

Fall Cover Crop Quicksheet

Cover Crops

There are different definitions when talking about crops used to improve soil health or fertility. For the purposes of this quicksheet we will define a cover crop as a crop mainly grown to prevent soil erosion by providing cover over the soil surface and holding the soil in place with the root system.

Benefits of Cover Crops

Winter wind erosion is an issue facing much of the SMBSC growing area. A fall seeded cover crop may be a viable agronomic practice to help reduce that erosion along with bringing many other potential benefits such as; improved water infiltration, uptake of excess nutrients and moisture, increased organic matter, and suppression of weeds. The movement of topsoil out of your field not only has a negative impact on the environment, but it is a direct loss of nutrients and fertility from your field.

SMBSC Research Trials

Implementing cover crops into a sugar beet crop can be challenging with the dense canopy and late harvest. Here are some results from our trial work and other suggestions on how to implement cover crops into sugar beets.

Fall Establishment Trial

As with anything in agriculture the success of establishing a fall cover crop depends on the weather. In 2016, we had a long and warm fall, which was great for establishing a cover crop. In contrast, 2017 and 2018 were much cooler and did not provide much of a window to establish a cover crop. Based on three years of trials we have concluded that a cover crop can be successfully established if planted on pre-pile acres in August and September. Cover crops planted during this time should provide adequate protection from wind erosion and take up excess nitrogen in the soil (Fig. 1). Cover crops planted during main harvest may germinate but will see very little growth to provide protection from wind erosion.

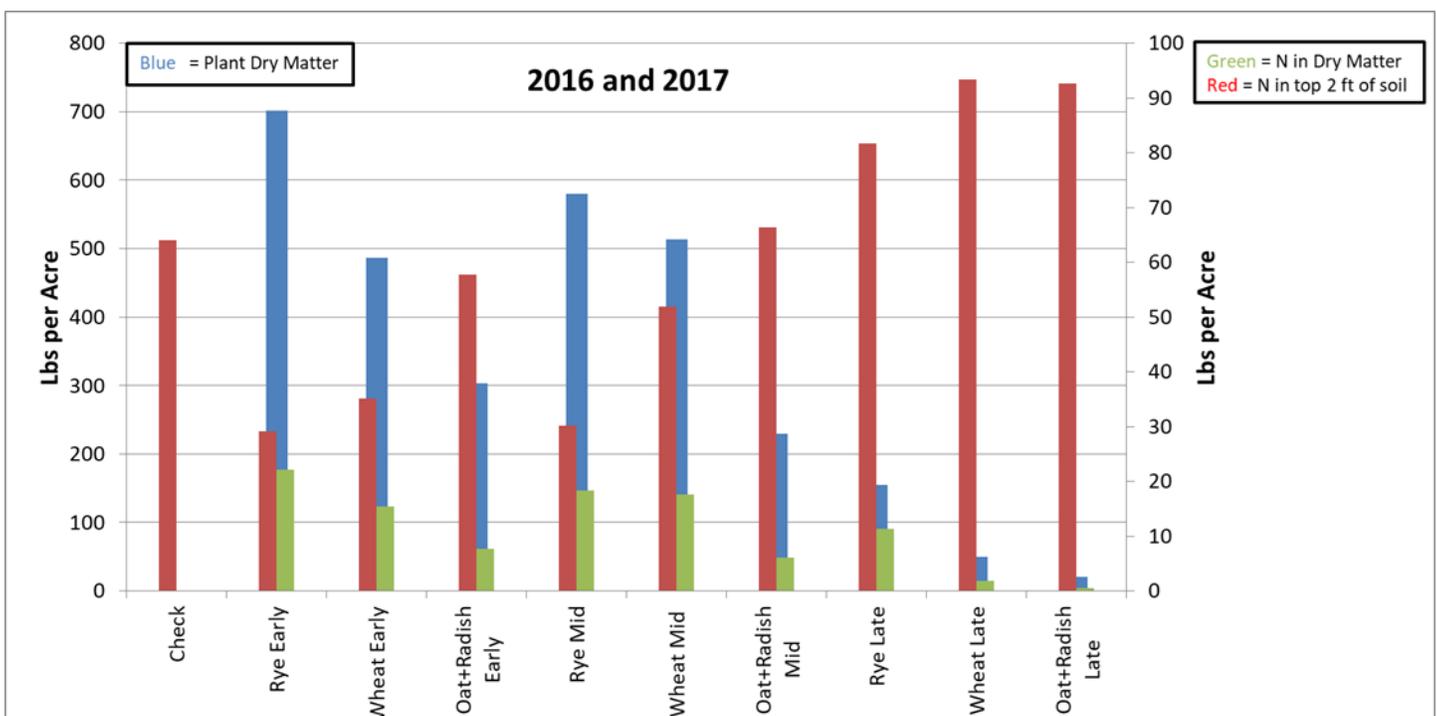


Figure 1: Plant dry matter, plant nitrogen, and soil nitrate in the top two feet combined for 2016 and 2017.

Early Season Interseeding Trial

A small portion of the sugar beet acres are harvested in August and September. While these acres should have time to establish a cover crop after harvest this does not help to protect the majority our coop's acres from winter wind erosion. To address this issue, we have conducted interseeding trials to establish cover crops during the growing season. We have conducted several interseeding trials using a variety of cover crops with minimal success. Interseeding must occur after the last glyphosate application. This does not leave much time before row closure and makes cover crop establishment very difficult. Any cover crops seeds that do germinate are shaded out. Interseeding cover crops into sugar beets is not a viable option at this time in the season.

Late Season Interseeding Trial

We also tried interseeding rye in early to mid September and had success in getting the rye established under the canopy prior to harvest without causing any significant damage to the canopy (see picture below). The rye looked good prior to harvest; however, the rye was buried under several inches of dirt and plant material and was not able to survive the harvest process. Interseeding of cover crops prior to harvest to give them time to establish was not successful because the cover crop did not survive the harvest process.

Spring Removal

If a fall cover crop is used that will over winter, then controlling that cover crop in the spring becomes a concern. Winter rye is one of the most winter hardy cover crops available in this area and can put on significant growth at cooler temperatures. It is important to control cover crops like winter rye early in the spring before they develop into a sod. In our spring removal trials we have found that **32-64 oz of glyphosate or 30-60 oz of Roundup Powermax3** is needed to control the winter rye. Glyphosate does not work as well at cooler temperatures and a high rate will be needed in early spring.

Recommendations

In our trials winter rye has performed the best overall. We would recommend that if growers are new to cover crops that they try broadcasting winter rye on any early harvested acres at 30-40 lbs per acre. Incorporation with a field cultivator will increase germination and establishment. **However, winter rye will require a control application of glyphosate in the spring. If that is a concern, then a mix of oats (30-40 lbs) and oilseed radish (5-10 lbs) could also be used as these will winter kill.** Broadcasting cover crop seed just ahead of the defoliator/harvester has also worked for some growers as a way to incorporate the seed.



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