

EMERGENCY FORAGES: TARGETING GAPS IN THE GROWING SEASON

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Introduction

Drought experienced through much of Wisconsin during the summer has reduced the states dry alfalfa inventory by 32% and other dry forage by 1% as of the 2012 USDA October Crop Production summary. Forage shortages are of great concern to livestock producers. The high cost of many forms of feed caused unexpected financial challenges for livestock producers. New forage production strategies will help rebuild the low forage inventories across the state.

One such strategy is the potential to raise double crop forages after winter wheat harvest. Farms scattered across Wisconsin tried growing emergency forages and double crop soybeans after winter wheat during the 2012 drought with mixed results. Rather than growing emergency forages during the wheat fallow gap in the growing season, planned double crop forage can increase the likelihood of success.

Discussion

Winter Wheat Growing Season Gap in Wisconsin

From 2006 to 2010, Wisconsin averaged 282,000 acres of harvested wheat (USDA-NASS, 2007-2011). After harvest some of these fields are planted with late summer alfalfa and a few more receiving manure, but many sit idle for the rest of the growing season. Fields that are tilled late summer for weed control are left vulnerable to erosion. If growers take action shortly after harvesting wheat and straw, they can use the 30% of growing season precipitation and 40% of total Growing Degree Units (GDUs) that remain. This 30 to 40% rule of thumb applies throughout the state. Data from the National Oceanic and Atmospheric Administration (1971-2000) across Wisconsin demonstrate a similar rate of GDU and precipitation increase through the growing season (NOAA, 2004). On average between the end of July to the end of October, Wisconsin receives 975 to 1,300 GDUs (corn base) (Fig. 1) and 9 to 11 inches of precipitation (Fig. 2). This amount of heat and precipitation has the potential to grow more forage.

Growing Double Crop Forages

Double crop forages such as brassicas, annual small grains, legumes, sorghums and millets, and even corn silage can be sources of late season forage with the potential to provide erosion protection, suppress weeds, and cycle nutrients. Double cropping after wheat is a value added forage opportunity. Many studies have been conducted on emergency forages and fall small grain forage. Yield results vary from 0.5 tons/dry matter/acre to 4.0 tons/dry matter/acre or more (Undersander, 2008). Planting timing is important because 20% of GDUs accumulate in August. Variety selection is also important for maximizing yield and quality. For example, Forage Plus oats is a good fit for yield and quality reasons because this variety should not develop into the boot stage as quickly as others thereby allowing time to work around corn and soybean harvest.

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Earlier maturing oat varieties can yield well but forage quality may decrease as heading stage is reached. If fall planting is delayed, then earlier maturing varieties should be considered (Coblentz and Bertram, 2012).

The decision process for growing double crop forages requires both planning and flexibility. Look back at the field's herbicide history. There may have been soil applied residual herbicides sprayed within past years that can create herbicide injury from persistence plus feeding the forage from fields with these residues may be an off-label use (Davis, 2012). UW Extension Publication A3646 ("Pest Management in Wisconsin Field Crops") has a table that provides planting intervals for rotational crops. Since some of the double crop forage species are not commonly found on herbicide labels, the field may need to follow the longest rotation interval provided. Producers and agronomists planning to integrate double crop forages into the crop rotation should review planting intervals of herbicides to select products that will allow for the necessary flexibility.

Plan seed acquisition early, yet have flexibility. Some producers that planted double crop forages in the summer of 2012 had difficulty obtaining seed. Because of the limited use of double crop forages in the past, local agricultural retailers and suppliers did not have all seed immediately available in local warehouses. Early conversations between seed buyers and sellers can help alleviate these problems in the future. While it is important to plan seed purchases early, variability of summer weather may change planting decisions. For example, during a summer that has above normal temperatures and wheat is harvested during early July, planting sorghum, sudangrass, or millet may be preferred. Conversely, during a cool summer with late harvested wheat, forage oats w/o peas could be preferred.

Double cropping can put crop insurance coverage in jeopardy. Insurance coverage concern has been a problem in the winter rye – corn silage rotation because delays in planting the insured crop have a greater potential to reduce yields. In response to the 2012 drought, the USDA has temporarily changed the crop insurance rules for cover crop harvesting in spring of 2013. In the spring of 2013, a farmer may harvest a forage/cover crop planted the previous summer/fall/winter, and then insure the following grain crop. Follow up with the insurance provider (Mitchell, 2012).

Fertilizer can help push the growth of forage cover crops. Nitrogen will increase yield of non-legume double crop forages when applied before precipitation. Nitrogen rate should be adjusted to the needs of the plant species. UW Extension Publication A2809 ("Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin") provides nutrient application guidance.

Double Crop Forage Options

Old standbys such as oat, oats/peas, or even barley (if oats are unavailable) are viable options for growing another 1 to 3 tons/acre dry matter. Oat variety matters. There is a planting date interaction indicating value to selecting a forage type oat or at least a late maturing oat when the forage double crop is planted during late summer. Research summaries by Coblentz and Bertram (2012) can be found online at: <http://www.uwex.edu/ces/crops/uwforage/FocusonForage.htm>

Timing and heat are important for planting millet, sorghum, sudangrass, sorghum-sudangrass, and corn silage fields. A few farmers planted these earlier in 2012. They are a better fit when planting in early July and forecasts call for above normal temperatures. These plants grow slowly once temperatures drop in the fall. This group of plants has specific feeding precautions for

nitrites and prussic acid, especially when killed by frost. A Focus on Forage tip sheet by Undersander (2003) can be found online at:

<http://www.uwex.edu/ces/crops/uwforage/SorghumsFOF.htm>

Planting corn silage after winter wheat is another option that had some success in 2012. Studies from 2005-2006 found yield of corn silage planted at the Arlington Research Station on July 15 at 5.3, 4.7, and 3.8 T/A dry matter for 108 day, 94 day, and 102/112 day BMR RM hybrids, respectively (Lauer, 2008). When corn silage planting was delayed until August 1, yield dropped to 2.1, 1.9, and 1.4 T/A, respectively. Corn silages planted on July 15 or August 1 had low starch content at 8% or less.

Forage radish and forage turnips are options for grazing livestock and heifers. There is enough time for establishment of the *Brassica* forages in August. Top growth and root size becomes smaller as these are planted later. Forage radish has grown very well planted after winter wheat; however, it struggles to develop a large taproot when planted after corn silage harvest. These cover crops show considerable potential but this note is meant to remind growers to have realistic expectations about growth as planting is delayed after corn silage harvest. A tip sheet by Undersander (1996) can be found online at: <http://www.uwex.edu/ces/forage/pubs/brassica.html>

Summer is too late for red clover seeding, rather it should be spring frost seeded into winter wheat. Red clover can be alternative late season forage after wheat is harvested with the bonus of nitrogen fixation. A research summary by Stute and Shelly can be found online at:

http://ipcm.wisc.edu/download/pubsNM/RedClover_0109.pdf

If feed supply will be tight coming out of winter, growers can plant winter rye after corn or soybeans for early harvest next spring. If winter rye seed is unavailable, then winter triticale and winter wheat are forage options. This practice can cause delays in spring planting which has the potential to lead to yield reduction in the following crop. A research summary by Stute et al. can be found online at: http://ipcm.wisc.edu/download/pubsNM/Rye_090507_final.pdf

Legumes including soybeans, chickling vetch, hairy vetch, crimson clover, berseem clover, Austrian winter field pea, and Sunn hemp have not been thoroughly researched as double crop forage in Wisconsin. Late planted soybeans are the best understood with data supporting high quality but low yield. Large amounts of feed tonnage are unlikely to accumulate from these plants after wheat. If new legumes are tried, please be sure to inoculate them with the correct *Rhizobium* inoculant.

Double crop forages planted after winter wheat have the potential to add more money per acre to a crop rotation. Wisconsin has low feed inventories after the 2012 drought; as a result, forage is more valuable than past years. The wide range of double crop forage species can help fill gaps in the growing season, provide ground cover and recover low feed inventories.

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Figure 1: Growing Degree Unit (GDU) accumulation selected from southern (Beloit) and northern (Ashland) Wisconsin. Two GDU formulas, the corn base and 45° F, demonstrate a similar rate of GDU accumulation across the state.

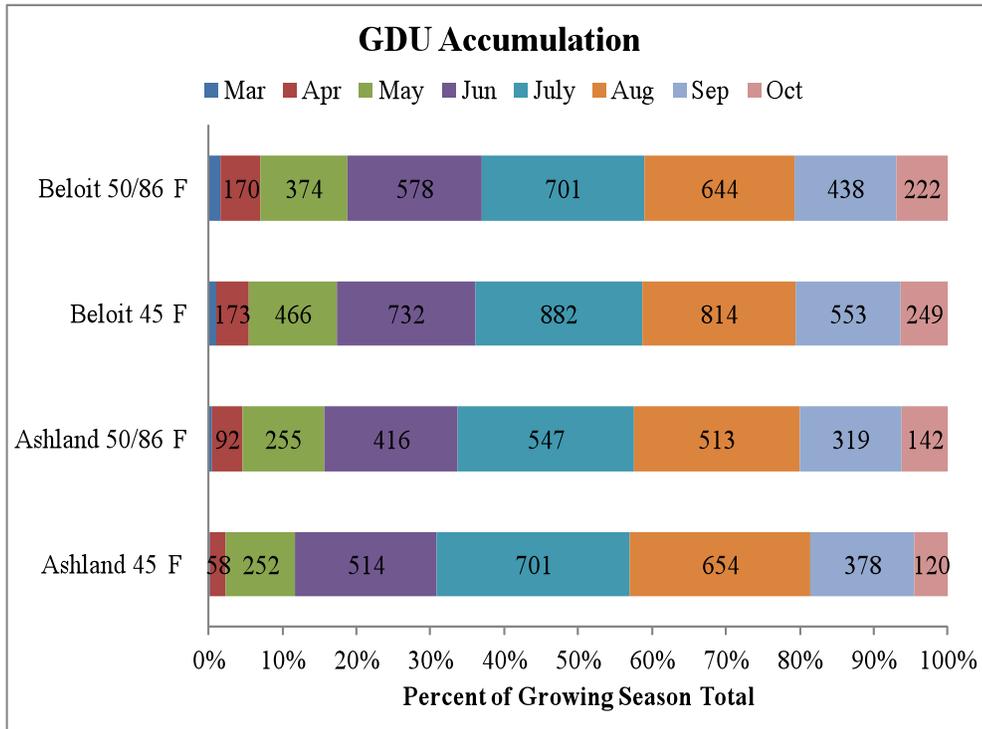


Figure 2: Precipitation accumulation (in inches) selected from southern (Beloit), central (Waupaca) and northern (Ashland) Wisconsin.

