

Wider windrows can help dry alfalfa for dairy silage

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(PhysOrg.com) -- The alfalfa silage harvests happening this month can shape the success of an entire year's milk production. That's according to South Dakota Cooperative Extension Dairy Specialist Alvaro Garcia, who said research focusing on proper alfalfa drying methods can help producers working with this important forage for their dairy herds.

"A timely harvest improves the utilization of alfalfa silage, and better utilization means more forage nutrients are deposited in milk components and less are excreted to the environment," Garcia said. "In addition, proper utilization will reduce the need to rely on expensive feed purchases."

Garcia said that alfalfa should be wilted to bring its [moisture content](#) below 70 percent. "This reduction is very important as it reduces the chances of clostridial [fermentation](#), a usual problem in wet silages," said Garcia.

"Modifying the width of the windrows can help accomplish this. If they are too narrow, a greater portion of the forage will be protected from the drying effects of the sun and the wind. Narrower windrows then increase the length of time needed to wilt the forage that continues to breathe and lose soluble carbohydrates." Garcia added that once ensiled, this reduction in water-soluble carbohydrates negatively affects fermentation.

"In 2003, research published by Jahn and others has shown that wilting alfalfa in wide swaths reduces the time needed to reduce moisture before harvest," Garcia said. "Research published by Kung and others this year found that harvesting alfalfa in wide swaths greatly reduced the wilting time needed to lower moisture content before ensiling."

In that research, scientists compared alfalfa wilted in narrow swaths (3.6 feet wide maximum) or wide swaths (7.3 feet wide maximum). With the wide

swaths, it took 29 hours to reach the targeted dry matter for ensiling at first cutting. The more-narrow windrows took 50 hours to reach the same level. "At ensiling time there were 5 percent more soluble carbohydrates in the wide swaths than in the narrow swaths," said Garcia. "The research showed that the wide swaths also resulted in a lower pH in the silage, with 4.58 for wide and 4.66 in the narrow ones."

Garcia said the research also showed that the narrow swath ensiled forage produced more ammonia. The ammonia from protein breakdown counteracts the decrease in silage pH as it increases the buffer capacity of the ensiled alfalfa.

In addition to the benefits already mentioned, Garcia said a recent USDA-funded study at the University of California found that cattle feed that ferments appears to be a large ozone culprit. So wider windrows may also have an environmental benefit, Garcia suggested.

"Certain bacteria present in silage can reduce nitrate to nitrite and this one to ammonia and nitrous oxide," Garcia said. "Ammonia emitted from silages not only can reduce air quality because of its odor, but can also generate nitrous oxide which is both dangerous to human health and a potent greenhouse gas." Garcia said that it is important to manage windrow width particularly when weather conditions are not optimal for rapid [forage](#) wilting in the field. "Increasing the width of the swaths reduces the time needed for alfalfa to dry before it can be ensiled," said Garcia. "Reduced wilting time decreases ammonia, and in turn nitrous oxide production, with positive impact on air quality and a reduction in greenhouse gas emission."

Provided by South Dakota State University

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