



Roller Crimping Cover Crops in Vermont: Benefits and Risks

Introduction

Roller crimping cover crops has been utilized as a way to terminate cover crops for many years. With the rapid expansion of cover crop implementation in Vermont, roller crimping offers a viable option to managing cover crops in a no-till cropping system. The cover crop is rolled and crimped when the plants have reached anthesis. This mature plant is flattened to the soil surface and its stems “crimped”. The crimping action helps crush the walls of the stem to facilitate drying down of the plant. There are several different types of roller crimpers available on the market. There are units available that mount on the front of the tractor, rear of the tractor, or even directly on the planting unit itself.



Figure 1. Planter mounted Dawn ZRX Roller Crimper used to roll cereal rye while planting corn crop.

Benefits

There are several benefits of incorporating roller crimping into your cropping system. First, the use of a roller crimper program helps to leave biomass on the soil surface, which drastically reduces risk of soil erosion and helps preserve soil moisture during the summer. The biomass on the soil surface will also keep the soil cooler during the summer reducing evaporation and heat stress on the cash crop. Rolling down high biomass cover crops also provides an excellent way to work towards improving spoil health. The use of the roller crimper will also suppress weeds early in the growing season potentially reducing the need for herbicides. The use of a roller crimper saves time, labor, and fuel when compared to conventional tillage practices. This practice will often result in a longer release of nitrogen as the cover crop breaks down over the summer. This will provide nitrogen throughout the summer, beneficial to crops like corn that utilize nitrogen through ear fill.



Figure 2. Roller crimping high biomass cover crop.

Risks

There are several considerations when implementing roller crimping technology on your farm. First is increased pest pressure. In Vermont, slugs and army worm infestations are more prevalent on fields with more biomass. Field scouting is a must with roller crimping. Second, there is a greater risk of lower final stand populations due to planting row crops into a heavy mat of biomass. A properly set up planter is the best way to eliminate this issue. Row cleaners and proper closing wheel setups will drastically reduce risk of planting issues. Proper planting depth must also be maintained. Operators must make sure seed is placed at correct depth accounting for biomass on top of soil surface. Roller crimping systems require you wait in the spring for the cover crop to mature, which can be an issue in areas where the weather is highly variable and good planting opportunities are limited. Roller crimp systems must add nitrogen to cash crop at time of planting to account for nitrogen immobilization due to high C:N ratios.



Figure 3. Typical roller crimped field with high biomass.

Roller Crimper Equipment

Roller Crimper equipment comes with many different options. Units can be homemade to purchased through any number of vendors. There are three main types of roller crimpers. Front mount, rear mount, and implement mount. Each type of roller crimper has its advantages and disadvantages depending on your farming operation. A front mount roller crimper requires a front mount three point hitch system, which can be acquired from several aftermarket sources if your tractor is not equipped. This system allows for ease of visibility (always looking towards the front) and provides uniform rolling and crimping because the tractor tires are not hitting the cover crop before the roller. This method has the advantage of potentially doing two field operations in one pass if you attach your planting equipment behind the tractor as shown in Figure 4.

A rear mounted roller crimper is the simplest and least expensive way to implement a cover cropping system. Most tractors come equipped with three point hitches on the rear of the tractor. Depending on the size of the tractor in relation to the weight of the roller crimper, you may need to add weight to the front of the tractor to maintain proper ballasting. Rolling and crimping the cover crop with this type of roller crimper can be done before or after planting, depending on how you wish to implement the system. Many types of roller crimpers allow you to add weight to the roller by filling them with water. This will produce better results especially in high biomass cover crops.

Implement mounted roller crimpers are a more recent development. It typically involves mounting a roller crimper to the planting implement and roller crimping as you plant your cash crop. This method is very efficient but has several important considerations that must be accounted for. The roller crimping tool mounted to the planting equipment will change the performance of the planter in terms of available down pressure delivered to the soil surface which may effect planting depth consistency. Another consideration is the fact that you need to manage the planting system for the increased variability of operating a roller crimper on the planter. Overall, all three of these options are viable and implementation of roller crimping can help create a more resilient cropping system which helps mitigate risk of crop failure due to weather extremes while building soil heath and reducing adverse effects.



Figure 4. Front mounted Roller Crimper.
Source: <https://rollercrimpers.com/pictures>



Figure 5. Rear Mounted Roller Crimper.
Source: <https://rollercrimpers.com/pictures>

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