

Vertical Tillage
The What, How and Why
or Tillage for No Tillers

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Definition – the most difficult

- Vertical tillage is any type of deep tillage that doesn't create a horizontal layer, and is performed with chisels, disk rippers, in-line rippers, parabolic rippers and combination deep tillage tools.
- However I believe that a vertical tillage tool today is defined by not having a shank that lifts, stirs and mixes the soil
- Definition varies, is open to debate and what counts is what you believe



Objectives

- "The main objective of using vertical tillage is to break up surface soil compaction, or smooth out areas in a field with shallow (2 to 3") rills from water erosion or ruts and tire tracks from tractors, combines, grain carts, trucks, and other equipment. It also is used to help improve rainfall penetration by breaking up crusts." DeAnn Presley, KSU
- Another objective is to cut and size residue for easier handling and anchor it down

Description of Functions

- Vertical Tillage
 - Cut and size residue
 - Partially cover residue with soil
 - Break clods and smash residue
 - Break compaction
 - Aerate the soil
 - Dry and warm soil
 - Blacken the soil
 - Incorporate manure
 - Fluff of residue in the spring
- Different things to different folks





Brands – hard to keep tract of

Company	Model	Type
Case IH	330 Turbo	Processing
Great Plains	Turbo Till and Turbo Chopper	Processing
Krause	Exceleator	Processing
Landoll	7431 VT Plus	Processing
McFarlane	Reel Disk, Spiral Reel Stalk Chopper, Reel Till	Processing
M&W		Processing
Salford	RTS and RTS XT	Processing
Summers	Super Coulter	Processing
Sunflower	6630 Vertical Tillage System	Processing
Till-Tech Systems	Twister	Processing
Aerway	Aerway	Aeration
Soil Regeneration Unlimited	Curse Buster	Aeration
Genesis Tillage	Gen-Till	Aeration
HCC, Inc.	Smart-Till	Aeration

Equipment Types

- Processing type
 - Process residue
 - Prepare seedbed
 - Level seedbed
- Aeration type
 - Break compaction
 - Aerate the soil
 - Level seedbed
- Rolling harrows
 - Fluff
 - Aerate

When we think vertical tillage do we only envision a combination of cutting and sizing coulters following by a harrow and rolling basket?



Residue Processing Brands

Turbo-Till



330 Turbo



RTS



Super Coulter



Aeration Brands

Aerway



Gen-Till



Smart
-Till



Curse
Buster



Equipment Set-ups

- No shanks
 - Not horizontal or deep zone tillage
- Gangs of coulters
 - Wavy or straight
 - Notched or edged
 - Concave or straight discs
 - Angled or straight gangs
- Rolling tines
- Harrows
 - Rolling
 - Static
- Rolling baskets



Field Action



Compaction Management

- Compaction created by years of horizontal tillage with a disk, chisel, or field cultivator
- Processing types take out a surface crust
- Aeration types fracture the surface
- Tines – which is better
 - 3 or 4 tines
 - Twist designs
 - Additional weight





Field Operations

■ How to run

- Speed - be ready for the ride of you life
 - ▶ 8 to 10 to 12 mph
- Horsepower – don't skimp
 - ▶ As little as 10 per foot when flat
 - ▶ As much as 15 per foot in the hills
- Weight
 - ▶ Big variable
- Depth
 - ▶ 2 to 4 inches for coulters
 - ▶ 6 to 8 inches for tines
- Angle
 - ▶ Parallel, angle or perpendicular
 - ▶ How much stalk do you leave standing
 - ▶ Wind a risk



Field Operations

- How to evaluate
 - Residue size
 - Residue anchored
 - Seed zone prepared
 - Seedbed leveled
 - Easier to observe
- Soil properties
 - Changes in bulk density
 - Aggregate stability
 - Water infiltration
 - Harder to measure



Evaluating Performance

■ Corn Stalks

- Sizing
- Anchoring
- Corn after corn
- Tough Bt stalks
- Rootballs



Evaluating Performance

- VT tools are major investments so has to work
 - Residue processing
 - Residue anchored adequately
 - How much soil is turned, too much or too little
 - Are rootballs intact, split or flipped out
 - Is it solving a compaction or crusting problem
 - Is seedbed preparation adequate
 - Will it guarantee faster and better emergence
- Don't hesitate to get out the broom



Setting a Goal

- What do you want to accomplish
 - Cut and size residue
 - Incorporate residue
 - Blacken the soil
 - Prepare the seedbed
 - Fluff up the residue and scratch the surface
 - Loosen and aerate the soil
- You have to decide



Buying Decision

- Understand the tool in terms of depth of tillage, level of disturbance, anchoring residue, able to perform in varying conditions
 - What's your goal
 - Fall or spring passes or both
 - Crops and residue
 - Depth of tillage required
 - Field leveling
 - Do you have the horsepower
 - Price tag of \$2,000 to \$2,500 per foot of width

Conclusions

- They all work
 - They are also all different
- Decide what you want to accomplish
 - Processing or aeration
- Know your expectations
 - Test out a few types
 - Talk to other adopters
- With all the brands and options available don't rush to buy just because you are loyal to a brand and color
 - Find the one that works best for you.
- My 2 cents

Questions

More Information---

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Thank you