

ON-FARM COVER CROP TRIALS: CLOVER, RYE, AND RADISH

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Clover

There has been much research using red clover as cover crop, frost-seeded in to winter wheat (Stute UWEX pub). Planting red clover into winter wheat provides a clear value for the subsequent corn crop in terms of greater yields and reduced need for nitrogen (N) fertilizer (Fig. 1.)

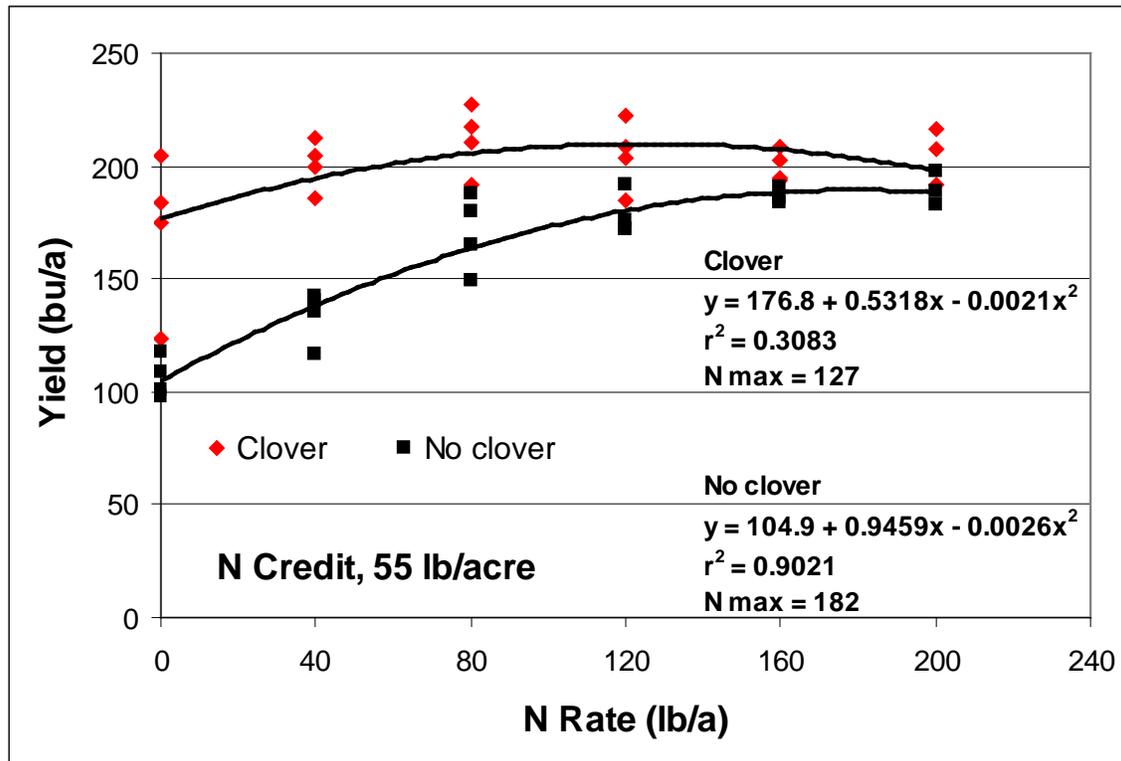


Figure 1. Corn yields following a red-clover green manure (red) or no green manure (black).

The drawback to using red clover is that it will not die during winters in Wisconsin and thus needs to be chemically terminated in the late fall or early spring. There are two other clover species that will winter kill and can be planted after

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winter wheat: berseem clover and crimson clover. Neither of these species has been well-researched in Wisconsin. In late-summer of 2013, berseem and crimson clover was planted in replicated strips on a farmer field in Sheboygan County. Preliminary findings suggest that both clover species established well. In 2014, this field will be planted to corn and a N rate study will be conducted.

Rye

Rye is a popular cover crop in Wisconsin as it establishes well, is easy to kill, and can be used for emergency forage if needed. Cover crop trials have been conducted at the Arlington Agricultural Research Station to evaluate the benefits and drawbacks to planting rye as a cover crop or forage crop after corn silage. Research results suggest that corn silage yields can be maintained as long as the rye cover crop is terminated early in the spring (Fig. 2).

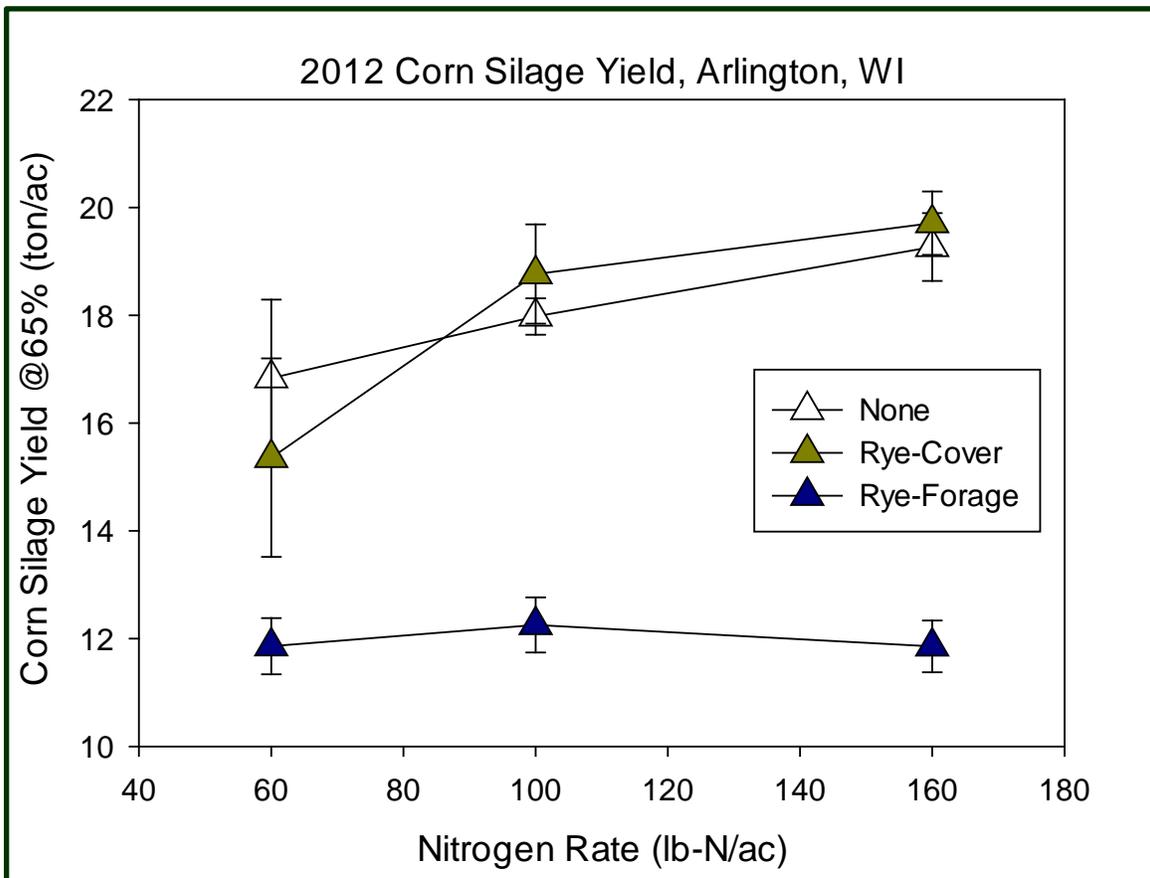


Figure 2. Corn silage yields in 2012 following no cover crop, a rye cover crop, or a rye forage crop.

In 2012, an on-farm trial was established in Monroe County, WI using the same sets of cover crop treatments: no cover crop, rye killed in early spring, or rye harvested as a forage crop. In 2013, due to the wet soil conditions, corn planting was delayed and the farmer switched the crop to soybean. Thus, no N was applied. Soybean yields were similar, but slightly lower where rye was planted (Table 1).

Radish

Radish is a popular cover crop with no-till farmers as its large tap roots can create biological soil disturbance. This cover crop can take up a lot of N, but will winter-kill, meaning the plant will start to decompose when temperatures warm in the spring. Little is known regarding the release of N (or the potential for a N credit) from this cover crop. In fall of 2012, radish in Sheboygan County accumulated 120 lb/ac of N in the above ground biomass and tap root. However, a nitrogen credit has yet to be determined based on yield results (Fig. 3).

Table 1. Soybean yields in 2013 following no cover crop, a rye cover crop, or rye forage crop.

Treatment	Soybean Yield bu/ac
No cover crop	56
Rye cover crop	53
Rye forage crop	53

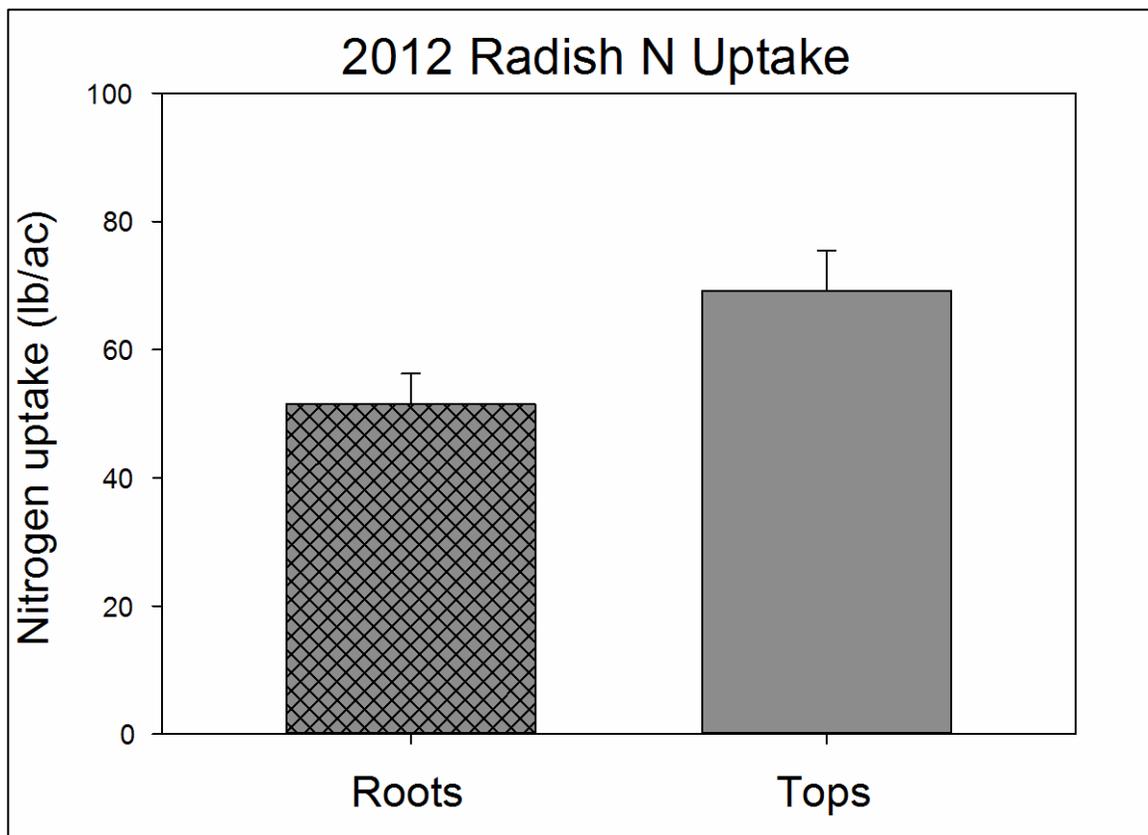


Figure 3. Nitrogen uptake by radish in fall 2012.

Presentation

The associated presentation at the 2014 Wisconsin Crop Management Conference will include a more comprehensive assessment of cover crops planted in fall of 2013 as well as research results from previous years.