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(54) **PROCESS OF PRESERVING GREEN FODDER**

(57) **Abstract:**

(54) **PRESERVATION DU FOURRAGE VERT**

*This First Page has been artificially created and is not part of the CIPO Official Publication*

One of the most important, if not the absolutely most important, agricultural problems at the present time is the discovery of a process to preserve green cattle fodder in such a state, that it will as much as possible retain its original nourishing value and aroma. From the same acreage, where the hay is now harvested air dried, it would be possible to obtain a double amount of fodder units, if only the fodder could be mowed several times during the season some three or four weeks old.

The preparation of pressed fodder is an attempt to accomplish above end. With the methods known and applied up to date, it has not, however, been possible to prevent the fodder from losing considerably from its food value either by respiration or especially by the fermentation caused by micro-organisms.

The butyric acid bacillus, which comes into the fodder with soil particles, will also multiply, rendering the pressed fodder practically valueless for cheese dairy milk production.

We have since 1925 in our laboratory carried out researches, as to at which hydrogen ion concentration the reactions, usually taking place in the common pressed fodder, will cease. The researches have clearly disclosed, that at a hydrogen ion concentration of P 4, the fodder will not lose scarcely anything from its nourishing value. At the same time the discovery was made, that the butyric acid bacillum will not multiply in said acidity, on the contrary, even the spores will die in this acidity in the course of some prolonged time. It was thus obviously proved, that in case the fodder immediately after the mowing is made, by addition of acidity, so acid, that its P<sub>H</sub> is about 4, the fodder will be preserved practically unchanged. It remains only to be found out, which acids as to their price and physiological properties could be advantageously applied to the process, and if the acid could be mixed in a practical way with the fodder homogeneously, and if the fodder thus prepared, possessed such a taste and smell as to be eaten by the animals with pleasure. Some minor experiments with the new process were carried out already during the summer 1926 by using hydrochloric acid, sulphuric acid, lactic acid and bisulphate of sodium. The

acids were added to the fodder in concentrated dilutions of some 7 to 15 percent concentration.

The experiments carried out in a small scale, proved thus from the very beginning, that the fodder is preserved exceedingly well by addition of some suitable acidity. On account of the varying coefficient of dissociation of different acids, these must be added correspondingly in different quantities. On account of this weak acids will hardly come in use alone.

Experiments carried out in a more extensive scale, proved, that the process could be practically applied and that it was quite possible to mix the acid with the fodder homogeneously. As the water contents of fresh mowed green fodder are some 80 per cent, it is not advisable to add much water thereto. For this reason the acid should be added in a concentrated or 1 to 20 per cent dilution. When experimenting in large scale, the fodder was preserved in silos or ground pits. In both cases the preservation of the fodder was equally good. For instance young clover was after a three to four months preservation greenish to its colour and its odour reminded that one of freshly mowed hay. A chemical analysis showed, that the ammonium contents were not in excess of 1 to 3 per cent. The albumens were accordingly not decomposed in a noticeable degree. Only the presence of amino acids was more remarkable. Butyric acid was not to be found at all. The presence of butyric acid bacillus could not be discovered by bacteriological investigation. Lactic acid and acetic acid were present to a certain degree. The ash reaction showed a strongly basic character.

At the feeding experiments Ayrshire cattle got a daily portion of some 45 to 70 kilogrammes and Finnish domestic cattle 20 to 30 kg per day of this new fodder, the solid stuff contents of which were somewhere at 20 per cent. The cows ate the fodder with pleasure. The experiments proved also, that of the fodder, prepared from young clover, some 5,5 to 6 kg was wanted to make one fodder unit. Its nourishing value was accordingly that one of freshly cut clover. It substitutes entirely power fodder given to cows, the yearly milk output of which was 4000 kg.

Except with fresh hay or green fodder, experiments have also been carried out with beet tops, fodder beets, and sugar beet slices. Even these stuffs have preserved their food value well, when treated according to the described process.

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Having thus described my invention, I claim:-

1. A process for preserving fodder in fresh condition, comprising the steps of adding to said fodder, before storing, and as homogeneously as possible acid substances, and regulating the quantity of said acid matter whereby the acidity of the fodder will be immediately from  $P_H$  3 to 5.

2. A process according to claim 1 wherein the acid material is added as concentrated as possible, i.e. in solutions not weaker than 1 per cent or as solid salts.

3. As a new product, / having an hydrogen ion concentration of from  $P_H$  3 to 5 and wherein this acidity has been obtained by adding acid substances during its preparation.

**SUBSTITUTE**

***REMPLACEMENT***

**SECTION is not Present**

***Cette Section est Absente***