

## **Reduced Tillage Trial Guidelines – Reduced Tillage Project 2013**

*Anu Rangarajan, Cornell Horticulture Dept. and  
Cornell Cooperative Extension*

With funding from a New York Farm Viability Institute and Northern NY Ag Development Grant, we want to assist more growers in testing reduced tillage approaches on their farms. Growers who have tested deep zone tillage have found savings in labor (between 25% and 60%) and fuel costs (between 25% and 70%) as compared to their conventional tillage systems (moldboard plow, plus other passes).

**We can provide equipment loans and support to twenty growers this year for deep zone tiller trials in vegetables.** We will provide information, technical assistance and cost share funds to help growers plan trials, rent or borrow needed equipment and learn how to adapt Reduced Tillage (RT) to their own farms. We are seeking growers with farms of all sizes, producing conventional or organic vegetables. Either direct seeded or transplanted crops may be tested. We will also assist with some economic analysis to quantify cash savings from these systems. Our research seeks to pair deep zone tillage trials alongside conventional tillage in the same field and on the same crop.

Trying to find the equipment to test RT has been an obstacle for many growers. We will provide loans and transportation of our Unverferth Zone Builder and Yeoman's Plow to growers that have an equipment capacity for such equipment. To help in this search, we have identified several equipment dealers around NY who will have deep zone builder units available in the Spring and Summer of 2013 for rental, for use in paired trials. The equipment dealers are working closely with Cornell and Cornell Cooperative Extension to make this equipment available and assist with transportation to interested growers.

***When deciding whether to try deep zone tillage, please consider this:***

**Limitations:** Be sure you have the **horsepower** needed to pull the tillage unit you'll be using. If your soil is heavier or compacted you will need more horsepower or you will not be able to rip as deep and break up compaction layers. Equipment dealers estimate that 100-120 horsepower is needed to pull a four row unit. For growers with a smaller acreage, our Yeoman's plow is a zone builder that has been built specifically for tractors where the horsepower rating may be lower, at a **65 rating or more**. Our Unverferth zone builder requires some more horsepower to run its two shanks at a rating of 85 or more.

### **For Cornell Equipment Loans:**

In addition the horsepower requirements, there are additional criteria for participating in a zone builder trial

***-Unloading the Yeoman's Plow and Unverferth:*** Due to transportation capabilities the units will be transported on a flatbed truck. A participating grower would need a tractor with a front loader that can take the equipment off and place it back onto the truck.

***-Weight Distribution:*** As the zone building units extend up to 10 feet behind the tractor, proper weights should be placed at the front of the tractor. Tractors often require 4-wheel drive

to pull the unit with ease, as too much reliance on the back wheels can lead to greater soil compaction.

**-Tractor Speed:** The tractor should be kept at a mid-range gear and run at the throttle typically set for the use of a PTO shaft.

**-Row Spacing:** The Unit is set at a 30 inch row spacing but can be adjusted to a wider spacing (if a more narrow spacing is needed one row can be removed).

**For Growers New To Practicing Reduced Tillage For Vegetables:** We suggest that you do your first trials on sweet corn, followed by large seeded vegetables or transplanted crops. We also suggest that you try reduced tillage for vegetables on a small acreage, until your equipment is adjusted properly for your soils and conditions, to ensure a good seedbed and plant stand. Also, plan to rip the same number of rows that you plant since you will be planting in those narrow disturbed channels.

**Preparing A Trial:** If you're planning a (RT) side by side comparison with your previous tillage practices: The deep zone tillage should be conducted **directly adjacent** to a conventionally plowed plot in the **same field**. The same crop variety, planting date, soil management, weed management and fertility program should be applied to your deep zone tilled plot as your conventional plot.

**Planting Your Crop:** Plan to plant the same number of rows that you rip. It's very important that the planting row go right over the deep rip for vegetables. If the weather is dry this will allow roots to reach water below your compaction layer. Also, check the spacing between your planter units at the disc openers and between the ripper units at ground level before planting. Row cleaners on the ripper or planter are essential to moving residue out of the way.

**Cleaning and Timeliness:** The units will be transported to additional growers in the region. To prevent the spread of soil diseases please clean the unit of all soil and residue. Effective cleaning typically require a thorough rinsing to ensure no residue remains on the unit. We ask that any modifications to the unit are returned to the default configuration before pickup. This includes the 30 inch row spacing and the attachment of the hilling disks and rolling basket to the back end of the unit.

**Sampling:** Cornell Cooperative Extension and the reduced tillage team will conduct some minor sampling from the crops grown in the reduced tillage and conventional tillage areas. This consist of harvesting up to 18 whole plants for yield measurements. Penetrometer readings (compaction depth) should also be recorded. Soil samples may also be taken for soil health assessment. Sampling will most likely occur around the time of harvest. We ask that you work with CCE and the Reduced Tillage team to notify them of your approximate harvest date.

If you are interested in participating in the project or have questions regarding reduced tillage, contact your local Cornell Cooperative Extension educator, Anu Rangarajan ([ar47@cornell.edu](mailto:ar47@cornell.edu)) or Ryan White ([rew37@cornell.edu](mailto:rew37@cornell.edu)) in the Cornell Department of Horticulture. Please also visit our team's website: [www.hort.cornell.edu/reducedtillage](http://www.hort.cornell.edu/reducedtillage) for videos, fact sheets and stories from other growers who have transitioned to reduced tillage.

