

## LEAFY GREENS – OUR STRATEGY FOR COVER CROPS AND ROTATION

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Pomykala Farm is a small vegetable farm in Grand Isle, VT. We grow for retail and wholesale on about 30 acres. We are 30 miles above Burlington, and 30 miles below Canada. We are on an island, surrounded by Lake Champlain. We do not get terrible frosts in the spring, which helps with asparagus and strawberries. Our soil is heavy clay-loam.

We try to have a cover crop or mulch on all our acreage at some time during the year. The exception is asparagus. Is someone could come up with a good way to grow a cover crop in asparagus; we would love to try it.

Our leafy greens cover crop strategy falls into 2 categories; transplanted and direct seeded

Transplanted crops are lettuce, kale, swiss chard

Direct seeded crops are spinach, beets, cilantro, dill, lettuce for salad mix

Direct seeded crops are planted with a 3 row planet junior seeder. They have shoe openers, and it doesn't take much to clog them up. Consequently, the ground either has to have very little cover crop residue, which works for early spring planting, or the ground has to be worked up well in advance of planting so the cover crop can start to decompose.

The transplanted crops are much easier to deal with. That is because we added disc openers to our 2 row Lannen transplanter. The disc openers slice thru unbelievable piles of trash and sod, and the packing wheels pack the plants just fine. We have irrigation anywhere we plant .

Our cover crop program is simple. We plant winter rye everywhere we can. We grow 8 acres+/- of Surghum-Sudan grass hybrid to chop as straw for our strawberries. If all goes well, we will chop the Sudax in the late fall and immediately spread or drill winter rye in the stubble.

We were fortunate to buy a tow behind combine to save our own winter rye seed. A side benefit is that after combining, there is plenty of seed left in the field to grow another crop.

## Soil Health and Crop Rotations

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## Soil Health Factors?

- Tilth
- Microbial Activity
- Moisture Movement
- Moisture Retention
- Fertility

## Tilth

- Description of how well the soil is worked
- Often described as friable, or crumbly
- Soils with good tilth can often be worked earlier in the growing season and better seed beds established, fewer clods, less crusting after planting and rain

## Microbial Activity

- Living organisms in the soil respire, live, die and in the process recycle carbon, oxygen, and other plant required nutrients that may be otherwise bound in the soil. Improved tilth helps optimize air and water in the soil to promote microbial activity

## Moisture Movement

- Soils with good microbial activity tend to have more ability to accept moisture and allow it to pass through the soil layers.

## Moisture Retention

- Soils with good soil health, as a result of microbial activity and other factors, should have improved organic matter content which helps to retain moisture for subsequent use of the crop.

## Fertility

- Good soil health fosters good air and water levels which fosters microbial activity which recycles nutrients that may otherwise be bound in the soil and unavailable for crop nutrition.

## Why Crop Rotations

- Break pest life cycles
- Insert species that provide needed benefits
- Improve tilth

## Break Pest Cycles

- Corn Rootworm
  - Rotate out of corn to break life cycle
- Verticillium Wilt
  - Rotate with Sorghum X Sudangrass to reduce inoculum
- Long rotations suggested to break many soil borne root diseases

## Insert species that provide needed benefit

- Provide Nitrogen
- Improve Tilth
- Improve Organic Matter Level
- Biofumigation

## Provide Nitrogen

- Legume Crops
  - Peas, Beans, Soybeans
- Legume Cover Crops
  - Alfalfa, Clovers, Vetch, Sweet Clover
    - Added benefit of bee pasture or pollinator nursery

## Improve Tilth

- Sorghum X Sudangrass
  - Root exudates improve flocculation and friability characteristics of the soil
- Soybeans
  - Noticeable improvement on moderately heavy soil after use of Soybeans in Maine

## Improve Organic Matter Levels

- Return as much dry matter biomass to soil as possible
  - Sweet Corn Stover
- NEVER, let soil lie fallow
  - USE COVER CROPS as soon as crop is removed
- Reduce number of tillage passes
- Adopt zone till or no till

## Biofumigation

- Brassica Crops Provide Biofumigation
  - Need to chop up and incorporate green material while soil temp and moisture are adequate for microbial activity.
- Species matters
  - Lots of research, but even chopped up broccoli is better than nothing at all

## Rotation Considerations

- Try to insert grasses into rotation
  - Corn
  - Small Grains
  - Grass Forage or Cover Crops
    - Longer the rotation the better
- They break disease cycles that impact other crops

## Rotation Considerations

- Be aware of serious pests of your principal crops, especially soil borne diseases
  - *Sclerotinia*, *Phytophthora*, *Pythium*, *Verticillium*, *Fusarium*, *Rhizoctonia*
- Will rotation crops improve situation or make it worse?
  - Example: Potatoes after beans is not a great idea
    - *Sclerotinia*, *Rhizoctonia*, *Pythium*

## Questions?

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