With recent challenging years for making haylage and corn silage, many Northeast farmers are re-examining what to do differently for forage production.

With recent use in grain crops, there is a lot of interest in fungicide application on silages. Small yield increases in haylage and corn silage fields are possible, but are not necessarily consistent or high enough to justify the application cost.

Moving toward cropping systems that use fungicides year-in and year-out will reduce the efficacy of these products more quickly than targeting their use to the most responsive situations.

**Fungicides on Haylage**

In 2013, three on-farm trials in Western NY examined fungicides applied on mixed alfalfa-grass fields and pure alfalfa stands. Comparisons were made between applying a fungicide alone, an insecticide alone, a fungicide and an insecticide together, and an untreated control on large scale field plots. The treatment strips (one to four acres each) were randomized and replicated in three blocks in each commercial scale farm field (20 to 30 acres).

All fields were treated two weeks prior to harvest for second and third cuttings. One field was also treated prior to first cutting. Fields were sampled for disease ratings before each treated harvest. Yields were measured with farm scales and corrected for moisture content. Forage quality samples were taken from the bunkers at harvest, vacuum sealed, and ensiled for six weeks before being analyzed at Rock River Labs in WI.

While most fungicides and some insecticide applications reduced disease pressure, only small increases in yield and few changes in forage quality were documented. The total season yield increases were only 0.2 to 0.4 tons of DM/acre in all of the on-farm trials -- if they were documented at all. One of the farmers in the study remarked, “It (fungicide) just didn’t seem to give us the bump in yield we were hoping for.”

Our results were consistent with research done in small plot experiments and smaller field scale experiments across the US. Work from the University of Illinois in the 1980’s also showed marginal yield increases of 0.2 to 0.3 tons of DM/acre in alfalfa fields.

Recent research from Wisconsin and Minnesota documented slightly higher alfalfa yield increases (ranging from 0.13 to 0.43 tons of DM/acre at first and second cuttings), but they were only seen at two out of five locations at first harvest, three out of five locations at second harvest, and not at a single location at fourth harvest.

With application and material costs ranging from $15 to $25/acre on haylage, fungicides may be a tough sell given the inconsistency of the small yield gains. Focusing on other management areas will likely be a better investment for farms stuck in the four to five tons DM/acre in their haylage fields.

**Fungicides on Corn Silage**

Unlike haylage fields, many farmers in the Northeast have some experience with applying fungicides to corn grain and corn silage. These applications are typically at the later vegetative growth stages, through tasseling and sometimes up to the blister stage. Debate is considerable among farmers, consultants, industry representatives, Extension agents, and professors on this topic in corn because fungicide responses have varied widely across the Northeast and Midwest.

Depending on the source, yield increases were documented on 25 to 75% of the acres sprayed. These increases are often not enough to justify $25
to $30/acre cost to put fungicides on corn. For fungicides to break-even, five to six bu of grain/acre or one ton corn silage at 30% DM is needed. Fungicide applications to corn and corn silage are most likely to pay off during epidemic years for corn disease outbreaks, in corn-on-corn fields, in reduced tillage systems, on susceptible varieties, in microclimates that are favorable for disease development, and in fields with a high level of crop stress. Crop stress includes low fertility, high insect pressure, competition from weeds or too little/too much rain.

If the corn diseases aren’t developing in a given year, fungicide applications simply don’t pay. Northern Corn Leaf Blight and Gray Leaf Spot are the Northeast’s main culprits in recent years. Fields that are in corn silage for multiple years have increased risk of disease developing and farmers may consider fungicide applications if other risk factors are present. No-till corn silage is standard in PA and many reduced tillage systems (zone and strip tillage) are becoming more common in NY and other parts of the Northeast.

While silage harvest removes much of the residue, inoculum can survive and multiply on the stubble left behind, especially over the course of multiple years. The biggest wild card is which variety is in the field. Responses to fungicide are very common in sweet corn varieties, not unheard of in BMR varieties, but highly variable in conventional varieties. Even when susceptible varieties are sprayed, the yield response is not always economic. For example, when susceptible corn grain varieties were sprayed in Illinois for Gray Leaf Spot, the fungicides only paid for their costs 50% of the time.

Understanding the local environment is critical to manage corn disease. Moderately susceptible varieties yield 30 to 50 bu (six to 10 tons at 30% DM) less than moderately resistant corn varieties in environments rated severe for Gray Leaf Spot. Obviously, the response to fungicide is more likely in these locations, but there is a stronger case for picking a better variety. Maintaining reasonable fertility levels, timely weed control, and keeping the insect pests at bay will go a long way towards making healthy corn plants that will be more resistant to disease and to reduce the responsiveness to fungicide application.

Field-by-field and farm-by-farm evaluations under local conditions will help you decide whether or not fungicides on corn and corn silage make sense for the situation. Do not rely on simple strip trials with only one replication (splitting the field). At least three replications of paired strip plots are necessary for valid comparisons between treatments. Make disease assessments at R1 and R5 growth stages. Work with your Extension agronomist to increase the accuracy and visibility of your on-farm trials.

Finally, it is important to remember the lessons from herbicide weed resistance. If fungicides are applied on a regular basis to forage and grain crops, the diseases will develop resistance to all fungicides. Appropriate fungicide use (or non-use) on forages, as part of an integrated pest management program, will keep these tools in the toolbox for years to come.

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**Shredlage – What do we know?**

*By Larry Chase, Cornell University*

Shredlage is the term for a new processing method for harvesting corn silage. This process uses a special head on the forage harvester that replaces the conventional kernel processing unit. This processor makes larger particle size corn silage by using grooved rolls that tend to rip or tear the forage. The suggestion from the company manufacturing the shredlage unit is to set a theoretical length of cut (TLC) of 23 to 30 mm depending on dry matter of the corn being harvested. Conventional kernel processors are usually set at a TLC of 17 to 21 mm. The roll settings for processing the kernels are suggested to be two to three mm. The goal is to achieve a corn silage processing score (CSPS) of 70 or more.

One research trial done by Dr. Randy Shaver at the University of Wisconsin compared shredlage to kernel processed (KP) corn silage. The corn silage used in this trial was from the same field but harvested as either shredlage or kernel processed corn silage. The CSPS of the shredlage was 75%, which is excellent. The CSPS for the KP corn silage was 60%. This was lower than desired. The silages were stored in bags and had similar packing densities. The corn silages were also similar in nutrient composition. Rations fed contained 50% of the total ration dry matter as either shredlage or conventionally kernel processed corn silage. These rations were fed for eight weeks. The primary difference is that the shredlage processed corn silage has a larger portion of coarse particles.

Trial results are:

- Feed sorting had no apparent differences between the TMRs in this trial.
- Dry matter was 1.4 lbs per day higher for cows fed the TMR with shredlage.
- Milk production was not different between the rations fed.
- Cows fed the shredlage TMR produced more 3.5% fat corrected milk (100 lbs versus 97.8 lbs).
- Feed efficiency, milk urea nitrogen, milk fat %, and milk true protein % were not different.
- Whole tract starch and NDF digestibility were higher for cows fed the TMR with shredlage.

This trial indicates that shredlage may have some advantages to improve starch and NDF use in the cow. However, some of this response may be related to differences in the adequacy of corn silage processing. A comparison of shredlage and better conventionally processed corn silage is needed to sort this out. A question regarding potential differences in packing density remains and needs additional research. A number of shredlage units were used in NY in 2013. Information from these farms on particle size, corn silage processing score and packing density is needed to better assess where shredlage may fit on NY farms.