

## Rye as a Cover Crop Prior to No-till Organic Soybeans in MN

### The concept:

- \* Plant rye in fall after small grains or corn, silage corn harvest.
- \* No-till drill soybeans into standing rye the next spring.
- \* If necessary, mow/shred rye after soybeans have emerged.

### Rye planting date and seeding rate:

- \* Late August – Early September for best fall biomass production @ 1.0 to 1.5 bu/ac
- \* Late September – October @ 1.5 to 2.5 bu/ac

### Rye variety:

- \* Apparently doesn't make much difference, but use good quality seed.
- \* Adapted varieties include Rymin, Prima, Homil21.

### Rye planting method:

- \* Depending on field situation, can be no-tilled (if smooth field with minor weed issues)
- \* Drilling ensures best seed-to-soil contact, and thus early stand establishment
- \* Broadcasting and light harrowing also works (use slightly higher seeding rate)

### Rye seeding depth:

- \* Rye is very forgiving. Plant deep (up to 2") into moisture if necessary.

### Fertility:

- \* If desired, manure can be applied prior to planting rye. The rye will 'scavenge' the nutrients.

### Soybean planting date:

- \* After mid-May through mid- to late-June (if rain delayed).
- \* About the time you would normally plant soybean, or perhaps slightly later.
- \* Be patient, don't "mud them in."

### Soybean seeding rate:

- \* 180,000 to 400,000 seed/ac – wide range, but read why below.
- \* Because of the rye & rye residue management, increase seeding rate slightly above normal.
- \* With appropriate varieties, the higher seeding rates (400,000 seeds/ac) can give great results. (especially if late planted)

### Soybean variety:

- \* Avoid small seeded varieties or varieties that are known to have poorer early vigor.
- \* Varieties that have worked well in the past include Vintons, Atwood and Norpro.

### Soybean planting method:

- \* No-till drill the soybeans at  $\leq 7.5$ " row width for best results.  
(otherwise you give up yield and weed control because of slow canopy closure)
- \* Consider cross-seeding (planting in two-directions). This does two things: 1) gives a good spatial distribution of the soybean plants for better canopy closure, and 2) can adequately control/shred the rye by laying down the rye on the first pass and cutting it up on the second pass.

### Soybean seeding depth:

- \* Use a good no-till drill: be sure the seed gets in the ground.
- \* It is desirable to have adequate seed-furrow closure.

**Rye mowing/shredding date:**

- \* Wait until the rye has headed (which is somewhat temperature dependent). [~early June]
- \* Best when pollen shed is or has occurred – waiting to pollen shed ensures less rye regrowth.
- \* Typically this will be during early- to mid-June, and the soybeans will be at the first or second visible trifoliolate growth stage.

**Rye mowing/shredding method:**

- \* Shred rye as low to the ground as possible (to ensure less rye regrowth), but above the height of the soybeans.
- \* Shred at heading, and ideally after pollen shed.
- \* Can use a flail mower, a sickle mower, or a rotary mower, but avoid creating windrows with the rye residue.
- \* This step can be avoided if the soybean is cross-seeded in two directions.

**Harvesting the soybean:**

- \* Don't be surprised that there will be rye seed in the soybean seed harvested. (This rye can be cleaned out, and sold for feed.)

**Do's:**

- \* Have the proper equipment for seeding the soybeans and mowing/shredding the rye.
- \* Timely field operations are essential.
- \* Plant rye early in the fall and at an adequate seeding rate for best weed control.
- \* Talk with producers who have done this successfully.
- \* Be patient (and adaptive). The first time you try this you will think it is crazy.

**Don'ts:**

- \* Skimp on rye and soybean seed / quality.
- \* Mow/shred the rye too early.
- \* Think the system won't work – it does work (see the 'Do's')

**Problems / Issues:**

- \* Poor rye stand obvious in early spring -
  - consider turning under the rye, but do this before rye stem elongation. (if the rye is turned under, plant soybeans on wide rows and cultivate)
- \* Planted rye late in the fall and there is little early spring growth / biomass -
  - if weed pressure is light and rye stand is good, be patient, the rye will grow.
  - if weed pressure is heavy, consider turning under the rye before stem elongation.
- \* Wet conditions delays soybean planting until mid- to late-June -
  - plant anyway, especially if you have the proper short season soybean variety.
- \* Wet conditions delays rye mowing/shredding and soybeans are tall and spindly -
  - mow/shred when you can, the soybeans will be OK.
- \* Dry conditions and the soybeans haven't yet been planted -
  - hold up planting soybeans until you get some soil moisture to ensure good seed placement. Hope rain comes. Mow/shred rye after pollen shed.

## Rye as a Cover Crop Prior to Organic Soybeans – NW MN

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