University of Missouri Extension

G4081, Reviewed October 1993

No-Till Checklist

Zane R. Helsel, Daryl D. Buchholz, Gary D. Hoette and L. E. Anderson
Department of Agronomy

Einar Palm
Department of Plant Pathology

George Thomas
Department of Entomology

Donald L. Pfost
Department of Agricultural Engineering

Field conditions; cover management; fertility; planting and machinery adjustment; insects, diseases, rodent and weed control are important factors in no-till crop production.

Field conditions

- Choose well-drained fields if planting early.
- Select fields where problem weeds can be controlled with available herbicides.
- Start with non-compacted soils.

Cover (residue) management

- You'll need 60 to 70 percent cover to substantially reduce erosion and to effectively conserve moisture.
- Create a good seedbed, but disturb as little residue as possible.
- Residue-clearing devices (V-set disks, "trash whippers," tines or similar devices) may be necessary where residue has been chopped or is wet or scattered.
- If you're planting in a cover crop or sod, kill early if the spring has been dry. Kill at planting time if soils have been wet.
- If you're double cropping, leave a 6- to 12-inch stubble and spread the straw evenly.

Fertility

- Fertilize and lime soils well during conventional tillage (to a medium-to-high test level).
- Phosphate and potash may be surface applied before no-till planting, preferably in the fall.
- Row fertilization may be beneficial when planting early in cool soils or when small amounts are needed.
- Increase nitrogen rate on corn by 15 percent if you're using dry or liquid nitrogen on the surface.
- Anhydrous ammonia applicators are available with coulters and wings to apply nitrogen for no-till.
- Monitor soil pH in the upper 1 to 2 inches, and apply lime according to soil test recommendations.
- Plowing or chiseling every four to five years may improve nutrient distribution and break compacted zones.

Planting and machinery adjustment

Don't plant if soil is too wet to plant conventionally.
- Plant after soil temperatures at 4 inches deep reach 50 degrees Fahrenheit for corn, 55 degrees Fahrenheit for soybeans and 60 degrees Fahrenheit for sorghum.
- Choose a coulter that works best in most field conditions. Narrow fluted (1 inch or less) or ripple coulters generally work best under variable conditions.
- Coulters should be close to seed openers for better tracking, particularly on sloping land.
- Set coulters to penetrate about 1/2 inch deeper than the desired seed depth. Check actual seed placement and soil contact, then make adjustments.
- Control the seed depth at 1-1/2 inches for corn, and 1 inch for soybeans when planting early or in moist soils. (Some herbicides require deeper soybean placement.)
- A common problem is closing the seed slot. You can get good seed-to-soil contact by using press wheels that close the slot (or modify them to do so). Add weights (barrels of water, concrete blocks, tractor weights, etc.) or increase down-pressure on springs, if needed, to make the different planter unit parts function properly.
- Use high quality seed.
- Increase seeding rate by 10 percent unless conditions are ideal.
- Check actual seeding rate by uncovering seed.
- Planting speed in sod, moist soils or under rough conditions should be no more than 3-1/2 mph.

Insects, diseases and rodent control

- Insect problems may increase under no-till; treat for insects that have consistently been a problem.
- Only certain insecticides and methods of application are cleared for no-till; check labels.
- If no treatment is applied at planting, check stands frequently and use a rescue treatment if needed.
- Consider seed treatment to control early seed and seedling diseases.
- Rotating crops or tilling may aid in pest control.
- Consider the use of a rodenticide when planting in heavy residue.

Weed control

- Burn down living vegetation with Gramoxone or Roundup. The latter is preferred to control tall or perennial weeds. To control certain broadleaf weeds, 2,4-D or Banvel may be used before corn.
- Liquid nitrogen may aid in burn down, allowing you to use moderate rates of a contact herbicide.
- Higher amounts and/or pressure may be necessary for good herbicide coverage.
- Use only herbicides that are labeled for no-till. Read the label. Follow instructions closely.
- When using soil herbicides on heavy residue, consider using the higher rate of the range for your soil.
- Be prepared to use post-emergence herbicides.
- No-till cultivators are available, but they reduce cover.

Related MU Extension publications

- G4080, No-Till Planting Systems
  http://extension.missouri.edu/p/G4080
- M164, Missouri No-Till Planting Systems
  http://extension.missouri.edu/p/M164

Order publications online at http://extension.missouri.edu/explore/shop/ or call toll-free 800-292-0969.

UNIVERSITY OF MISSOURI Extension

■ Issued in furtherance of the Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211
■ an equal opportunity/ADA institution ■ 573-882-7216 ■ extension.missouri.edu