

TRANSITIONING TO REDUCED TILLAGE AT HEMDALE FARMS

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At Hemdale Farms we started transitioning from conventional to reduced tillage 10 years ago. We started with an IH 3 pt. 6 shank subsoiler with the goal of loosening up our compacted soils after vegetable harvest. In the beginning the soil would come up in chunks and leave craters. As we repeated this deep ripping each fall the soil conditions continued to improve that now the soil flows by the shanks.

Early on we were using points with wings and hilling attachments at the top of the shank to create ridges. There has been concern that lifting too much of the soil profile can in fact create a new density later at that depth. The soil experts now recommend using a narrow point and shank to cut slots through the soil.

Our program begins in the fall when depending on crop history we may spread a cover crop and or manure then deep rip at approximately 14" and pull an Aerway behind. Previously to 2010 in the spring we would make a pass with a field cultivator set 8-9" deep or use the deep ripper and Aerway at 10-12" deep. Our second and usually last pass would be incorporating herbicides with a field cultivator at 5-6" deep. This program has shown continued improvement in soil health while maintaining and in some cases such as cabbage increase yields. This system has dropped a secondary tillage pass from our original conventional tillage program. Snap beans are the only crop that we have not seen positive yield results. We find we still get our best bean yields after moldboard plowing. But we know continued plowing is not sustainable. Plowing addicts the soil to tillage and leads to degradation of soil structure.

For 2010 we started using a form of zone tillage for a majority of our crop acres. We are using an Unverferth Zone Builder set up to apply liquid fertilizer in the slot. In the vegetables we aren't doing any true one pass zone building and then plant, but we are planting over the slot through use of GPS. In a crop such as cabbage we still want to incorporate Treflan as part of our weed control program. These fields will get one pass with the zone builder then the herbicide incorporation pass with a field cultivator.

This past spring we went through a several week period with frequent rains and slow drying conditions and I found that for some of our heavier soils two passes with the zone builder aerway and crumbler did the best job of preparing a zone for optimum planting conditions. I believe it would have been a challenge using full width conventional tillage.

We didn't see a yield response to the placement of fertilizer in the slot but in the case of cabbage we had a more efficient use of fertilizer. We have been broadcasting our fertilizer for transplanted cabbage because the transplanter does not lend itself easily for fertilizer application plus we don't want another task for an operation that involves 10 people. By applying liquid fertilizer in a band with the zone builder we were able to reduce our phosphorus and preplant N rates 30-40%. We custom fertilize every field by soil test, crop history, and yield goal.

When transitioning to reduced tillage you need to commit to it for 2-3 years as you start a renewal to healthy soil. We have witnessed increased earthworm activity. We are actually seeing where the worms are carrying organic material from the soil surface into the soil.

We also experience the positive affects of deep tillage and reduced tillage can have on harvesting operations. With good soil structure and better water infiltration we don't get the rutted field conditions when we need to continue harvesting in wet weather. To help maintain soil health in these conditions we do all we can to avoid compaction by using tracks and wide flotation tires.

I'll also tell you that reduced tillage requires more management. You have to time cover crop burn down so the resulting residue won't interfere with planting. And if you want to reliably plant over a zone you need GPS. The first year with GPS will take some additional time to get set up and comfortable using it. Also found that running the transplanter over the slot made the soil more mellow and that our plant spacing widened by 10% because of some slippage by the ground drive system. We plan to address this in 2011.

These are all items that can be managed and the results we've seen in overall soil health have made us believers in reduced tillage.

Biography

Casey Kunes

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Hemdale Farms is a diversified farm with approximately 3000 crop acres consisting of cabbage, green beans, sweet corn, vine crops, field corn, alfalfa, and wheat. Also operate a 700 cow dairy.

My responsibilities include coordinating the day to day activities pertaining to the cropping enterprise and oversee equipment operations, maintenance, repair, and replacement.