

# THE LEADING EDGE

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## A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

### **Shallow Vertical Tillage: An Up-and-Comer in the Tillage Lineup**

Tired of compacted soils preventing healthy root development, looking for a way to get into the field earlier in the spring, or searching for a fast, fall residue management option that still fits a no-till mentality? Shallow vertical tillage could be the answer producers battling these obstacles are looking for.

Vertical tillage tools have evolved, and the term no longer applies to only deep tillage with strait shanks, which results in completely overturned soil. Today, manufacturers are making tools for vertical tillage designed to penetrate at most, the top three inches of soil. These types of "top only" vertical tillage are also known and marketed as vertical finishers.

Many manufacturers refer to the blades on their vertical tillage tools as coulters; the curvature of the blades and fluting varies. But they share a common benefit: low soil disturbance. According to Tony Vyn, Purdue University agronomist, a big part of tillage is trying to make sure soil damage is limited and the creation of any root-restricting layers is voided during that operation.



A vertical tillage pass in the fall helps residue breakdown, especially though Bt corn hybrids.

"That way, you give the maximum potential for unimpeded root development after tillage and planting."

Most shallow, coulters-based vertical tillage tools have fairly low horsepower requirements and can be operated at relatively fast speeds of 6 to 10 miles-per-hour—two times as fast as a disc! Faster operation has benefits in both the spring and the fall.

Producers are more likely to be able to complete fall tillage using a shallow method, especially beneficial after a late harvest. Vertical tillage anchors some residue in the soil, putting it in contact with active microbes. This speeds residue breakdown, a big benefit for those who plant Bt corn hybrids. Other residue is chopped to a manageable size but left on the soil surface as an erosion-preventing cover.

Also, shallow vertical tillage prepares the loosened soil to absorb and store moisture that will be released during the growing season. Finally; pass with a vertical tillage tool in the fall goes a long way toward eliminating yield-robbing soil compaction caused when heavier tools make another pass through combine-trod fields.

**Vertical tillage provides a natural mechanism to improve insect and disease control through residue sizing and disturbance, and vertical tillage attachments can be used for very shallow incorporation of fertilizer and herbicides.**

In the spring, vertical tillage can set the stage for the ideal seedbed. If temperatures are slow to warm, vertical tillage can offer just enough residue disruption and soil disturbance to facilitate soil warming and earlier planting dates. Vertical tillage is especially well-suited for fields that dry slowly in the spring, such as those with poor drainage or high clay content. But use caution—if fields are too wet, a tillage pass too early, even with light equipment, can cause unwanted compaction.



Vertical tillage in the spring helps the soil warm up and dry quicker, allowing for easier planting.

Some manufacturers are making vertical tillage tools that are compatible with field cultivators, chisels, and fertilizer application shanks, giving producers the opportunity to multitask with existing equipment. Other beneficial spring attachments for vertical tillage tools may include rolling baskets to further fluff residue and smooth the seedbed.

Spring or fall, a key to successful vertical tillage is to leave the soil surface as level as possible. Coming out of the winter with peaks and valleys no deeper than three inches is ideal. Any more than that can lead to herbicide streaming. Plus, non-uniform soil is difficult to plant into.

Other general guidelines for operating vertical tillage equipment include:

- Space the coultter blades on the tillage tool on 6-inch centers.
- Set or mount coultter blades to run perpendicular to the soil.
- Operate at a speed of 6 to 10 mph.
- Don't let vertical tillage coultter blades operate too

While the investment in a complete shallow vertical tillage set-up could be expensive, several manufacturers offer the option of purchasing only the attachments . An old chisel plow is the perfect candidate to be modified to accept these vertical tillage attachments. Putting an outdated tool back into the field with an updated purpose makes economic sense.



Vertical Tillage Attachments transform chisel plows, field cultivators, and soil finishers into low-cost vertical tillage machines.

Producers can create a customized tool by choosing the right vertical tillage coultter option—straight or slightly angled—for their needs. Narrow coultter blades provide the least amount of tillage, while wider waves result in more soil disturbance.

Studies so far have not shown that shallow vertical tillage consistently produces higher yields, but the flexibility this relatively new tillage practice offers has its own benefits. It may be the tillage solution that increases yield performance when adverse weather conditions or the spring time crunch means the alternative is planting into a less-than-ideal seedbed. It may help dedicated no-tillers overcome some disadvantages of this conservation practice.

Shallow vertical tillage is a practice easily undertaken with minimal equipment expense and offers multiple benefits leading to healthy crops. This tillage option offers a quick return on investment as well as time and money savings.

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Yetter Manufacturing Co., Inc.  
109 S. McDonough  
Colchester, Illinois 62326  
Phone: 800-447-5777  
FAX: 309-776-3222  
[www.yetterco.com](http://www.yetterco.com)  
E-mail: [info@yetterco.com](mailto:info@yetterco.com)



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