

# Using the Roller-Crimper on Terraced Ground

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Michael Willis, SARE Grant FNC13-940  
michaelwillis87@gmail.com

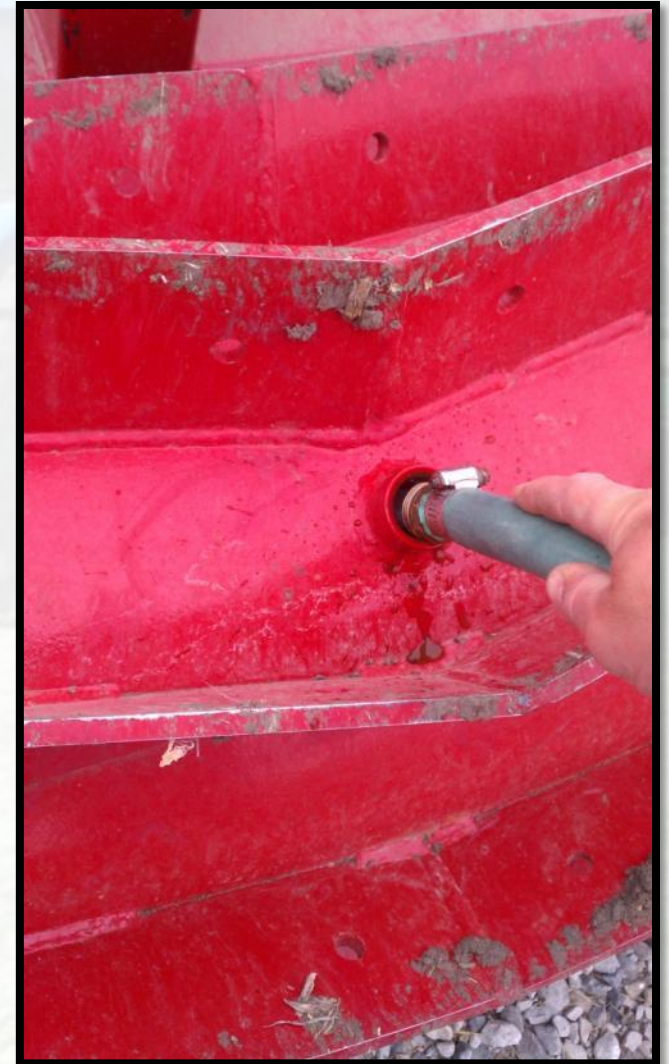
NCR-SARE's Farmers Forum, 2016



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# The Roller-Crimper Design

- I&J Manufacturing ([www.croproller.com](http://www.croproller.com))
- Build your own: (<http://rodaleinstitute.org/our-work/organic-no-till/no-till-rollercrimper-plans/>)
- Designed to mount on a front three-point hitch, also comes in a rear-mounted version.
- Hole in the front lets you add water for extra weight – 75 lb./ft. when filled completely.
- 15.5' roller is 2400 lbs. empty, 3560 lbs. filled with water.





# Finding a Front Three-Point Hitch

- LaForge Systems, Inc.  
([www.fronthitch.com](http://www.fronthitch.com))
- Buckeye Tractor Co.  
([www.buctraco.com/3%20Online%20Catalog/FrontHitches.htm](http://www.buctraco.com/3%20Online%20Catalog/FrontHitches.htm))
- Frontlink, Inc.  
(<http://frontlinkinc.com/>)
- Grouser Products  
([http://www.grouser.com/front\\_hitch.php](http://www.grouser.com/front_hitch.php))
- Auction websites  
(e.g., Tractorhouse)



# Setting Up the Hitch

- The lower two arms of the front three-point hitch do not swing to the left or right.
- Pins lock the arms in place and can be set one of two ways:



1. The first locks the arms firmly in place.
2. The second lets them move up and down slightly.





# When to Roll-Crimp?

- If rolling-crimping cereal rye, it needs to *at least* be at pollination stage (anthesis).<sup>1</sup>
- Waiting a little longer until the milk or dough stage results in even better control.<sup>2</sup>
- Cooler springs mean delayed cover crop maturity, which means rolling and crimping later.



# Operating the Roller-Crimper

- I kept it in the same gear and range as I normally would. I kept my speed at 4 to 4.5 mph.
- Don't turn too sharply!
- The roller-crimper can handle very gentle curves, but sharper curves should be treated like corners.



# Curve Sharpness

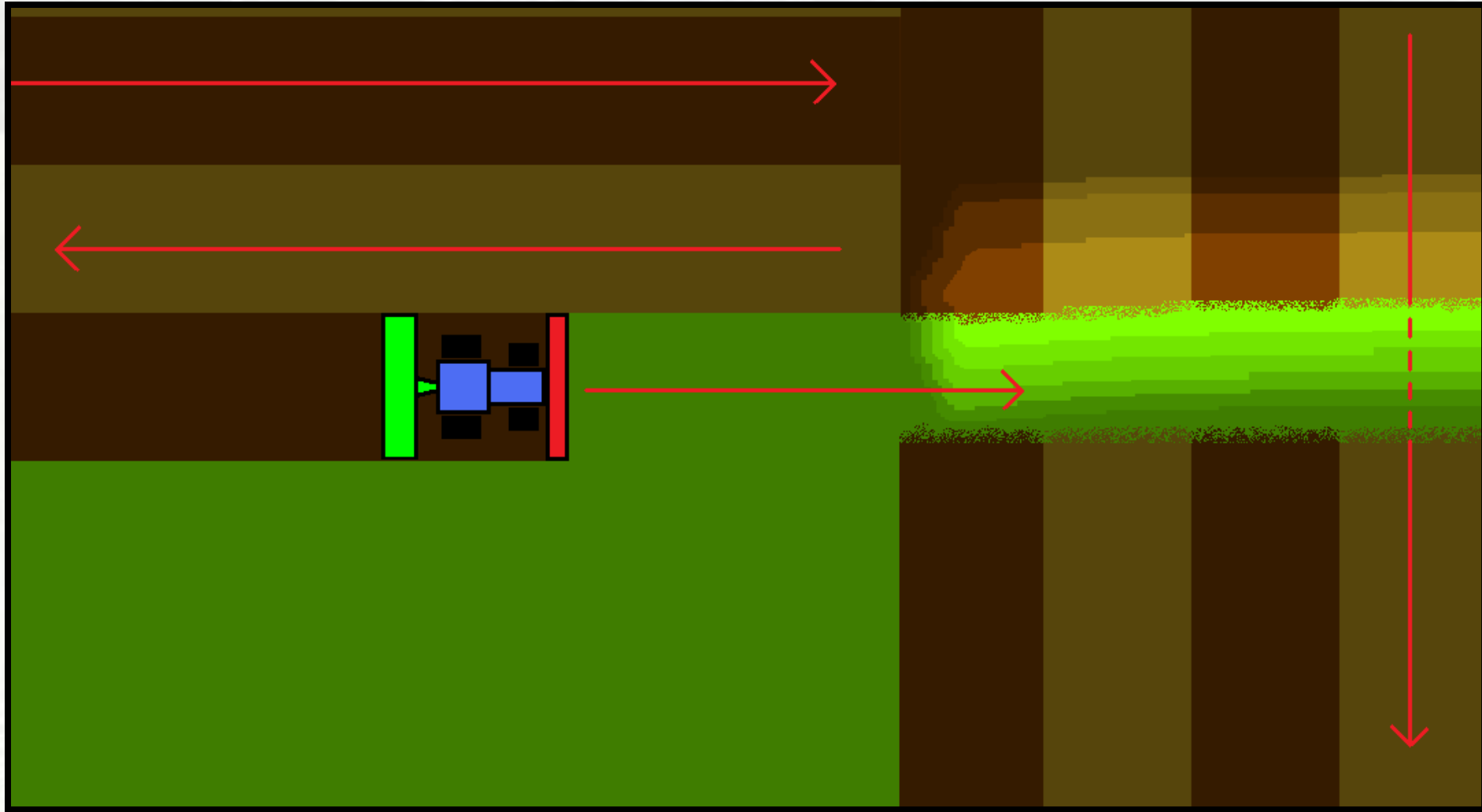




# Going Up and Over a Terrace



# How to Approach It





# Ditches and Non-Level Ground





# Side Slopes

- The roller-crimper can drag the tractor sideways downhill.





# Straight Terraces

- Straight terraces are pretty easy to roll-crimp while planting.
  - First, I made one pass at the top of the terrace.
  - Then I made passes to each side of that first pass.
  - Finally, I made passes to the sides of those subsequent passes.



June 13, 2013

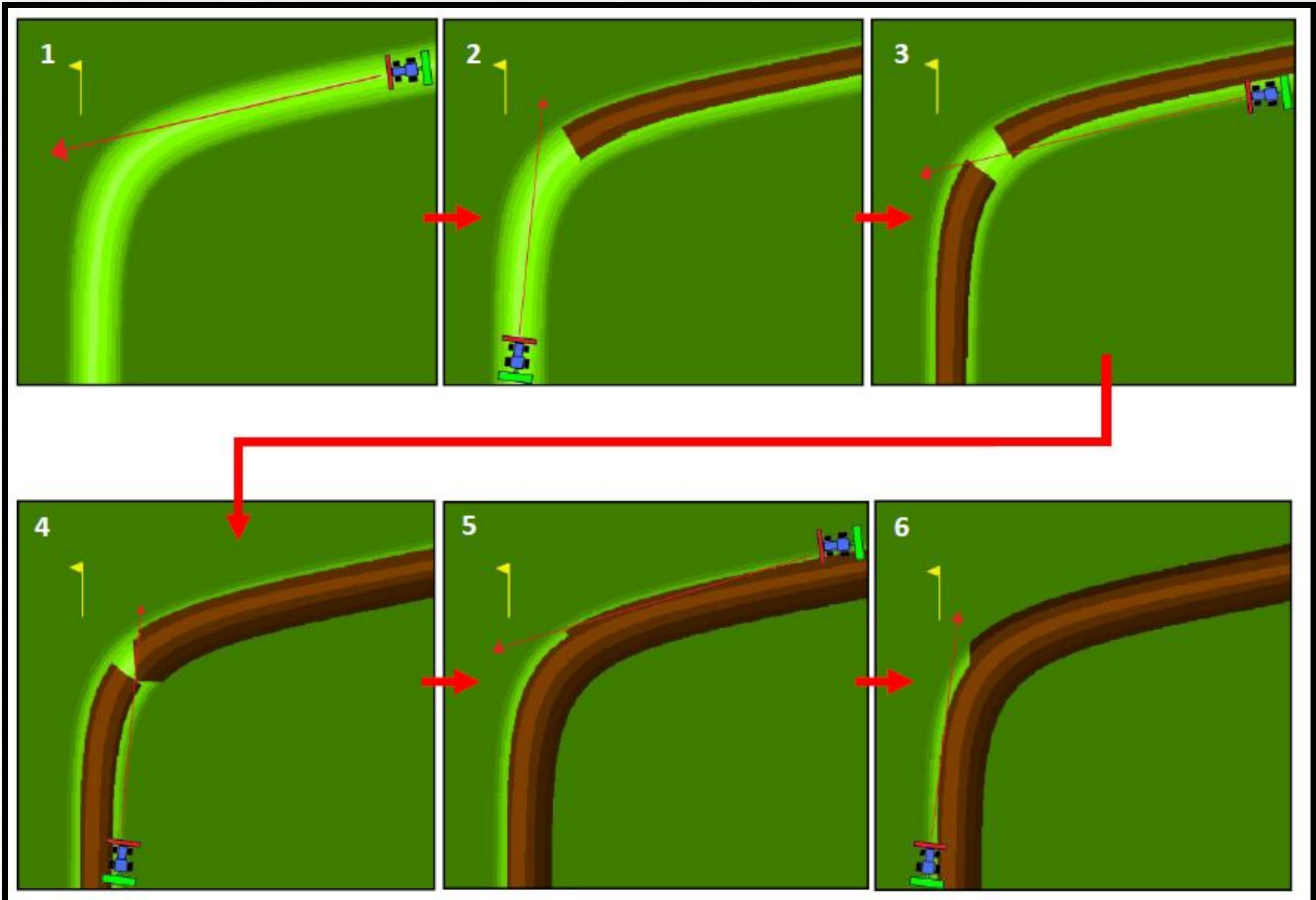




June 22, 2013



# Curved Terraces





# Terrace Outlets





# Fertility & Rolling-Crimping





# Fertility & Rolling-Crimping

- Cereal rye in areas with higher fertility flattened better.
- Fertilizer (particularly N) results in thicker mulch.<sup>2</sup>





# Fertility & Rolling-Crimping

- Eroded areas and thinner ground result in a poor stand and less biomass for mulch.







# Corn - 2013

- Two types of cover crops:
  - Cover Crop Mix: (cereal rye, hairy vetch, Austrian winter pea, crimson clover, purple top turnip, canola) drilled August 16, 2012, following wheat.
  - Cereal rye (50 lbs/ac.) drilled October 11, 2012, following soybeans.
- Fertilizer: Mix - 12.5-75-55-15S-5Zn, fall-applied; Cereal Rye - 80 lbs. N, spring-applied
- Corn (110-day) planted May 23, 2013, at 25,000 seeds/ac.
- John Deere 7000 6-row planter, 13-wave coulters, heavy-duty no-till down pressure springs, Keeton seed firmers, cast iron closing wheels.
- Heavy rains and cooler temperatures after planting.
- Yield: Mix - 48.99 bu./ac., Cereal Rye - 21.14 bu./ac.



# Corn in Mix – After Planting: May 23, 2013





# Corn in Mix – June 21, 2013





# Corn in Rye – While Planting: May 23, 2013



# Corn in Rye – July 20, 2013





# Soybeans – 2013 Planting

- One type of cover crop:
  - Cereal rye (60 lbs/ac.) drilled October 12, 2012, following soybeans.
- Soybeans (LibertyLink, 3.1 Maturity) drilled June 13, 2013, at 160,000 seeds/ac.
- John Deere 1590 15' no-till drill, no suitcase weights were added.



# Soybeans – June 21, 2013





# Soybeans – June 22, 2013





# Soybeans – Weed Control

- The mulch left from rolling-crimping didn't smother all weeds, such as marestail.
- I sprayed Liberty (29 oz./ac.) June 22, and July 21.





# Weed Control

- This prickly lettuce grew horizontally beneath cereal rye that was rolled-crimped for a summer squash patch.





# Soybeans – September 10, 2013





# Soybeans – 2013 Yield Results

- Yield was 29.26 bu./ac. in the rolled/crimped area.
  - Adjacent area in the same field with the same soybean variety planted May 17 into cereal rye killed with Gramoxone (4 pt./ac.) and Authority MTZ (12 oz./ac.) yielded 36.51 bu./ac.
  - Another field of soybeans (Roundup Ready 2, 3.7 Maturity) just across the road planted May 16 into cereal rye killed with Gramoxone and Authority MTZ yielded 50.28 bu./ac.



# Volunteer Rye in Soybeans – Aug. 13, 2013





# Volunteer Rye – October 25, 2013





# Volunteer Rye – March 19 & 21, 2014





# What To Do with Volunteer Rye

- Fertilized one field with 40 lbs. N/ac. as urea, the other I did nothing.
  - Fertilized volunteer rye yielded 24 bu./ac., unfertilized yielded 11 bu./ac.
- Volunteer cereal rye stand was patchy, despite drilling 20 lbs./ac. of rye in the thinner spots.

# Soybeans – 2014

- Cereal rye planted September 12, 2013, at 45 lbs./ac.
- Non-GMO soybeans (3.7 maturity) were planted May 21 at 160,000 seeds/ac.
- Roller-crimper didn't provide adequate mulch. Rained .4" that night. Sprayed May 23.
  - The rye residue made a rescue spray more forgiving
- Harvested on October 28. Yield was 53.5 bu./ac.
  - This was comparable to other fields at the same farm



# Soybean Emergence – May 28, 2014





# Soybeans – June 25, 2014





# Rolled-Crimped Garden – June 15, 2013





# Rolled-Crimped Garden – June 16, 2013





# Rolled-Crimped Garden – July 23, 2013



# Main Points

- **DON'T TURN TOO SHARPLY.**
- Start small, pick your easiest-laying fields.
- Planting soybeans into cereal rye is easiest.
- Cover crop mixes are more difficult to manage due to multiple maturity dates.
- Fertilize your cover crop for a better mulch.
- Straight terraces are easier than curved ones.
- Even, level terrain provides better control.



# Main Points

- Keep weather delays in mind:
  - The weather may turn wet for several days, but you can't plant yet because the cover crop isn't mature enough to roll-crimp.
  - If weather keeps you out of the field too long, the cover crop may be too mature and has already set on seed.
- Be prepared for volunteer cover crops if rolling-crimping late.
- Residue makes rescue sprays more forgiving.

# Cover Crop Info/Good Reads

- *Managing Cover Crops Profitably*
- *Building Soils for Better Crops*
  - Both of the books listed above are available for free online at the SARE website.
- *Dirt: The Erosion of Civilizations* – David R. Montgomery
- *Cows Save the Planet* – Judith D. Schwartz
- *The Soil Will Save Us* – Kristin Ohlson
- *1491 & 1493*– Charles C. Mann
- *The End of Plenty* – Joel K. Bourne
- *The Elephant in the Cornfield* – Chris Clayton



# Sources

1. Seidel, R.; Curran, W.; Moyer, J.; and Richard, T. 2008. "Cover Crops and No-Till Management for Organic Systems." *Rodale Institute/Northeast SARE*. Grant# LNE08-268.  
(<http://www.sare.org/Learning-Center/Project-Products/Northeast-SARE-Project-Products/Cover-Crops-and-No-Till-Management-for-Organic-Systems>).
2. Lawrence, C.; Balderson, K.; Brann, C.; Chilton, J.; Jones, B.; and Phillips, M. 2006. "Introduction to Cover Crop Rolling and the VA-USDA Crimper Roller Demonstration Project." *Virginia Cooperative Extension/USDA-NRCS*.  
([http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_018551.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_018551.pdf)).