

MANAGING MANURE

Cover crop and fall manure application window

Successful cover crop establishment after corn silage harvest is important, especially on highly erodible land (HEL). In recent years, some agronomists have suggested that dairy producers should select earlier hybrids, which results in earlier silage harvest and subsequent cover crop planting.

But there are some important facts that producers should be aware of. For example, our research shows that 95-100 day hybrids compared with 105-110 day hybrids are about 3.5% lower in moisture in mid-September in Western NY (Figure 1). Corn silage dries down about 0.33% water/day from September 20 to October 1, but only about 0.25%/day from October 1 to 15. So, in a typical year, a dairy producer would begin harvest of 95-100 day hybrids on about September 20, if planted in Western NY or the Finger Lakes regions from mid to late May, and would finish harvest of 200 to 400 acres of corn silage by about October 1.

Consequently, a rye cover crop could be planted during the first week of October, allowing for considerable fall growth. In contrast, dairy producers would begin harvest of 105-110 day hybrids planted from mid to late May on about October 1 with completion of harvest of 200 to 400 acres on about October 15 because of slower drying. In this case, cover crop planting may not be finished until about October 20, which would greatly reduce fall growth. Obviously, an earlier maturing hybrid is the best management practice, if the top priority is to successfully establish a vigorous cover crop after silage harvest.

What if the top priority is to maximize corn silage yields and

The case for earlier planting instead of shorter maturing corn.

also establish a successful cover crop? Our corn silage hybrid trials indicate that over a 10-year period (2004-2013) 95-100 day versus 106-110 day hybrids yielded about 6% lower (Fig 2). So if 95-100 day hybrids had average yields of 20 tons/acre on 300 acres, the 106-110 hybrids would typically yield 21.2 tons/acre on 300 acres or 360 total tons more. Can dairy producers get the 106-110 day hybrids down to 67% moisture by September 20? Yes, if dairy producers begin planting corn in

late April/early May, instead of late May/early June.

How early can dairy producers begin planting corn without suffering stand reductions because of cold temperatures? We have conducted planting date by seeding depth studies at the Aurora Research Farm over the last two years on a well-drained soil (Table 1). The data clearly indicate that on a well-drained soil, final stands were essentially the same for planting dates from about April 20 until about May 30 (except for the May 19th planting date in 2014 where the 1.5 inch depth had fewer plants/acre because soil conditions became dry after planting). This study was conducted on well-drained soils so results would differ if the soils were poorly drained.

So, if dairy producers have well-drained soils, planting corn any time after April 20 looks good in Western NY or the Finger Lakes region. How about dairy producers who have poorly drained soils? An early planting date is more risky but there is an answer -- tile drainage! An investment in drainage is probably the best investment that anybody growing crops can make.

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Figure 1. Corn hybrid moisture as influenced by hybrid relative maturity when planted in early May and harvested in mid-September in Livingston County for the 2010, 2011, 2012, 2013 growing seasons and the 10-year average from 2004-2013. Approximately 10-20 hybrids were harvested in each maturity group in each year so the 10-year average represents ~400 hybrids.

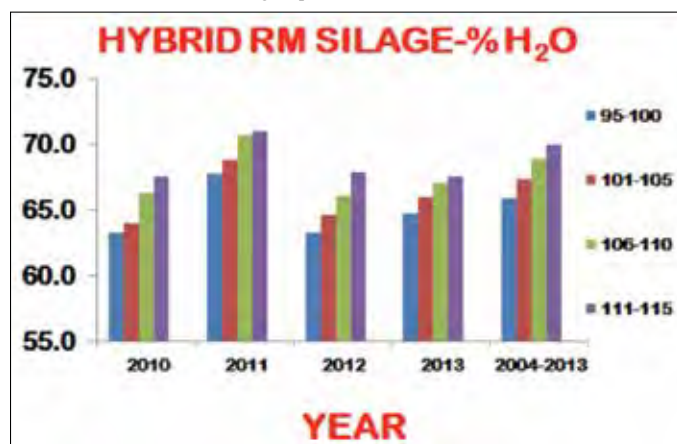
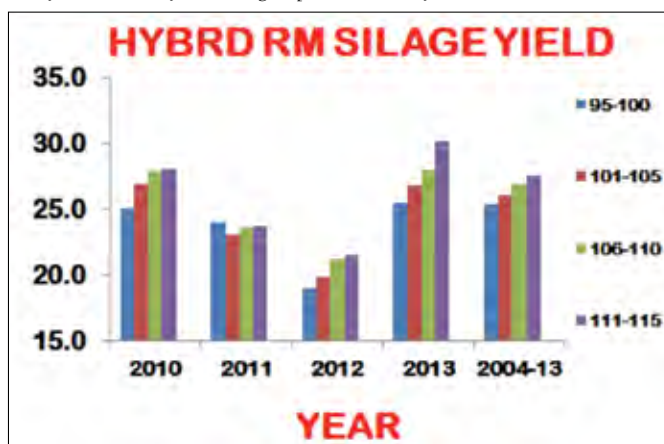


Figure 2. Corn silage yields as influenced by hybrid relative maturity when planted in early May and harvested in mid-September in Livingston County for the 2010, 2011, 2012, 2013 growing seasons and the 10-year average from 2004-2013. Approximately 10-20 hybrids were harvested in each maturity group in each year so the 10-year average represents ~400 hybrids.



Nitrogen rich strips can be established with fertilizer or by setting aside a section where extra manure gets applied. For corn, the strip needs to be created before or shortly after planting. This allows ample time to see if the crop is going to respond to the extra fertility. It is also critical that crop sensors are placed at the correct height above the crop being sensed. The sensors must be 24 to 48 inches above the crop canopy to get the correct readings.

A number of university studies have shown that a N rich strip is essential to get the most reliable information from sensor technology. Equations used in sensors have been developed by several organizations across North America, South America and India primarily for grain crops and for non-manured situations. As these sensors are now starting to be used on dairy farms in the Eastern US, we initi-

ated a three year study in NY in 2014 to see how N rate equations developed for other states work in NY, or if modifications are needed to better fit the production of corn silage in our soil and weather conditions.

In some crop years such as 2014, dairy producers wonder if enough manure was applied to meet crop N requirements. Some could not return to the field to sidedress N. They may or may not have lost yield. Others decided to apply N but did not know if the application was the right thing to do. Optical sensors can provide a sound way to check on crop status and to evaluate if additional N is needed. Farms that have invested in yield monitoring equipment are in an excellent position to evaluate results as they can easily evaluate if application rates were justified. □

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Another obstacle to early planting, in addition to wet soils, is spring manure application. Quite often wet soils in the spring, especially if they do not have drainage, do not support heavy manure tanks without significant compaction. Some farms, however, have made changes in their manure handling capabilities, by adding capacity, labor, or maybe using frost injection of manure in the early spring if that was keeping them from early planting. How about cover crop kill or spring tillage? Some farms have solved this challenge by reducing their tillage or spraying their cover crops and planting no-till or zone till into the killed cover crop.

Dairy producers face significant challenges in trying to plant a corn silage crop in late April or early May. May of 2011, 2013, and 2014 were wet, which hampered timely corn planting. Corn planting in New York was 43%, 87%, and 58% completed by June 1 in those respective years. Unfortunately, most of the unplanted corn by June 1 those years was corn silage by dairy producers. Yet many successful dairy operations were able to finish corn silage planting before first cut of perennial forages in those wet May months.

The easy management practice for an early silage harvest and successful establishment of a fall cover crop by early October is to plant an early season hybrid. The more challenging management practice is to plant full-season hybrids during the last 10 days of April and first 15 days of May and harvest the silage at the same time that an early-season hybrid planted in late May/early June is harvested. Many dairy producers, however, are able to pull it off. If the soils are too wet to plant from April 20 to May 20, then dairy producers can switch to a shorter-season hybrid for late May and June plantings to have a timely harvest for successful cover crop establishment. But selecting an early-season hybrid before the growing season has even commenced should not be the default option if attaining maximum silage yields is also a high priority.

I think that dairy producers “can have their cake and eat it too,” especially those who have well-drained soils. They can maximize corn silage yields on their farm and successfully establish a cover crop to tie up excessive soil N and prevent erosion by being prepared to plant corn anytime from April 20 to May 20.

Other benefits of planting corn early is that corn silage planting does not have to take a back seat to perennial forage harvest when

Table 1. Corn plant populations at the 4th leaf stage (V4), averaged across two corn hybrids, and planted on five dates at three depths at a seeding rate of 31,800 kernels/acre on a well-drained soil at the Aurora Research Farm in Cayuga County in 2013 and 2014.

DEPTH	PLANTING DATE				
	4/10	4/20	5/6	5/19	5/30
inches	Plants/acre				
2013					
1.5	27,000	28,000	27,500	28,000	29,000
2.0	24,500	28,500	28,500	28,000	29,000
2.5	24,500	28,500	28,500	27,500	28,000
Avg.	25,300	28,333	28,166	27,833	28,667
2014					
1.5	27,800	27,000	27,750	24,350	28,310
2.0	27,315	28,250	29,500	28,375	29,440
2.5	26,750	27,000	28,500	28,000	27,815
Avg.	27,288	27,750	28,853	26,909	28,522
+ Bold numbers indicate the lowest values in the same row (planting date).					

+ Bold numbers indicate the lowest values in the same row (planting date).

first cut is ready (thereby delaying corn planting until June 5 to 20), corn plants are shorter and sturdier so lodge less, and brown mid-rib (BMR) hybrids dry down by mid to late September with less plant health issues. The easy management practice is to select an early hybrid and plant it when it is convenient during May and June. A more challenging management option is plant full-season hybrids during late April and early May, which typically results in maximum silage yields, timely harvest and subsequent successful cover crop establishment. Home-grown forages are crucial to the success of dairy operations. The old 1970s and 1980s mindset that “field crops are a necessary evil on a dairy farm” and not of sufficient importance to place a high priority on to insure a timely planting date is no longer valid. To stay competitive in a global dairy market, dairy producers should take advantage of the high-quality, high-yielding corn silage that we can produce in NY if planted on well-drained soils in a timely manner. □

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