Forestry Reclamation Approach
Low Compaction Grading
Step No 2.

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FRA Advisory No. 3: Low Compaction Grading on Surface Mines

FRA Advisory No. 4: Loosening Compacted Soils on Surface Mines
- Poor tree survival and growth
- Decreased infiltration
- Increased runoff
- Greater erosion/sedimentation
- Higher peak flows
- Increased downstream flooding

Forestry Reclamation Approach
Step 2

Loosely grade the topsoil or topsoil substitutes established in step 1 to create a non-compacted growth medium.
Recommend no more than two passes with equipment to remove excessively large rocks and shape to final backfill configuration.
Loosening Compacted Mine Soils

The Effects of Scraper Pans on Mine Soil Compaction and Tree Growth at an East Texas Lignite Surface Mine
Gulf States Region
Luminant Mining Co.

- Research Location
  - Oak Hill Mine, Henderson TX

- Area Mining Method
  - Dragline Operation

- Reclamation Approach
  - Oxidized Material Haulback
Oxidized Material Haulback Methodologies

Truck-Shovel Combination

Tractor Pulled Scraper Pans

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Gulf States Region: Revegetation Process
Surface and Subsurface Tillage Techniques

- **Control**
- **Disking** (12-14 in depth)
- **Disk + Single-Ripping** (3 ft depth)
- **Disk + Cross-Ripping** (3 ft depth)
Rome Disking
D8 Dozer Ripping
Disking + Ripping
Single-rip
Aboveground Herbaceous Biomass

Biomass Production (kg/ha)

Tillage Treatment

Control  Disk  Rip-Disk  Cross-Rip Disk

p<0.1

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Soil Strength Between Tree Rows

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cone Index (MPa)</th>
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<tr>
<td>Control</td>
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<tr>
<td>Disk</td>
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<tr>
<td>Rip-Disk</td>
<td>2.50</td>
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<tr>
<td>Cross-Rip + Disk</td>
<td>2.20</td>
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<tr>
<td>Truck-Shovel</td>
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</table>

Significant differences at p<0.1

- Control (a)
- Disk (ab)
- Rip-Disk (bc)
- Cross-Rip + Disk (c)
- Soil physical properties
- Soil chemical properties
Acknowledgements

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  - H. Williams, J. Stovall, K. Farrish, L. Young

- **Field Assistants**

- **Oak Hill Mine**

- **Appalachian Regional Reforestation Initiative**

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Any Questions?