Cover Cropping in Seed Production

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Cover Cropping

- Growing plants to protect and improve the soil
- Needs to be goal oriented
- Needs to remove problems not create them

Soil Health Principles

1. Keep a plant in the vegetative stage for as many days possible
2. Increase functional plant group diversity
3. Reduce tillage
4. Reduce reliance on synthetic inputs
5. Properly incorporate livestock

Seed Production

- Genetic purity is priority
  - Rotation
  - Species selection
  - Weed control
  - Seed quality and vigour

Seed Vigour

- Legacy Effect
  - Dr. Christine Jones
  - Microbiome left from previous plants growing in the soil
    - Shared with current plants growing
    - Creates microbiome 2.0 on the seed produced

Seed Vigour

- Microbe Quorum
  - Dr. Christine Jones
  - When growing multiple functional plant groups creates a multiplier effect

Rhizophagy

- University of Queensland 2010
  - Dr. James White
  - Plants prefer to uptake nutrients by consuming microbes
    - Not from fertilizer applications

Multispecies Cropping

- Intercropping
- Relay cover cropping
- Preseed cover cropping
- Post harvest cover cropping

Intercropping

- Growing 2 or more cash crops at one time
  - Different in
    - Seed size
    - Seed density
    - Seed colour

Intercropping

- Pea and canola (Clearfield)
- Soybean and canola
- Oat and flax
- Oat, pea and mustard

Relay Cover Cropping

- Having more than one crop growing at one time
  - Intent to harvest one
  - Others will continue to grow after first harvest

Relay Cover Cropping

- Spring triticale with Italian ryegrass and subterranean clover
- Canola with crimson clover (Clearfield)
- Peas with radish flown in 30 days before harvest

Preseed Cover Cropping

- “Seeding green”
- Have a growing cover crop growing and seeding into it
  - Alive or terminated prior to seeding
  - Ideally terminated at anthesis
- Used when delayed seeding

Preseed Cover Cropping

- Oat before buckwheat
- Winter cereal in the fall then corn or soybeans in the spring
- Turnip, sunflower and barley before hemp
- Sunflower with winter wheat seeded in the fall

Post Harvest Cover Cropping

- Most common, especially in US
- Harvest cash crop then seed a cover crop
- Highest risk
  - Short growing period
  - Driest part of the year

Seed Ramifications

- Need to have species that will not create contamination
  - Biennials in annual crops
- Need synergies not competition
  - Legumes and forbs help
  - Brassicas are scavengers

Seed Ramifications

- Some species have hard seeds
  - Delayed germination
    - Hairy and common vetch
- Some have fast seed production
  - Buckwheat, annual ryegrass

Seed Ramifications

- 2008 imported seed of things we could not produce seed here
  - But would grow
- Beet, Japanese millet, Italian ryegrass, collards, Persian clover
  - If not producing seed, no contamination

Seed Opportunities

- Local seed cuts down on producer expense
  - Cereals
    - Oat, barley, winter cereals, millet
  - Pulses
    - Peas, fababean, lentil, clover
  - Broadleaf
    - Sunflower, flax, safflower

Seed Opportunities

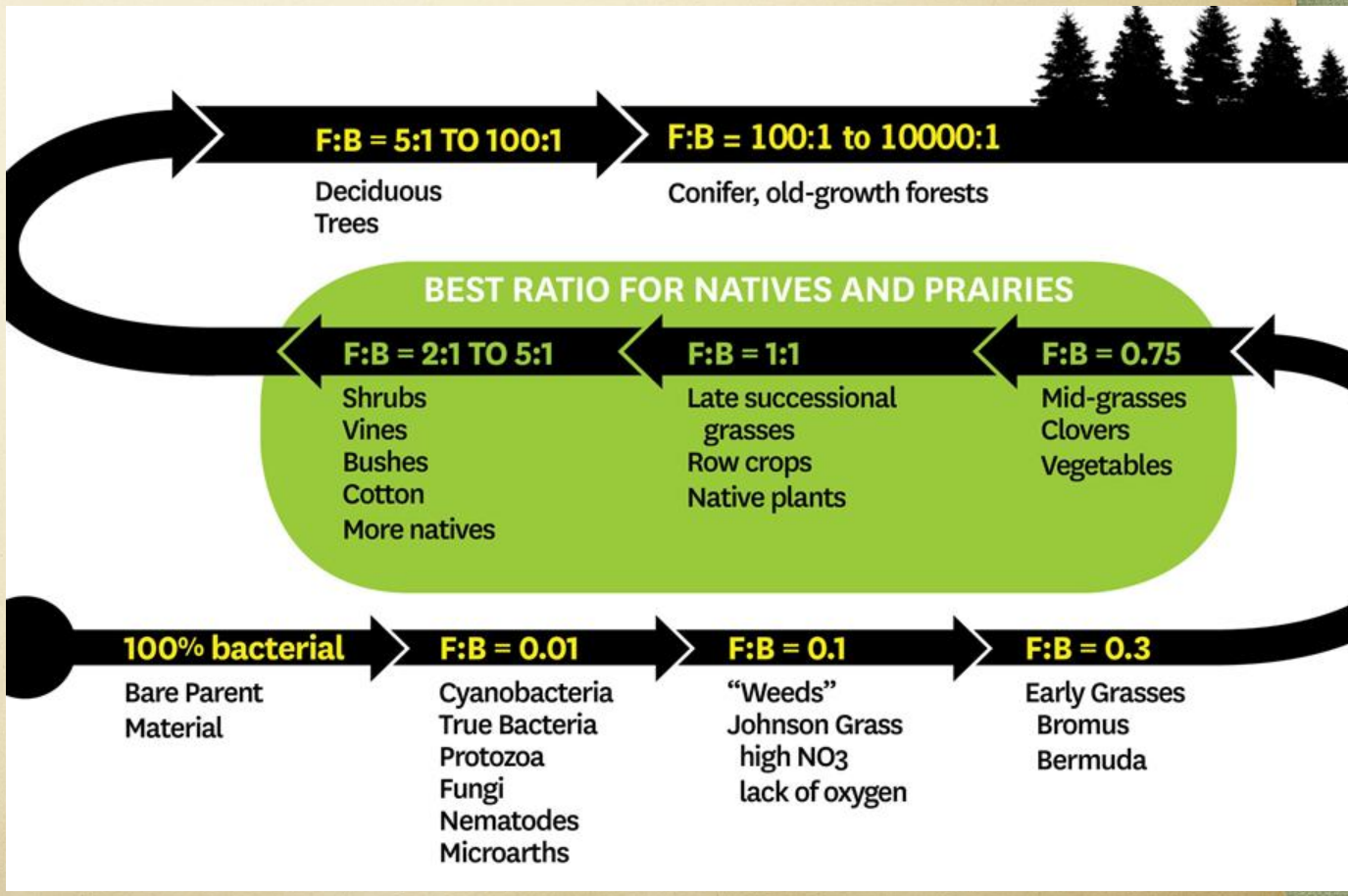
- New crops
  - Proso millet
  - Teff
  - OP Sunflower
  - Sweet clover
  - Winter cereals
  - Others?

Weeds

- Weeds are early successional plants
  - Bacterial dominated soils
    - High tillage
    - High fertilizer
    - High Fungicide

Weeds

- By increasing fungal: bacterial ratio
  - Early successional plants disappear
  - Nutrient cycling is better
    - Less fertilizer is required
  - Higher Brix in plants



Cover Cropping

- Need for seed growers to include
  in rotation
  - Build microbiome
- Cultural control of pests
- Increases vigour in seed
- Reduces production costs

Resources

- Jay Fuhrer
- Joel Williams
- Dr. Christine Jones
- Dr. Jill Clapperton
- Dr. Kris Nichols
- Dr. Yamily Zavala

- Cover Cropping in Western Canada
- Not Just Dirt: Revitalizing Soils With Regenerative Agricultural Principles

books.friesenpress.com

Amazon

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