Developing Cover Cropping Systems for Urban Agriculture

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Stone's Throw Urban Farm LLP

- 2.5 acre market garden located within Twin Cities limits
  - 16 different sites, mainly vacant residential lots
- 73-member Community Supported Agriculture (CSA) program, two farmer's markets, several wholesale/restaurant accounts
- High diversity of vegetables
  - Specialization in carrots, beets, salad mix, arugula, tomatoes
- Partnership
  - Decisions made collectively by 6 partners with equal amount of investment in the business

Challenges

- Inexperience
- Spatial limitations, logistics
- City policy
- Water access
- SOIL FERTILITY

Urban soils

- Highly variable land-use history
- Compacted
- Low organic matter
- Low levels of biological activity
- Weedy
  - Crabgrass
  - Lamb's quarters, Purslane

What are the best ways to improve soil fertility on our farm?

- Challenges
  - Significant time and spatial constraints
  - Uncertain land tenure
  - Necessity to maximize financial return
  - Several barriers to on-site composting
- Potential solutions
  - Mulch
  - Compost
  - Cover crop

Experimental Questions

- How can we integrate cover cropping into our farming system to improve soil fertility?

- Does cover cropping significantly improve soil fertility (in comparison to solely applying compost)?

- What types of cover crops work best?

Experimental design

- Comparison of fall-planted oats/peas, rye/vetch, red clover
- Planting regime
  - Planted after onion harvest or after harvest of salad greens
  - Planted into existing stands of nightshades (peppers, tomatoes, eggplants)
- 3 trials
  - Cover crop - no compost, cover crop - compost, compost
- Experiment replicated on 4 different plots
- All cover crop planted between 8/6 - 8/20

Evaluation

- Soil tests (O.M., nitrogen, pH)
  - sampled in mid-July (2012)
  - will sample spring (2013) for comparison
- Soil bulk density
- Cover crop and weed biomass
- Photographic journal

Initial musings

- Intercropping difficulties with germination, growth
  - Shade
  - Disturbance
- Success dependent upon moisture availability
  - Drip irrigation lines
  - Thin layer straw mulch
- Oats/peas - open areas
- Rye/vetch - intercrop

Future work

- Comparison of fall cover-crop regime to early-spring cover crops (i.e. early planted clover preceding cucurbits)
- Comparison of fall-applied leaf mulch to fall-planted cover crops
- Experimentation with different types of tillage
  - Ridge-till/strip-till system
  - Crimping of cover crop residue


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Matt's