What every farmer should know about water management... and how it leads to higher yields.

Find out more about the yield-till system and how to help your plants thrive. Ask your Case IH dealer for more information.

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You cannot control the amount of rainfall you receive. But you can control how your plants utilize it. Proactive water management is the key to higher yields in dry and wet years. Therefore, understanding how water interacts with soil is essential. Let’s examine a few common water management misconceptions.

**DEFINITIONS**

- **Infiltration:** water entry into the soil.
- **Permeability:** ease of water movement through the soil.
- **Percolation:** excess water moving deeper into the soil profile.
- **Soil Tilth:** partly, a measure of a soil’s ability to absorb and hold water.
Maybe, maybe not. During severe droughts, soil moisture gets depleted all the way down, deep into the soil profile. This important moisture reserve must be replenished for plants to thrive, but water cannot get down into the subsoil if your soil is compacted. Rainfall on compacted soil only soaks down as far as the compaction layer. The rest either runs off or creates ponds, a waste of precious resources.

Did You Know?

The Case IH tiger point improves soil tilth to help manage the extremes in rainfall/moisture and compaction. The result is higher yields even in the most diverse conditions.

MISCONCEPTION:
Good rains will take care of a drought.

1999 Soybean Yields in Primary Tillage at Defiance, OH

Plants get additional water from an ecolo-tiger!
It takes 5,000 gallons of utilized water to produce a bushel of corn. That means 200 bushels of corn require 1,000,000 gallons of utilized water per acre!

**MISCONCEPTION:**

Ponding is a result of too much rainfall.

Not necessarily. Ponding is usually a result of poorly managed soil. When soil is compacted, it cannot absorb water. Compacted soil is like a sponge that is squeezed tight: there is no space for air and water. To make matters worse, compacted soil forms an impenetrable layer that prevents excess water from draining through. The result is ponding.

**eco-tiger 9300**

9 shanks, 30 in. (76 cm) spacing
400–500 required hp
22 ft. 6 in. (6.86 m) working width
- X-disk frame
- Lead shanks are optional
- Optional rear hitch for P/T crumbler
seed bed finisher
Soil with good tilth has moisture throughout and its open, mellow structure allows the roots to absorb it. Compacted soil can hold very little moisture — primarily in the area above the compaction layer — leaving it vulnerable to quickly drying out. When this happens, the roots will try to find water deeper in the soil. Unfortunately, a compaction layer will stop them dry. The bottom line? If conditions are optimum, you might get good yields with poor tilth, but you’ll always do better with good tilth, no matter how much rainfall you get.
While earthworms do help create pore space in soil, the large pores they create act mostly as drainage pipes. Thus, when rainfall hits compacted soil with earthworm activity, the large pores tend to not store water for plant growth. In addition, earthworms’ ability to inhabit the soil profile is limited by compaction.
Primary tillage, using **yield-till system** tools, fractures compaction and creates a more open soil structure (good tilth) for improved water absorption, infiltration and percolation. This helps increase yields in wet and dry years. If it’s too wet, good tilth through primary tillage lets excess water drain through. Good tilth also opens up the soil and increases its water-holding capacity; therefore, in dry years the soil has more moisture and the roots are free to get it.

**PROPER PRIMARY TILLAGE**

**ecolo-til® 2500**
- 3–9 shanks
- 85–345 required hp
- 7 ft. 6 in. – 26 ft. 6 in. (2.29 m – 8.08 m) working widths
- Available in a unique No-till tillage configuration with Case IH No-till shanks and No-till points for virtually disturbance-free tillage
- Can be equipped with fertilizer attachments to till and root zone band fertilizer in one pass

**ecolo-tiger 730C**
- 7 shanks (5-shank unit also available)
- 245–340 required hp
- 17 ft. 6 in. (5.33 m) working width
- Fractures compaction, increasing soil tilth and water and nutrient absorption by plants
- Optional rear hitch for P/T crumbler seed bed finisher

**THE RIGHT PRIMARY TILLAGE SOLUTION:**

The Case IH **yield-till system** includes primary tillage tools for every farming practice. Each tool can be equipped in a variety of ways so you get the level of residue management, compaction fracturing and seed bed conditions you want. Each one will help you manage water for higher yields.
THE WATER MANAGEMENT SOLUTION:

How is good tilth created?
Proper primary tillage creates good soil tilth by managing crop residue and eliminating compaction. This returns the soil to the ideal mixture of 40-50% soil, 20-30% water, 20-30% air (pore space) and 1-5% organic matter. Here’s how this is accomplished with an ecolo-tiger® disk ripper.

1. X-disk frame cuts, sizes and incorporates residue.

Residue mixed into the soil:
- Meshes with soil aggregates, enabling water infiltration.
- Builds and separates soil aggregates to resist crusting and maintain pore space.
- Builds soil organic matter, increasing soil water-holding capacity.

“The yield [increase] is definitely attributed to better utilization of the water that we had over the winter, allowing the root system to get down to that water to get those nutrients.”

Richard Wesley
USDA Agricultural Engineer, speaking of the up to 15 bu/acre soybean yield increases due to deep tillage.
Maryland Farmer, March 1997, pg. 9.

Did You Know?

The freeze-thaw cycle cannot adequately solve compaction problems, since compacted soil has had the water squeezed out of it.

Example: The Oregon Trail has not been used for over 100 years, yet soil in the wheel tracks has 50% lower water infiltration and 50% lower air permeability!

Sharratt et. al
2. Lead shanks and main shanks equipped with tiger points fracture compaction.

3. Hydraulic disk level’r distributes the soil and residue mixture while the P/T crumbler Fall seed bed finisher reduces clod size.

- **10 in. standard tiger points**
  Fracture: 50% – 70%
  Residue remaining: 70% – 85%

- **10 in. replaceable tip and wing tiger points**
  Fracture: 50% – 70%
  Residue remaining: 70% – 85%

- **7 in. standard tiger points**
  Fracture: 30% – 60%
  Residue remaining: 70% – 90%

- **7 in. replaceable tip tiger points**
  Fracture: 30% – 60%
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- **8 in. No-till points**
  Fracture: 25% – 50%
  Residue remaining: 70% – 95%

Note: Field performance varies based on soil and operating conditions.
How does the tiger point work?

- Fractures up to 80% of compaction with 10 in. (25 cm) point on 30 in. (76 cm) centers
- Creates a mellow, healthier soil for greater yield potential — in dry or wet years
- Maximizes water/air infiltration to reduce ponding, runoff and erosion
- Enables percolation of excess water deep into the soil
- Opens up the soil so roots can go deep for needed moisture during dry times

**Lift**: the tip starts the fracturing by lifting the compacted soil

**Twist**: the front area of the wings starts the twisting action which relocates soil layers — preventing immediate recompaction

**Roll**: the back of the wings, together with the shank, finish the job by rolling the soil to incorporate fertilizer and residue

"If the plant hits a dry spell in summer, its deep roots can get to moisture."

Francis Childs
grower of 393 bu/acre corn, speaking about tillage.
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This patented lift, twist and roll action is **NOT** found on sweep points!
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**THE RIGHT PRIMARY TILLAGE SOLUTION:**

**MRX690 ▶**
7 shanks (5-shank unit also available)
200–400 required hp
17 ft. 6 in. (5.33 m) working width
- Shallow-concavity blades offer superior soil penetration
- Parabolic shanks and winged tiger® points shatter compaction to create healthier soil
- Standard-concavity rear leveling blades aggressively size clods, roll soil and mix residue

**P/T crumbler ▶**
Size Recommendations
530C – 15 ft. (4.57 m)
730C – 20 ft. (6.10 m)
9300 – 25 ft. (7.62 m)
MRX690 (5-shank) – 17 ft. 6 in. (5.33 m)
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- Breaks clods to create a uniform soil surface
- Pushes soil and root crowns into open “holes”
- Levels and firms the soil surface
- Flattens residue to protect soil from erosion

**MYTHS AND FACTS**

**MISCONCEPTION:**
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Will This Year be Wet or Dry?

Whichever it is, you’ll maximize your yields with proper primary tillage for proactive water management.

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