

Monsanto Company

STRIP-TILL OUT YIELDS CONVENTIONAL TILLAGE—2006 IRF STUDY

Jeff Tichota—Technology Development Rep.—Monsanto. Co.

Strip-Till Benefits Show In Corn Yields

Deficit irrigation was used to compare Strip-Till vs. conventional tillage at the Irrigation Research Foundation (IRF) near Yuma, CO during the 2006 growing season.

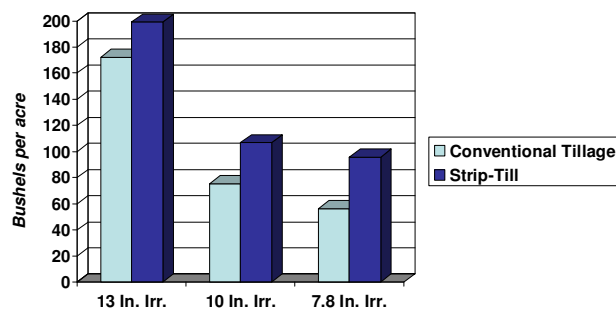
Two DEKALB® corn products DKC 52-40 (RR2/YGPL) and DKC 61-68 (RR2/YGRW) were compared in Strip-Till and conventional tillage. Conventional tilled plots were disked twice prior to planting. Three levels of irrigation, 13, 10 and 7.8 inches were applied to both hybrids across Strip-Till and conventionally tilled areas. Plant populations were 32,000 in the 13 inch irrigation and reduced to 25,000 and 18,000 plants per acre under 10 and 7.8 inches of irrigation. All plots were eight rows wide and duplicated to increase accuracy of the experimental procedure.

Yield analysis showed a benefit to maintaining crop residue on the soil surface which acts to promote deeper root growth in the Strip-Tilled plots and increased water infiltration which is critical in a water short environment. Strip-Till out yielded the conventional plots in each of the three irrigation levels. The value of crop residue conservation with Strip-Till showed greatest yield increase as irrigation levels decreased.

Previous studies at the IRF and a site in Mingo, KS under limited and full irrigation also confirmed the benefits of Strip-Till. Some of the benefits we have observed over the years of these studies are:

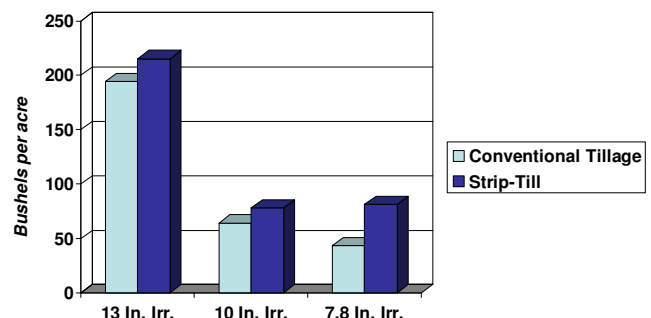
- Deeper root development
- Increased water infiltration
- Increased root mass
- Decreased expense to prepare fields for planting
- Yields are rarely less than conventional tillage and often out yield conventional tilled fields.

**2006 IRF
Limited Water Study – DKC 52-40**



DKC52-40 (RR2/YGPL)

**2006 IRF
Limited Water Study – DKC 61-68**



DKC 61-68 (RR2/YGRW)

How was the trial conducted?

The plot area was kept weed free with a preemerge application of Degree Xtra® and two post emerge treatments of Roundup WeatherMAX®.

Fertility (nitrogen and phosphorous) were equal in the Strip-Till and conventional tillage but placement varied with broadcast fertilizer application in the conventional plot and incorporated with disking while the Strip-Till fertility was dual placed with a mole knife at four and eight inches below the row. Additional nitrogen and phosphorous were applied with the planter in a two by two inch offset band to both tillage comparisons. Final nitrogen requirements were applied with center pivot or as a directed stream with a hooded sprayer. Nitrogen and phosphorous amounts were reduced under 10 inches of irrigation and more so under 7.8 inches. However, the total amount of nitrogen and phosphorous exceeded the amount needed for our 2006 crop yields in all three irrigation levels so fertility was not a yield limiting factor.

Irrigation was delayed in the 7.8 and 10 inch treatments where the bulk of the water was applied at teasing to ear fill. However, the hot, dry spring and summer temperatures coupled with soil evaporation rates that exceeded the amount of stored soil moisture caused the crop to suffer from drought stress and barren plants were common as well as tip back at ear fill stage. The soil profile did not fill during the winter and spring prior to planting and only four inches of rainfall fell during the growing season. The combination of a short soil water profile, reduced rainfall and deficit irrigation along with above normal summer temperatures placed the crop under severe drought stress in the 10 and 7.8 inch irrigations. Corn yields reflected the benefit of crop residue with Strip-Tilled areas out yielding conventional tillage. The advantage of Strip-Till increased as irrigation amounts decreased.

Check Out Our Website!

www.monsantoperformance.com

Jeff Tichota

Technology Development Representative

Phone: 303-324-4941

Email: jeffrey.m.tichota@monsanto.com

Always read and follow pesticide label directions. Individual results will vary. Seed Product performance may vary from location to location and from year to year. Growers should evaluate data from multiple locations and years whenever possible. Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® agricultural herbicides. Roundup agricultural herbicides will kill crops that are not glyphosate tolerant. Degree Xtra® and Roundup Weather MAX® are registered trademark of Monsanto technology L.L.C. DEKALB® and the Winged Ear Design are trademarks of DeKalb Genetics. Degree Xtra is a restricted use pesticides and are not registered in all states. The distribution, sale, or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited. Check with your local Monsanto dealer or Monsanto representative for the product registration status in your state. RR2 = Roundup Ready Corn 2 YGPL = YieldGard Plus YGRW = YieldGard Rootworm



Before opening a bag of seed, be sure to read and understand the stewardship requirements, **including applicable refuge requirements for insect resistance management**, for the biotechnology traits expressed in the seed as set forth in the Monsanto Technology Agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with those stewardship requirements.



Grain harvested from products that bear this mark is fully approved for food and feed use in the United States and Japan, but is not approved in the European Union. You must find a market for this crop that will not ship this grain or its processed products to Europe. Appropriate markets for this grain include: domestic feed use or grain handlers that specifically agree to accept this grain and handle it appropriately. For more information on your grain market options, go to the American Seed Trade Association's website at www.amseed.org or call your seed supplier.

MARKET CHOICES® is a registered certification mark used under license from ASTA.

Know Before You Grow®, an information service provided by National Corn Growers Association at www.ncga.com.

A publication of

MONSANTO
imagine®



Growers should refer to Monsanto's Technology Use Guide for information on crop stewardship regarding the potential movement of pollen to neighboring crops. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Know Before You Grow® is a registered service mark of National Corn Growers Association. For more information call 1-866-SELL CORN.

IMPORTANT: The following information is current as of [date of printing]: YieldGard Plus, YieldGard Rootworm with Roundup Ready Corn 2 and YieldGard Corn Borer with Roundup Ready Corn 2 are grandfathered for import and use in processed feed in the EU. YieldGard Plus with Roundup Ready Corn 2, YieldGard VT Rootworm/RR2 and YieldGard VT Triple are neither approved nor grandfathered and there is zero tolerance for these traits in processed feed imported in the EU. Growers of all products bearing the Market Choices mark must talk to their grain handler to confirm the handler's buying position for grain from these products. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted.