

# Mixed Approach to Agriculture on Appalachian Mined Lands

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Income Opportunities on Reclaimed Mine Lands Seminar  
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# Post-Mining Conditions

- Reconstructing the Appalachian Strata



# Post-Mining Conditions

- Forested Ridges and Valleys to: ???



# Post-Mining Conditions

- Soil Condition and Mitigation Options
  - Intense Compaction: cannot till or disc, only rip or bulldoze (or wait 100+ years)
  - Extremely Rocky: after ripping, only hand labor possible unless stone crushing/removal is performed



# Post-Mining Conditions

- Soil Condition and Mitigation Options
  - Low Organic Matter: rotational grazing, cover crops, imported manure/biosolids



# Post-Mining Conditions

- Vegetative Condition and Mitigation Options
  - Invasive Species: rotational grazing, stonecrusher/mulcher, hand removal (high labor cost), and/or spray with powerful toxins



# Mixed Ag Systems on Mined Lands

- Surface Mined Lands: Livestock
  - Low Intensity: free range cattle
  - High Intensity: rotational grazing of mixed, smaller animals (goats, hogs, and birds such as chickens, ducks, turkeys)
  - Land doesn't necessarily need to be replanted, but can help



# Mixed Ag Systems on Mined Lands

- Surface Mined Lands: Perennial Plants
  - Woody Perennials: Fruits (pawpaws, apples, pears etc), Berries (blackberries, raspberries, elderberries), Vines (grapes), Nuts (hazelnut, walnut, pecan etc)
  - Herbs: Lavender, Echinacea, Chamomile
  - Challenges: Compaction, weed competition, and deer/elk/bird





# Mixed Ag Systems on Mined Lands

- Surface Mined Lands: Agroforestry “Stacked Systems”
  - Some combination of forestry, livestock grazing, and perennial ag
  - Example: use goats + hogs to kill autumn olive on hilly slopes, replant with native trees such as black locust and tulip poplar. Continue to graze
  - Ex. 2: plant perennials in rows with 8-10 ft alleys, graze sheep and/or birds in alleyways with netting and movable coops



# Mixed Ag Systems on Mined Lands

- Underground Mining: Aquaculture, Aquaponics
  - Steady 55 deg temps provide ideal water source for rainbow trout and Atlantic char, and potentially freshwater sturgeon (caviar)
  - Even if water source not clean or plentiful enough for direct use in fish tanks, old mines can supply heat sink for geothermal HVAC system
  - Example: Kermit Aquaponics AML Pilot Project



# 22 Mine Road Agriculture Project – Holden WV



- Rotationally grazed mixed livestock, woody perennials, and herbs
- Coalfield Development “33-6-3” model for workforce development, higher education, and personal development



# 22 Mine Road Agriculture Project – Holden WV

- Pilot model to explore feasibility of scaling up to commercial basis on similar mined lands while training agricultural workforce
- Collaborating with WVSU on research project to determine productivity of pulverized (stone crusher) VS ripped VS unprepped mine ground



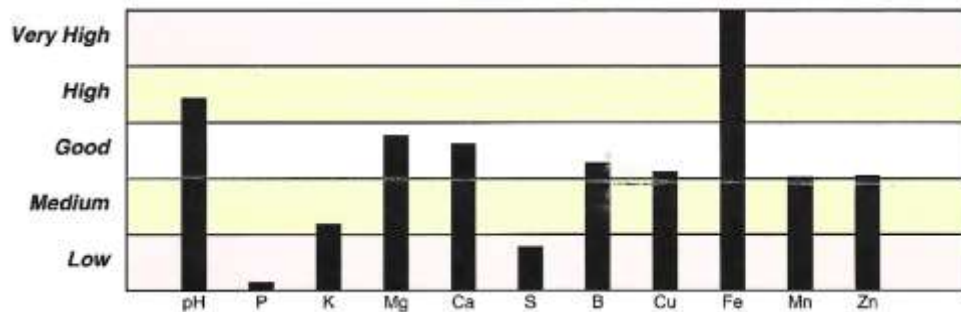
# Stone Crusher Demonstration

- First ever use of innovative, powerful equipment on Appalachian mined lands: Seppi Supersoil Stone Crusher
  - Powered by 300+ hp tractor with special transmission, grinds all rock types into soil particles. 8 ft working width, 0.5 mph ground speed
  - 3 to 5 acres per day, requires ripping and reducing stone size to <18 inch



# Stone Crusher Demonstration

- Possibility of any kind of agriculture on mined lands after stone crusher prep: row crops, high quality hay/forage, as well as orchards, livestock, etc
- Collaborating with WVSU on research project to determine productivity of pulverized (stone crusher) VS ripped VS unprepped mine ground
- Intend to spin off B Corp for contracted site prep and long term commercial agricultural management



# Stone Crusher Demonstration

- Partners in demonstration:

- Seppi USA
- Linndale Equipment
- Deutz-Fahr Tractors
- JJN Multimedia  
[vimeo.com/245456581](https://vimeo.com/245456581)



# Contact Information

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