Integrating Manure and Cover Crops with Manure Slurry Seeding

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Enhance soil biology with organic inputs—manure and cover crops

- **Increase**
  - organic matter
  - water holding capacity

- **Improve**
  - aggregate stability
  - water infiltration

- **Decrease**
  - evaporation
  - soil bulk density
Manure with a cover crop

- Greater yield response to manure applied with a winter cover crop than manure on bare soil.
Goal

- Develop an integrated process that incorporates
  - low-disturbance tillage
  - manure application
  - and seeding of cover crops
- in one efficient operation
Manure slurry-enriched seeding of cover crops
Fewer plants, greater biomass

Daikon radish
- Slurry, 3.6 ton/ac
- Seeded 09/01/09
- Drilled, 1.2 ton/ac
- Harvested 12/05/09

Forage turnip
- Slurry, 2.8 ton/acre
Seed placement and emergence

- Aeration tillage creates cracks and fissures that are filled with seed-laden slurry.
  - Emergence from near surface to 3 inches.
Small grain cover after corn silage

October 4

Slurry-seeded rye

Drilled rye

April 14
Suitable for several crops

- Oil seed radish
- Annual rye grass

Slurry  No-till  Slurry  No-till

Oil seed radish  Annual rye grass

3/12/2010
Pasture improvement
Pasture improvement

- Frost Seed RC
- Slurry Seed RC
- NT Drill RC

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Late season/stockpile grazing

Drilled + 50 lb/ac Slurry-seeded

Late Season Graze Slurry Seeding, 2005

Biomass Dry Matter, ton/acre

- Forage Rape, drilled
- Forage Rape, slurry
- Forage Turnip, drilled
- Forage Turnip, slurry
- BMR Sudan, drilled
- BMR Sudan, slurry
- Oats, drilled
- Oats, slurry
Slurry-enriched seeding is environmentally sensitive

- **Environmental benefits**
  - Conserves crop residue and improves infiltration, reduces over land flow.
  - Stabilize soil and contaminants, recycles nutrients.

- **Crop protection**
  - Natural pest suppression, reduction in pesticides.

- **Soil quality benefits**
  - Reduce tillage and traffic, organic inputs, sequester carbon, increase soil organic matter.

- **Resource efficiency**
  - Aeration tillage, manure application and cover crop seeding in one pass. Saves 2 gal/acre fuel, 0.35 h/acre labor.