ANALYSIS OF THE PRETREATMENT PROCESS FOR HAYLAGE, WHEAT STRAW, SWEET CORN SIALGE, AND VARIETIES OF CONVENTIONAL CORN SILAGE.

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The focus of this research is to investigate the non-enzymatic extraction of saccharides from commonly available farm materials that have been stored in an ensiled state using acid hydrolysis. Field corn, grasses, and other materials are commonly harvested and placed in long term anaerobic storage. The stored material becomes slightly acidic, with a pH of 4 to 5, and then stabilizes for long term storage for one or more years.

Previous research by the Rochester Institute of Technology and elsewhere has demonstrated that hot aqueous, acidic solutions effectively extract and/or hydrolyze starches, simple sugars, and hemicellulose. This research has evaluated two varieties of corn silage, haylage, corn silage, a food processing waste by-product, and wheat straw with different acids and different degrees of mechanical pre-destruction to determine the amount of hydrolyzed material.

Acid hydrolysis of various corn silages yields up to sixty-seven percent hydrolysis whereas the grass based silage, haylage, had an approximate thirty seven percent hydrolysis yield under the same conditions.