

Silage Quality After Applying Liquid Dairy Manure to Alfalfa Stubble

by Ron Wiederholt, Pat Hoffman, Richard Muck

Introduction

Post harvest application (topdressing) of liquid dairy manure to alfalfa has been adopted on Midwest dairy farms as a method to reduce the amount of manure requiring summer storage. Recently, dairy consultants and dairy producers have speculated that topdressing manure on alfalfa may negatively alter alfalfa silage fermentation on subsequent harvest. Research at the Marshfield Agricultural Research Station (MARS) was conducted examining the effects of top-dressed liquid dairy manure on 2nd cutting alfalfa silage fermentation. This *Focus on Forage* reviews the results of this study.

How much manure can be applied to alfalfa stubble?

Previous application studies and on-farm practices have shown that liquid dairy manure can be applied to alfalfa stubble at rates up to 6000 gallons per acre without any negative agronomic effects. This practice should be used primarily on older alfalfa stands. Applying manure to new seedings may result in possible salt injury. Also, topdressing generally increases the percentage of grass in the stand due to the nitrogen content of the manure.

When can manure be applied to alfalfa after harvesting?

Timing of liquid dairy manure application to alfalfa stubble is extremely important. Burning of alfalfa regrowth is common when manure is applied to the foliage rather than the stubble. If weather or time doesn't allow for liquid dairy manure to be applied immediately after alfalfa harvest, it is best to avoid applying the manure.

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In a 2000 study at Marshfield, the levels of endemic lactic acid bacteria on pre-ensiled alfalfa forage were lower when manure was applied to alfalfa regrowth rather than stubble. Also, ensiled forages from the topdressed plots had higher pH, lower organic acid production and the presence of butyric acid and 2,3-butanediol when manure application was delayed until after alfalfa regrowth occurred.

Is there a negative effect on silage fermentation when manure is applied to alfalfa stubble?

The study conducted at Marshfield observed decreases in endemic lactic acid bacteria on the pre-ensiled alfalfa forage when liquid dairy manure was applied to the stubble. However, when the alfalfa was ensiled at an appropriate dry matter (DM) content (35-40% DM), there was no appreciable difference in the fermentation between control silage or stubble topdressed silage. When alfalfa forage was ensiled at a DM greater than 40%, the silage from plots with stubble-applied manure was higher in pH and contained less lactic acid. This indicates that a poorer fermentation occurred.

Should liquid dairy manure be topdressed on alfalfa stubble?

According to this study, when manure is topdressed immediately to alfalfa stubble and ensiled at 35-40% DM, there is a low risk of altering the fermentation characteristics of the silage. However, there is a risk of having lower levels of natural lactic acid bacteria in the forage to initiate fermentation. It is advisable to use a quality silage inoculant to ensure that adequate levels of lactic acid bacteria are available to rapidly start fermentation.

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