

No-till/Cover Crop Summary for Years 2015-2017

For Desert Gem Farms, LLC

In this summary I will discuss: the history of farming methods used on the land in this experiment, benefits or problems of conventional farming, initial benefits and problems of no or minimum tillage, long term benefits or problems of no or minimum tillage, overall summary/opinion of the no or minimum till methods and use of cover crops.

Prior to my implementation of cover crops and no-till, my typical agricultural practices for wheat included fall disking and ripping after grain harvest. Prior to planting wheat in the spring I would pull a disk and roller harrow. My potato crop would have been preceded by a fall disking of grain stubble, fall ripping, spring disking and finally chisel plowing. Then I would have my rows professionally marked out prior to planting potatoes. Two to three weeks following planting I would harrow down the potato hills to eliminate sprouted weeds. About three weeks following that I would top dress fertilize and then go through with a rolling cultivator. After potato harvest the land would be disked. The following spring would include a trip across the field with a disk and roller harrow to prepare for wheat planting. Soil fumigants were also necessary prior to potato production. Maintaining adequate soil moisture was usually difficult as well. All of this left my land exposed to heavy wind erosion.

My initial goal with this project was almost entirely an effort to reduce wind erosion of our sandy loam soil. I first began by planting about 30 pounds of spring wheat following a potato crop to reduce fall and spring erosion. That worked fairly well, however without a no-till drill I still ended up disking/harrowing in the spring. There was some reduction in erosion but not enough. In 2015 I purchased a no-till drill and began using mustard and radishes as cover crops instead of wheat. This almost entirely eliminated wind erosion problems howbeit I quickly began to see a problem with volunteer radishes and mustard in the following year's crops. I also began to see quack grass and thistle getting a strong hold in my no-till land. I experimented with 70 acres where I grew no-till wheat for 3 years. No erosion at all, but weeds, yield loss and rodents eventually forced me to grow potatoes in that ground. Soil fumigants were also necessary prior to potato production. Maintaining adequate soil moisture was usually difficult as well.

As I have continued use of no-till/minimum till and cover crops over the years I have had increased success. I have found that getting proper seed to soil contact with cover crop seed is critical to eliminate volunteer cover crop issues in the spring. I am also currently working on modifications to my no till drill in order to spot spray glyphosate while planting to clean up problem areas in my fields as I pass over them. Working the ground once a year, has been an acceptable solution for eliminating the buildup of rodent populations. It also helps slightly

incorporate the straw to speed up decomposition with minimal exposure to wind erosion. Reduced weed pressure has been a benefit as well. Soil health has probably been the second most noticeable benefit from these practices. The past three years I have dramatically decreased the chemical applications to my potato crops. I have reduced fertilizer and water inputs to both wheat and potatoes by at least 15%. All while maintaining yields and producing better quality potato crops. One of the last things I will mention is in my effort to reduce chemical inputs I am careful to choose cover crop species that either winter kill easily or will die when I spray my regular herbicide in my crops.

In summary, I have found the implementation of cover crops and minimum tillage to be very beneficial. This experiment has proven to me and even a few fellow growers that we can grow quality crops with reduced tillage, have little to no wind erosion and healthier soils all while using less fertilizer and water. I am now working on reducing my tillage practices in potatoes as well. I began experimenting with no-till potatoes in 2015 and have seen very promising results. I believe the cover crops I have been using the past several years have improved my soil health significantly, so much so that I no longer use soil fumigants prior to growing potatoes. My potatoes have never looked better. It has been an interesting experiment to say the least, but very worthwhile.

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