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Effect of additive on alfalfa mixed silage quality

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Key words: alfalfa (*Medicago sativa*), mixed silage, additive, fermentation quality

Introduction Alfalfa with rich protein and poor sugar, can't meet the energy requirements of *Lactobacillus*, a bacterium essential for the production of high quality silage. It will be very difficult to silage alone, without taking wilt or lower water treatment (Giffel et al., 2002). This study was conducted to investigate whether mixing alfalfa with other forages and the use of an additive (cai he) product could be used to enhance the quality of alfalfa silage. cai he is a kind of additive. Cai he belongs to the production of Shangdong Tianda CAIhe Animal Health Co., Ltd.

Materials and methods First-cutting alfalfa and perennial lespedeza (*Lepedeza hedysaroides*) and ceratoides (*Ceratoides arborescens*) were at full bloom period, *Hordeum* (*Hordeum brevisubulatum*) was cut in the fruit phase. All forages were wilted for approximately 2d. Forages were chopped to a theoretical length of 2-3 cm and alfalfa mixed with three other forages at ratio of 1:1 giving the four silage types listed in Figures. Additive was mixed in distilled water according to the manufacturer's instructions (250g/tonne) and sprayed on to some of the forages providing the following treatments: 1) control silage without additive (untreated), 2) silage treated with additive (cai he). Silage was then stored in 20L plastic barrel and compacted, and sealed with double polyethylene plastic film. Each treatment was repeated three times.

Results The additive (cai he) significantly decreased the CF (Crude Fiber) content and PH value of silage (Figure 1, 2). The CF content of single alfalfa silage (23.71%) was significant lower than mixed silage without additive, the CF content of alfalfa and lespedeza (23.50%) was the lowest in all of the mixed silage with additive. The reduction of CF content indicated that the inside of silage happened strong microorganism fermentation. pH was the significant indicator of fermentation effect. The PH of untreated silage did not differ among silage types (Figure 2), however, PH of silage treated with cai he declined rapidly. PH of treated silage were lower than that of the untreated silage. The PH value of alfalfa and hordeum silage was significantly lower than other mixed silage types.

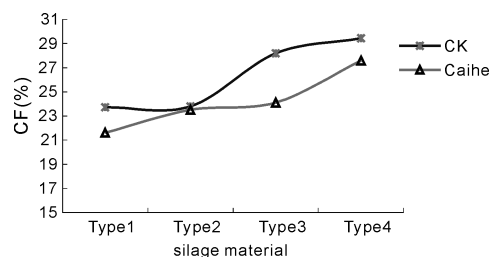


Figure 1 CF variation of mixed silage.

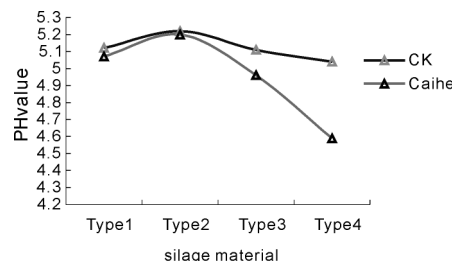


Figure 2 pH variation of mixed silage.

Note: Type 1: Alfalfa; Type 2: Alfalfa and Lespedeza (1:1); Type 3: Alfalfa and Ceratoides (1:1); Type 4: Alfalfa and Hordeum (1:1)

Conclusion Additive can improve the fermentation quality of mixed silage and reduce the CF and PH value of silage. Alfalfa and Lespedeza (1:1) was effective according to the routine nutrition ingredients.

References

Giffel M C, Wagendorp A, Herrewegh A, Driehus F. 2002. Bacterial spores in silage and raw milk. [J]. *Antonie Van Leeuwenhoek*, 81: 625-630.