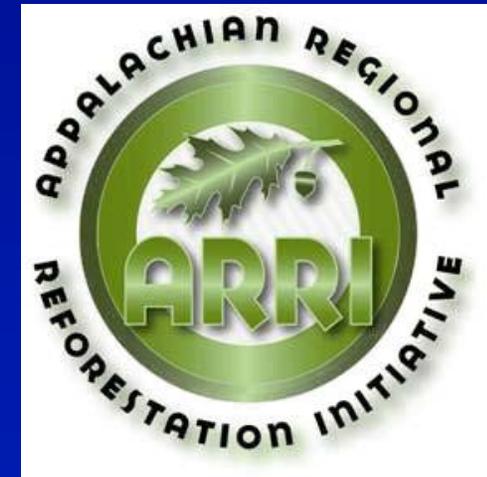


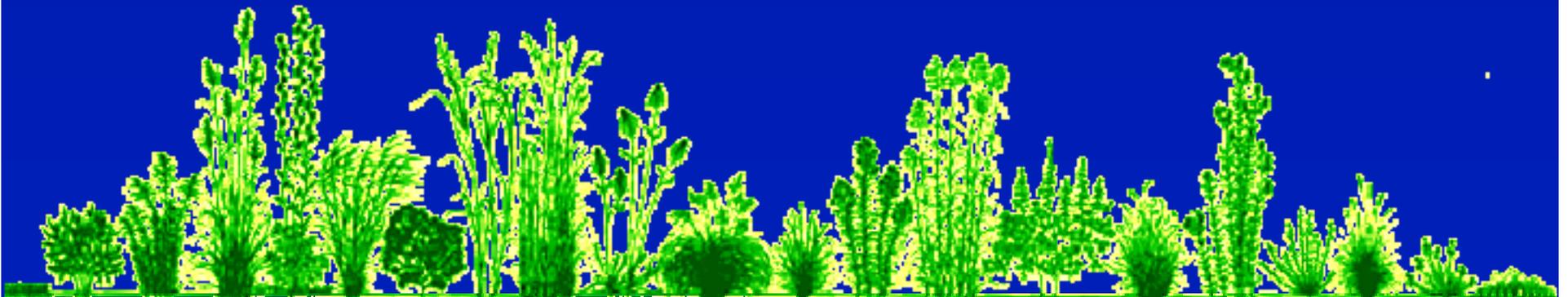
Compatible Groundcovers

Jennifer Franklin



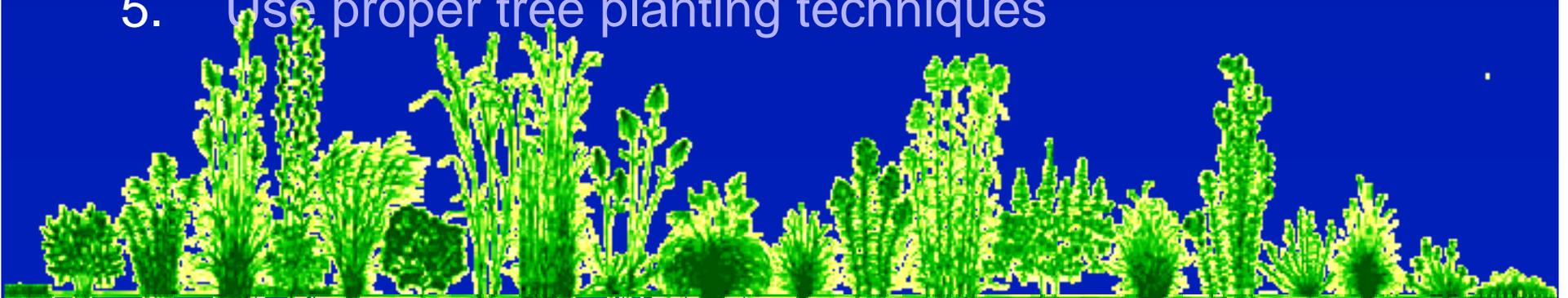
5 steps of the FRA:

1. Create a suitable rooting medium 4 feet deep and comprised of the best available material
2. Loosely grade the topsoil or topsoil substitutes to create a non-compacted growth medium
3. Use ground covers that are compatible with growing trees
4. Plant two types of trees – 1) early succession species for wildlife and soil stability, and 2) commercially valuable crop trees
5. Use proper tree planting techniques



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Use ground covers that are compatible with growing trees

Ground cover competes with tree seedlings for

- Light
- Water and nutrients

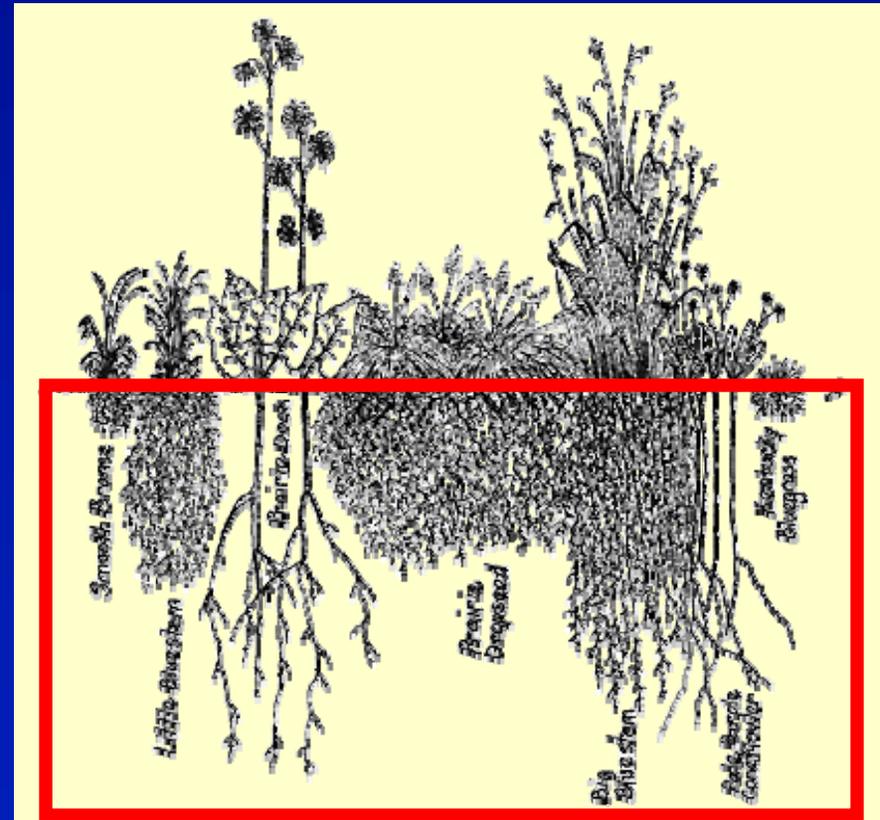
Find the oak seedling!



Use ground covers that are compatible with growing trees

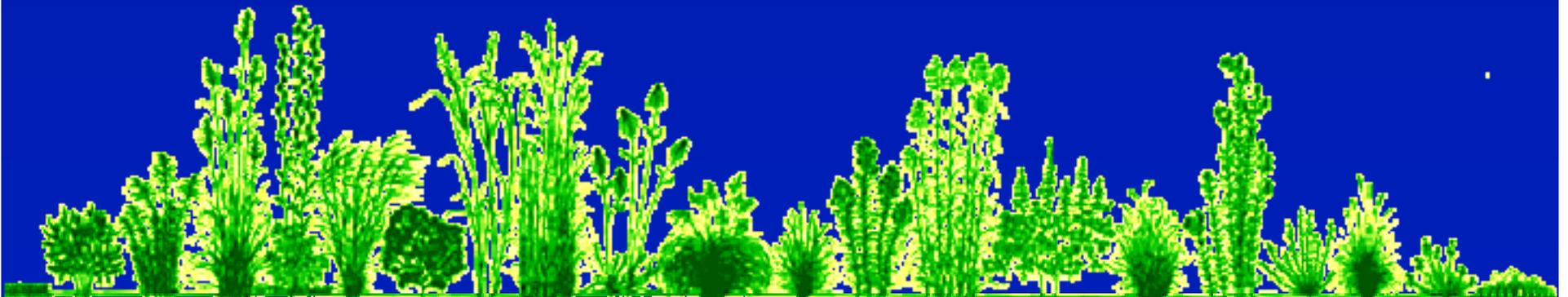
Ground cover competes with tree seedlings for

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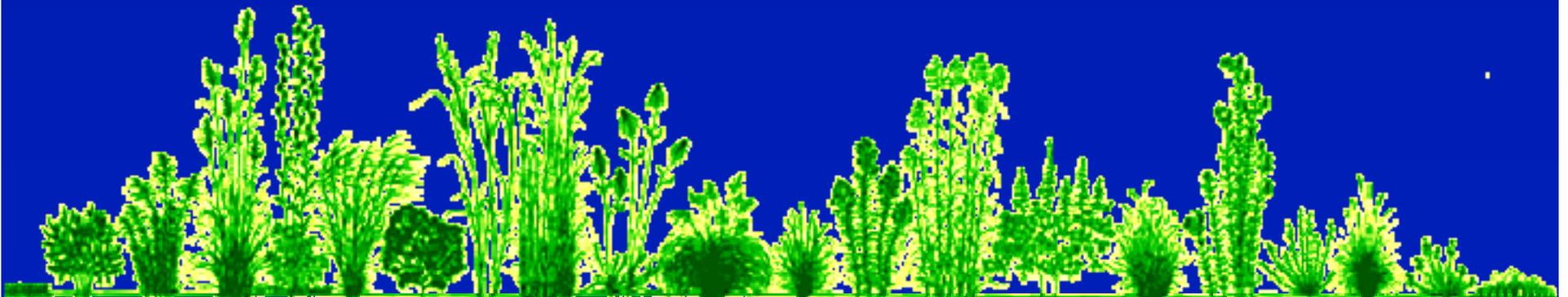
Less competitive grass and legume species

- Slow growing
- Low growing
- Tolerant of low fertility and a range of pH
- Grow in bunches rather than a continuous cover



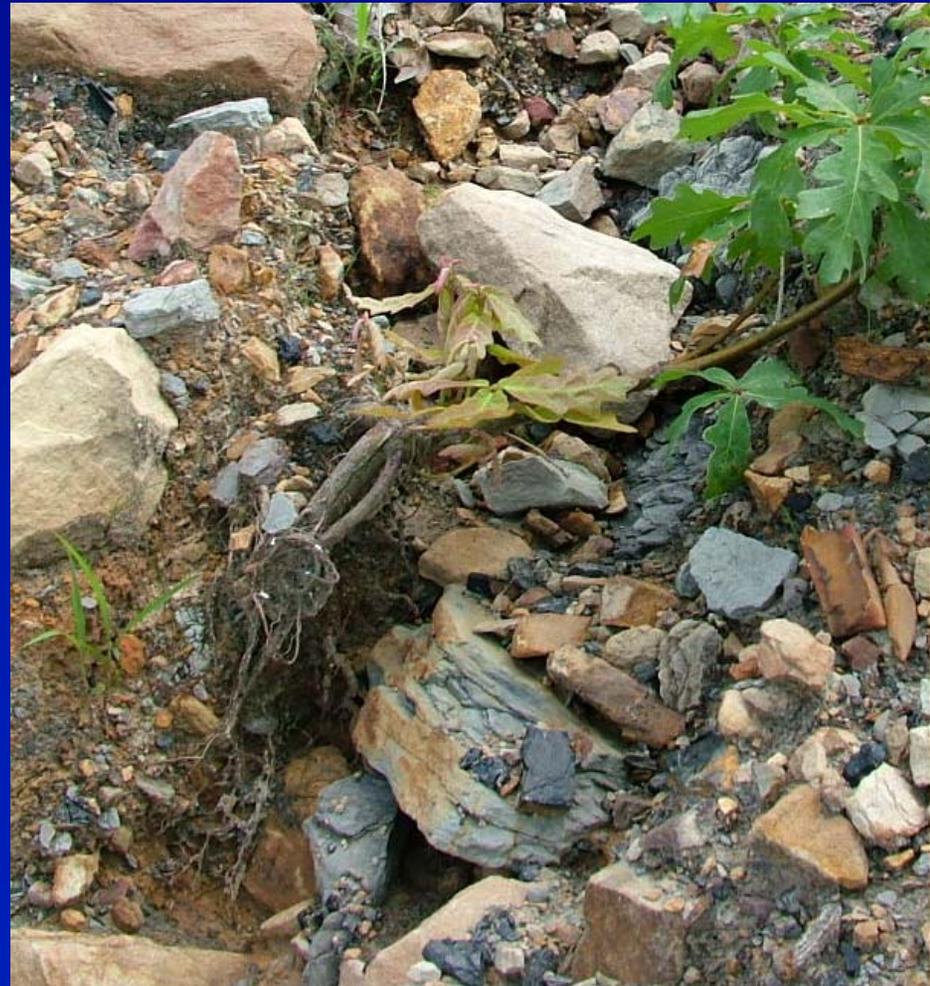
3 components of a seed mix:

- Annual for rapid cover
- Perennial grasses for longer-term cover
- Legumes for nitrogen fixation



Annual

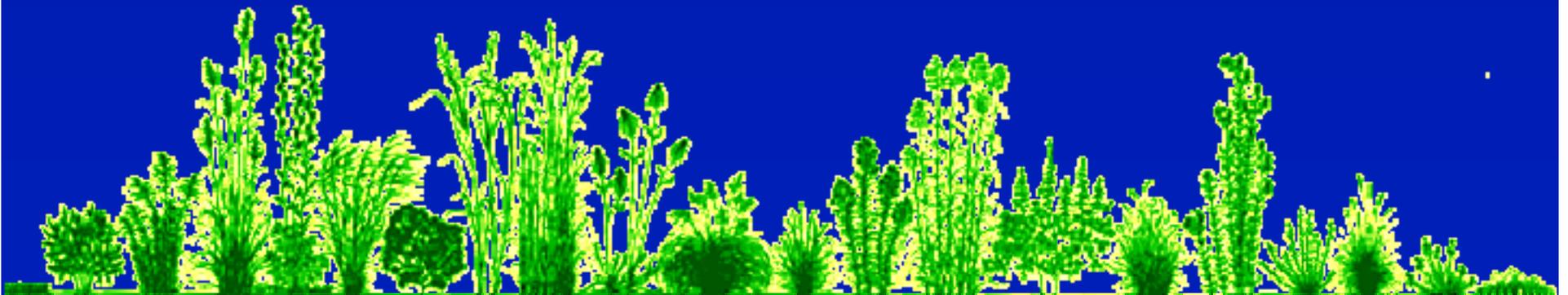
Lack of early cover – erosion and exposed tree roots



Annual characteristics

- Establishes easily and quickly
- Tolerates a range of pH
- Agronomics and non-natives are OK
- **DOES NOT RE-SEED!**

- Examples: annual rye, millet, winter wheat



Annual function

- Reduce sediment movement
- Provides organic matter to:
 - Begin soil building
 - Improve soil water
 - Begin nutrient cycling

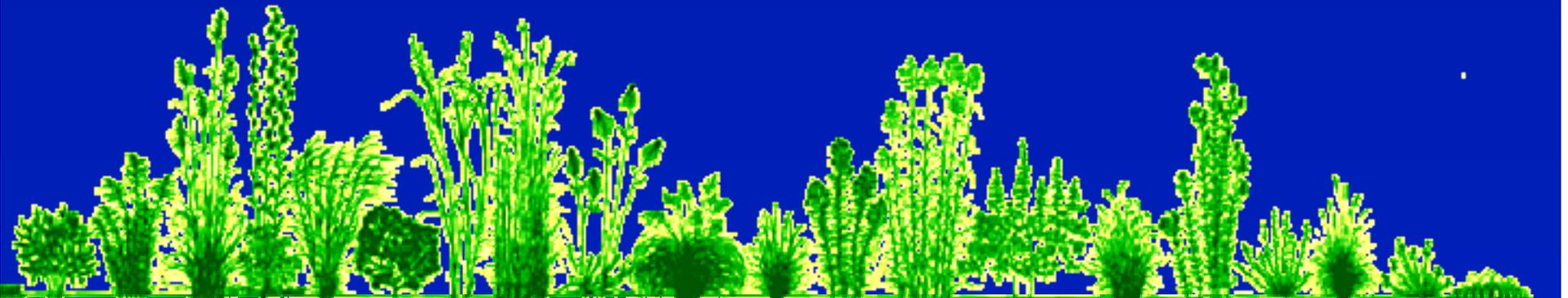
Dead annuals don't
compete with trees!



Perennial grass characteristics

- Short – shorter than the tree seedlings
- Grow slowly
- Tolerant of low fertility
- Grow in clumps rather than as a mat

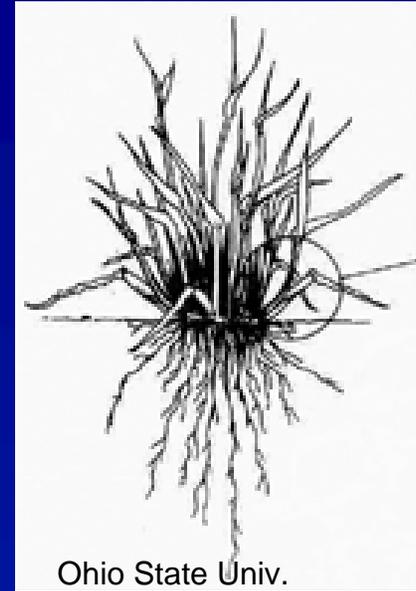
Examples: perennial rye, little bluestem





UC Davis

Kentucky bluegrass



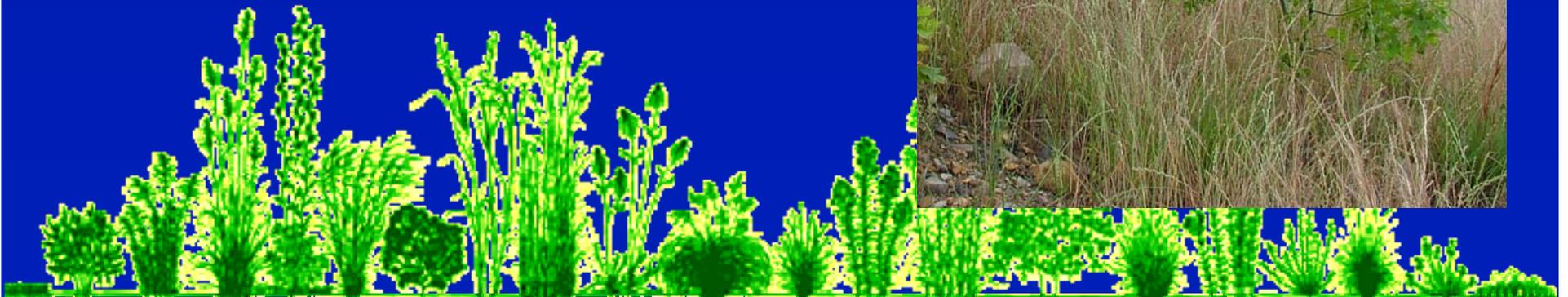
Ohio State Univ.

Perennial rye



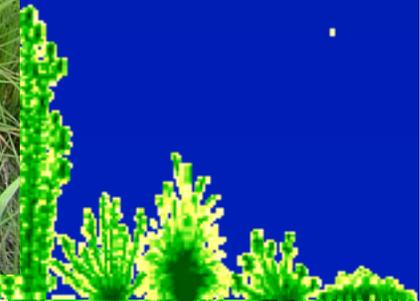
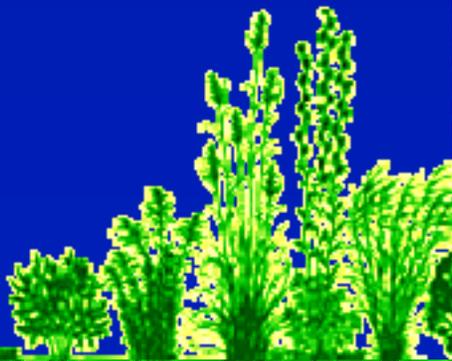
Perennial grass functions

- Mid-term (3-10 years) control of sediment movement
- Soil building
- Are slowly replaced by native forest plants



Clumps
plants

ative
site



Legume characteristics

- Short – shorter than the tree seedlings
- Do not require high nitrogen to get established

Examples: birdsfoot trefoil, white clover, ladino clover



Legume function

- Fix atmospheric nitrogen
- Add inoculants to seed mix



Seeding rate

Lower than for grassland reclamation to reduce competition with trees and allow for recruitment of native plants.

Annual

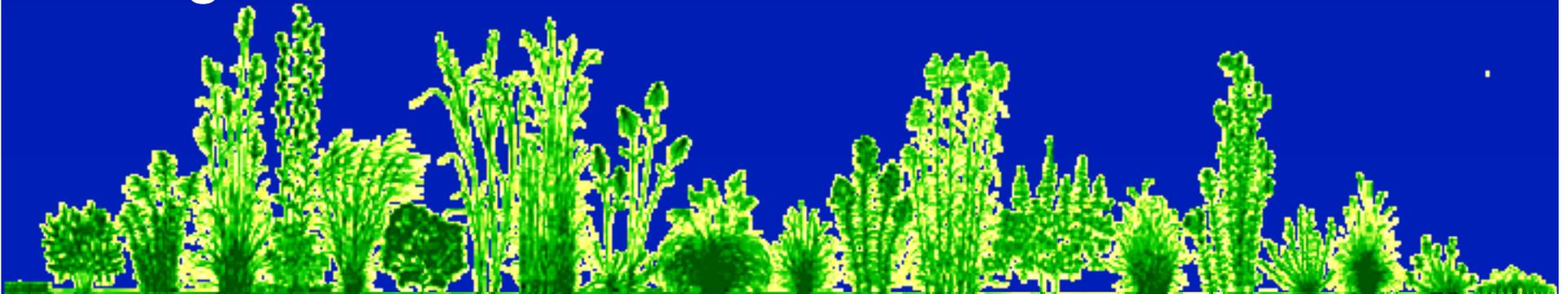
5-20 lb/acre

Perennial grass

10-20 lb/acre

Legumes

3-8 lb/acre



Fertilization

Lower nitrogen

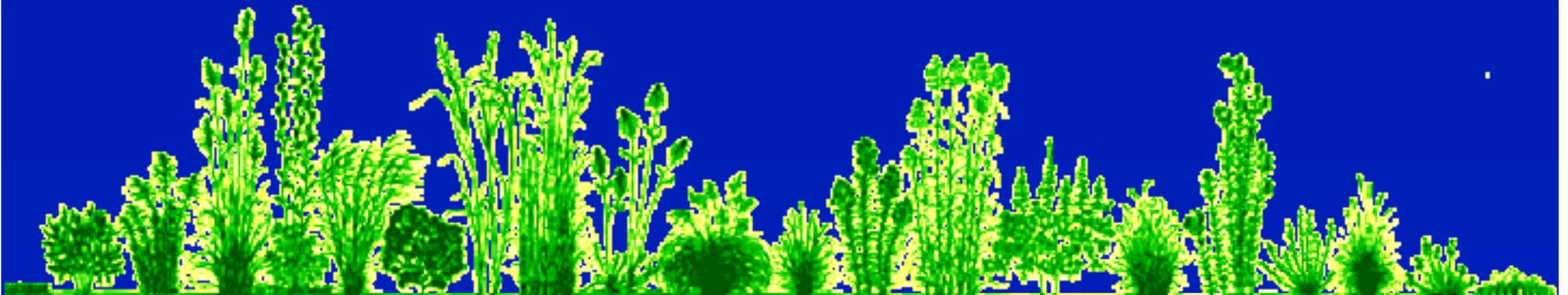
50-75 lb/acre

Higher phosphorus

80-100 lb/acre

Favors root growth

Favors trees and native species

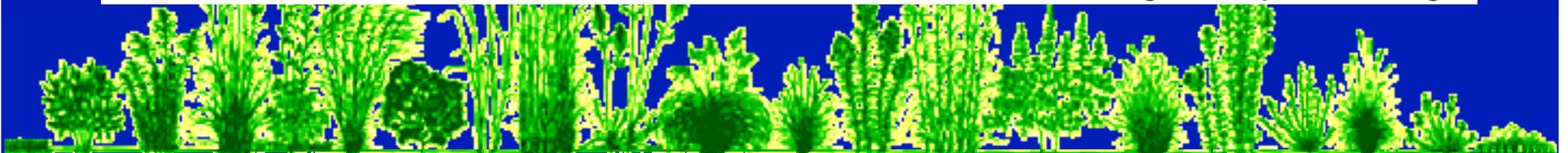
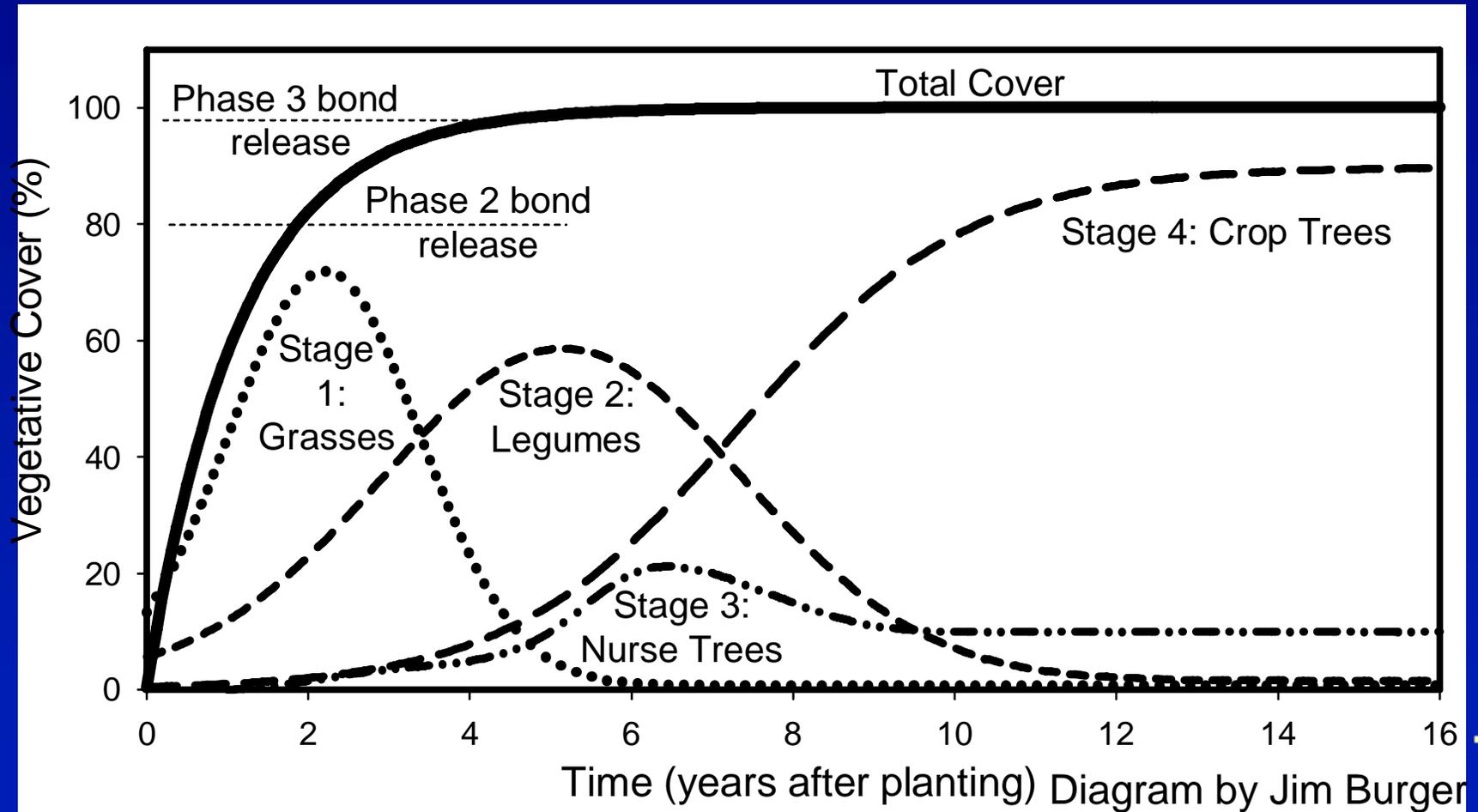


Lime

- pH of native forest soils is 4.5 – 6.5
- Don't add lime unless acid-forming rocks present or soil test shows a pH below 4.5
- Low pH will favor native species and trees



FRA Ground Cover Encourages Ecological Succession

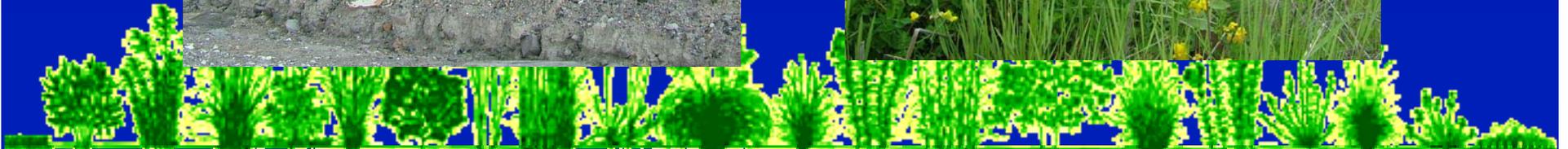


Accept a sparser cover in the first few years

1 year



2 years



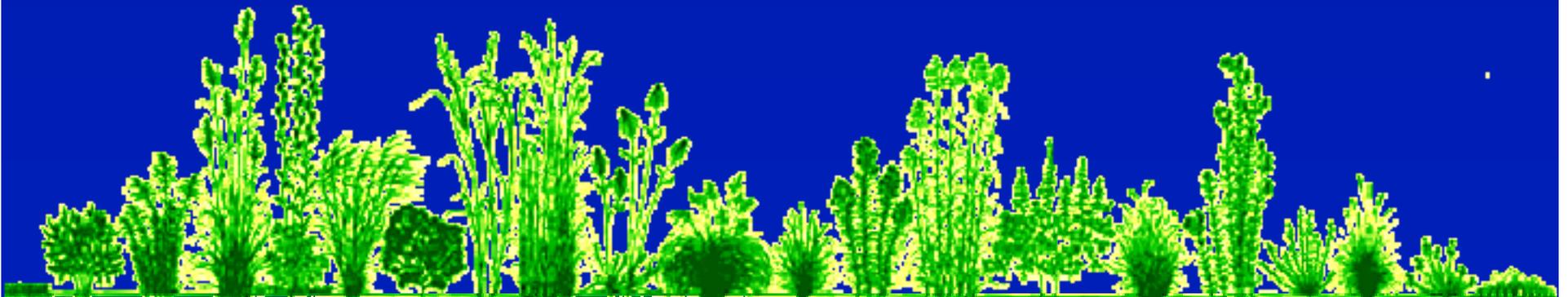
Adapt seed mix to your site

- Use your knowledge of your soils and ground cover species to adjust recommended rates for your sites
- Sometimes the unexpected will work!



Recommendations

1. use less-competitive grass and legume species
2. use lower seeding rates
3. use less nitrogen fertilizer
4. accept a lower % herbaceous ground cover in the first few years after seeding



Many thanks to:

OSM Knoxville Field
Office

Dave Buckley, FWF

National Coal

UT Forest Resources
Education Center

