



After years of farming conventionally, Manthey switched to “zone tillage”. He says it has allowed him to break through yield barriers to new levels of production and profit.



Manthey says the Zone Tool is especially effective in the spring, accomplishing in one pass what a disk or field cultivator did in two or three passes.

## He Says New Tillage System Boosted His Yields, Income

By Lorne Manthey, Wanamingo, Minn.

Like most farms in the 1960's, my family's operation had a wide variety of machines to produce crops. In fact, my agriculture book-keeping records in high school showed no less than 38 items of depreciable equipment on our 200-acre farm. At least half of those were needed to plant, cultivate, spray and harvest corn and soybeans.

Flip the calendar ahead to the year 2004 and my current machine inventory is a vastly different picture. I now use only 5 pieces of equipment to till the ground, plant and harvest my soybeans and corn. This drop was due in large part to a new approach to crop production that has reduced costs, improved yields, improved soil conservation and saved time.

Until the mid-1990's I was a conventional crop farmer who believed, like my father, neighbors and many agricultural educators, that land needed to be moldboard plowed or chiseled in the fall, that residue needed to be chopped and/or buried, and that fields needed to be worked in the spring until they were table-rock smooth. Those methods for me produced average yields that held at about 175 bushels for corn and 50 bushels for soybeans. Even when I gave special attention to fertility and crop rotation in the latter 90's, my top yields never reached more than 195 for corn and 55 for soybeans.

Looking for improvements that would break through the “yield barriers”, I studied tillage, fertility, planting methods and biological activity in the soil. I used no-till and twin-row beans with the Roundup® cropping system, but the soybean yield barrier held tight. I used the latest corn hybrids, new fertilizers, regular crop rotations, and twin row corn, but those barriers also held.

Three years ago I became interested in the tillage methods and fertility concepts taught by Donald Schriefer, author of *Agriculture in Transition* and *Life in the Soil*. Schriefer's concept of minimum tillage, banding nutrients, stimulating biological activity in the soil and conserving residue was markedly different. Consulting agronomists in Minnesota, Nebraska, and Iowa were also advancing these concepts. After observing that innovative farmers were winning yield contests with his approaches, I decided to give them a try.

One of the first steps I had to take was to reduce fall and spring tillage and place nutrients in a band. After looking at equipment options, I decided on a custom design that would use large shanks to slice through compaction and place liquid nutrients under the root mass of young corn and soybean plants. Although stock machines were available from three or four companies, I had a machine custom-built by Rawson Farms of Farwell, Michigan. Ray Rawson has been an innovative and conservation-minded farmer for 40 years and holds several patents for tillage equipment. This design was a modification of other equipment he has built in recent years.

Mine is a 6-row, 30-in. pull-type machine with a 6 by 6-in. box frame hitch, two sets of dual wheels, a 500-gal. liquid tank and a John Blue pump. Six lead coulters mounted on the front frame cut residue in front of the 6 deep shanks mounted on the rear 4 by 6 box frame. Beside and slightly behind each shank are two wavy coulters that can be adjusted to throw soil into a slight berm, which is leveled by a rolling basket.

I use this “Zone Tool” in the fall on soybean stubble to place liquid nutrients and bio-

logical products about 14 in. deep on 30-in. row spacing. This is ground that's planted to corn the following spring. I've also used the machine in cornstalks, doing primary tillage on 30-in. centers between standing stalks. Depending on the nutrients and biological products I'm placing, I'll run from 10 to 16 in. deep. To operate in heavy cornstalks, the rolling baskets and wavy coulters are removed, replaced with a coulters that has less aggressive soil action and handles trash better.

The Zone Tool is especially effective in the spring, accomplishing in one pass what the disk or field cultivator did in two or three passes. In soybean ground I drive on the row stubble and the shanks follow the slots that I placed between the rows the previous fall. Shanks run only about 6 in. deep and apply liquid N and biologicals in the spring. The deeper slots underneath provide an ideal zone for corn roots to penetrate deep into the soil. The wavy coulters and rolling baskets create a perfect 8-in. wide berm for the planter row units, while the remaining surface area of the previous year's row is undisturbed.

For cornstalk ground going into soybeans, I use the Zone Tool in the spring to cut slots on 30-in. centers between rows of standing stalks. The aggressive action of the front cutting coulters, the single shank running 6 in. deep, and twin coulters cutting 3 to 4 in. beside the shank create a nicely tilled zone for soybeans. The rolling basket levels the berm and breaks up small dirt clods. I let the worked ground settle and warm for a half day before planting.

While planting I apply liquid fertilizer and biological products in the row with a Rebounder and Y-Not Split It. Plant popula-

tion for corn is in the 34,000 to 36,000 range and for beans in the 120,000 range. Results with this system the past two years have been exceptional. Two years ago my corn topped out at 200 bushels, and last year two fields were in the mid 230's. My overall average for the farm in 2003 was just over 200 bushels an acre, about 25 bushels better than any previous average.

In 2003, soybeans were hit with a dry spell in late July and August when less than 1 in. of rain fell in 50 days. Aphid pressure was high during the first week of August and we applied insecticide along with a foliar fertilizer. Despite this stress, yields were 52 bushels per acre, with portions of the best field in the mid 60's. The strip tillage combined with undisturbed residue held moisture much better than in neighbors' fields that were worked clean.

Using the Zone Tool and changing my management plan has resulted in better yields, better soil conservation, fewer trips across the field, less labor, and more income per acre. For now I've parked my chisel plow and field cultivator and I don't chop the stalks. Savings from these changes paid for the Zone Tool in two years. Better yet, I've seen a major improvement in soil tilth, a huge return of earthworms, and less crop stress during the summer drought of 2003. Repeating the success of the past two years is my goal for 2004, and if the results are there again, the parked machinery will be at the consignment auction next year.

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## Vertical Wind Tunnels Let Anyone Fly

Did you ever wish you could fly? The next best thing is time spent in a “vertical wind tunnel”, an experience that's like sky-diving without the need to jump out of a plane.

The first vertical wind tunnel was patented in 1982 but they've only recently started to catch on as a tourist attraction.

There are both permanent and portable facilities but all of them create a single high-volume stream of air that's strong enough to support one or more people.

Some facilities are set up to lift flyers as high as 70 ft. However, beginners are kept in the 2 to 12-ft. range.

Inexperienced flyers move around a lot, while those who have developed their body position skills have much more control and can maintain a fixed position if desired.

There are at least five stationary vertical wind tunnels in the U.S. open to the public in Tennessee, Nevada, Florida, California, and North Carolina. There are also at least four portable units in the U.S. Although there are currently none operating in Canada, plans are underway for three of them.

The facility, located at Pigeon Forge, Tennessee and called Flyaway Indoor Skydiving, is an indoor/fixed operation that is open to the public.

For \$24.95 you get three minutes of flying time. Customers wear flight suits that make flying easier by providing more lift. An instructor stands or flies at the student's side and can provide assistance when needed, so it is not difficult to stay up for the full three minutes, according to supervisor Wes Evans.

At the end of the three minutes, the instructor helps the customer land safely on pads around the edges of the air column (like a big donut) by guiding them when they fall off the windstream.

The Pigeon Forge facility produces an approximate airspeed (average) of 105 m.p.h. and offers a flight area of approximately 8 1/2 ft. (diameter) by 21 ft. tall.

A website at [www.bodyflight.net](http://www.bodyflight.net) serves as a network of information on the various aspects of the vertical wind tunnel business.

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Some vertical wind tunnels lift flyers as high as 70 ft.