

Silage Inoculants

Silage inoculants are live cultures of *anaerobic* (they grow in the absence of oxygen) lactic acid bacteria which are used to supplement the native (epiphytic) bacteria on the crop to guarantee a fast and efficient fermentation in the silo. Inoculant bacteria have been isolated from silages or silage crops and selected for rapid growth under a wide variety of temperatures and moisture conditions.

Native bacteria normally produce both lactic and acetic acids - they are *heterofermentative*. Of these, lactic is the stronger acid - a given amount of lactic acid will have a greater effect on lowering silage **pH** than an equivalent amount of acetic. Inoculant bacteria have been selected to be *homofermentative* - they produce only lactic acid - resulting in a more efficient use of crop sugars to reduce pH.

Inoculants are unlikely to improve silage quality when ensiling conditions are ideal. They are likely to have a beneficial effect when:

- the number of epiphytic bacteria on the crop are limited (e.g. exposure of a light swath to sunlight may have reduced numbers);
- the amount of fermentable sugar in the crop is limited (often the case for alfalfa);
- the crop has a high buffering capacity (e.g. alfalfa) which means that more acid is required to lower pH into the ideal range (pH 3.8 - 5.0);
- a high level of moisture (low dry matter) in the crop dilutes the acid produced, limiting pH depression and encouraging the growth of competing bacteria (*Clostridia*) which consume lactic acid;
- silage has not been well packed and covered resulting in extended growth of *aerobic* (oxygen-requiring) bacteria which consume available crop sugars and produce excessive heat.

for more information:

[Bacterial Silage Inoculants](#), Alberta Dairy Management

[Effect of a Bacterial Inoculant on Silage Fermentation](#), University of Alberta Dairy Research Highlights

[Round Bale Silage](#), Alberta Dairy Management

Silage Manual, Alberta Agriculture publication # 120/52-2, 1988