cooperation among state and federal regulators and mine operators working on such an important reforestation initiative," said Cathryn Loucas, ODNR deputy director. "Although agricultural land is very important as a post-mining land use, we need to recognize that forest lands provide a significant commercial and environmental value to the citizens of the state."

[Jeff Emmons](#) is based in Mineral Resources Management's Cambridge Office at 740-439-9079.

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The ARRI team members engaged in numerous discussions about the use of FRA with local school teachers and students, landowners, surface mine employees and other interested parties. The conversations included the benefits of using the approach to growing trees on surface mined lands and potential earnings for the landowner regarding value of the property with an increased site index for growing trees.

On October 19 and 20, 2007, Emmons hosted an ARRI display at the Forest Heritage Festival at the Tuscarawas County Fairgrounds in Dover, Ohio. Teachers and students from local schools and landowners from throughout the county attended the festival. Demonstrations included posters and a power point presentation on the use of FRA on mine sites as well as discussions of what landowners can expect from planting of trees on the increased site index using un-compacted soils and the planting of high value hardwood trees.



(Photos by Mike Hiscar) Hiscar inducts the newest and youngest ARRI members at the fair.



The Guernsey County Fairgrounds.

Graves Receives Secretary's Environmental Leadership Award

Dr. Donald H. Graves, retired chair of the University of Kentucky's Department of Forestry, received the 2007 Secretary's Environmental Leadership Award October 1, 2007 at the Governor's Conference on the Environment in Lexington, Kentucky. Graves has long promoted a method of reforesting surface coal mine sites by planting seedlings in loose spoil instead of the more common compacted surface.

Environmental and Public Protection Cabinet Secretary Teresa J. Hill, who presented the award, said Graves has obtained grant money that "enabled the direct rehabilitation and reforestation of 3,000 acres of mined land throughout the Kentucky coalfields."

Graves' career at the University spanned more than 4 decades, and throughout most of that time he spent much personal time and effort on improving reforestation techniques on surface mined lands. He is recognized by many of his peers and students for his many wonderful professional accomplishments which include a lifetime of leadership in surface mine reclamation research.

Graves played a significant role in the development and promotion of the Department for Natural Resources' Reclamation Advisory Memorandum (RAM) # 124. RAM # 124 is a guidance document that contains detailed reclamation techniques that when used by the coal industry provides for the establishment of

healthy viable hardwood forest on mine sites.

Through his ongoing research efforts, Graves has received a number grants from the US Forest Service and US Department of Energy.

These reforested areas provide many research opportunities for studies in commercial forest establishment, wildlife habitat, recreation and carbon sequestration.

The reclamation techniques outlined in RAM # 124 have been adopted by most of the surface mining regulatory agencies in the Appalachian coal fields, and these principals have become the cornerstone of the Federal Office of Surface Mining Reclamation and Enforcement's Appalachian Regional Reforestation Initiative.

Graves is warmly recognized as the "Godfather of reforestation" in the Kentucky coalfields.



Dr. Don Graves receives his award from Teresa J. Hill.

News Clips from the Appalachia Region

The Conference "Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains" was held November 13 and 14, 2007 in Knoxville, TN. The conference objective was to identify, summarize and evaluate scientific information that is highly relevant to conservation planning in the Cumberlands. An optional pre-conference excursion took participants to Frozen Head State Park and the Museum of Appalachia during the afternoon of November 12.

The Conference Steering Committee included representatives of Oak Ridge National Laboratory, The Nature Conservancy in Tennessee, University of Tennessee – Knoxville, USDA Forest Service Southern Research Station, and National Council for Air and Stream Improvement.

A forum on surface mining and reclamation was held on the campus of Northern Kentucky University for students and faculty October 3, 2007. Represented on the forum was an ARRI spokesperson, a representative from Kentucky Department for Natural Resources (KDNR), the coal industry, and academia.

Other invitees include: Bill Caylor, Kentucky Coal Association, Steve Gardner, coal industry consultant, Rick Swiegard, University of Kentucky, Brian Patton, Kentucky coal company, Susan Bush, KDNR, and David Ledford, Rocky Mountain Elk Association.

The University of Kentucky hosted a demonstration of a mechanical system for reconstructing severely disturbed soil without vehicle compaction on November 2, 2007. A 1.5 acre site was reconstructed during 2007 at an approximate rate of 430 cubic yards per hour. Soil was transported to the mechanism by a 12 cubic yard scraper and placed in a strip or 'windrow' approximately 24 inches deep and eight feet wide. The mechanism then created an uncompacted berm three feet deep and six feet wide in two passes. The system could process soil deposited by such scrapers dumping at 1.7 minute intervals.

Appalachian Regional Reforestation Initiative



The Appalachian Regional Reforestation Initiative was started in 2004 with the goal of encouraging the planting of high-value hardwood trees on reclaimed coal mine sites using the Forestry Reclamation Approach. The initiative is a coalition of the States of the Appalachian , the Office of Surface Mining and their partners in industry, environmental organizations, academia, local, State and Federal government agencies and local citizens who have come together to support this valuable initiative.

For more information on ARRI see our website at: <http://arri.osmre.gov/>

GOALS OF ARRI

- **Plant more high-value hardwood trees on reclaimed coal mined lands in Appalachia.**
- **Increase the survival rates and growth rates of planted trees.**
- **Expedite the establishment of forest habitat through natural succession**

ARRI Core Team Leaders:

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Scott Eggerud, West Virginia DEP
Linda Keene, OSM AVS Office
Mike Bower, OSM Appalachian Region

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