The fungal battlefield

John Goeser and Damon Smith for Progressive Dairy

AT A GLANCE

Proactively scouting and identifying fungicide application opportunities to improve feed hygiene and dairy production is one option to battle rising mold counts in feed.

Coming off a couple of years of adequate to excessive rainfall throughout many dairy forage growing regions across the country, feed hygiene is an increasingly

scrutinized forage quality item. In some areas, growers recognized 200+% of normal rainfall in 2019. With added moisture, feeds spoil faster, but microbial contaminants also grow more in the field.

The challenges associated with 2019 are likely still with you; however, fungal contamination has apparently been increasing for many years, according to forage testing laboratory database trends. For example, Rock River Laboratory has recently summarized years of fungal measurements on feedstuffs, and it is clear mold counts in feed are at greater levels on average than has previously been observed in the past



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10 years. These observations likely in part tie back to the environment and growing conditions.

Similar to the trendline reported by Rock River Laboratory, ear and stalk rots are visual symptoms of plant disease in the field. Yet beyond these visual symptoms, we often cannot see hygienic issues and often perceive that if plants or feed look clean (i.e., no mold or spots), then all is well. Do not assume we can see all fungal infections. For example, following digestive upset or milk component challenges, we often find health and performance issues tie back to unseen contaminants in forages.

Feed hygiene research and impact is not a new area, with researchers such as the late Keith Bolsen, Rich Muck and Limin Kung among the leaders in the U.S., and European leaders such as Antonio Gallo in Italy having investigated, studied and taught many in this area. Despite the wealth of knowledge out there, we often find dairy and beef forage quality opportunities going unrecognized because the hygienic issues are visualized.

Feed hygiene diagnostics include searching for mold, yeast and opportunistic or negative bacterial contamination. Feed hygiene investigations also include looking for soil contamination, mycotoxin contamination and even poor starch digestibility when we have clinical symptoms such as extremely loose or even bloody manure.

Focusing in on microbial contamination and growth potential, mold and yeast have been the starting point following herd health or performance hiccups. Mold and yeast represent fungal contaminants. These broad-spectrum laboratory measures capture many different species of each and recognize that these fungi can stem from the field, ensiling or feedout challenges. Ear

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and stalk rots, spots and blights all represent plant pathogen clinical symptoms in the field. These plant diseases can initiate a vicious cycle leading to increased lignification (plant defense mechanism), additional plant diseases taking hold or premature plant death and whole-plant corn drying down at a rate beyond what forage harvesting crews can manage.

We have taken an interest and role in this area with regards to dairy and beef forage crops. Damon Smith of the University of Wisconsin – Madison has recognized the field is where our feed hygiene focus should start, rather than the feedbunk or the silo. In the past several years, Smith has documented that fungicide application on corn intended for silage can lessen both fungal growth and mycotoxin load. Our current recommendations are to apply a well-researched fungicide around V14 to R2 for maximum efficacy toward lessening fungal and mycotoxin contamination.

While wild yeast challenges likely stem from the field as well, little is known at this point in regard to how we can lessen wild yeast loads in fields destined for silage. Note that fungicide application is only part of the management story. While it can be effective, reductions in mycotoxin levels of material going into the bunker max out around 50%. Hybrid resistance, good rotations and corn residue management also need to be worked into the management plan to further reduce fungal infections and mycotoxin loads.

Phil Cardoso of the University of Illinois has also studied fungicide application impact on forage quality and dairy cow performance. In a recent review, Cardoso commented that field scouting is important and fungicide application appears to improve corn silage nutritional value. This area deserves more attention and research, with highperforming cows consuming more and more silage and forage and recognizing contamination has been increasing over the past 10 years.

Bring mold and yeast discussion points up with your nutritionist, veterinarian and agronomist. Consider putting an action plan together to proactively scout and identify fungicide application opportunities to improve feed hygiene and dairy production.



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Fungicide application and improved feed hygienic quality may have as much value for your business as research-proven probiotics or nutritional additives in your highperforming dairy cow diet to boost health, performance and feed conversion efficiency.

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