

The changes of yield and moisture contents in stover, ear, and whole plant of forage corn after optimal ensiling stage ⁽¹⁾

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Abstract

In order to explore the feasibility of using the whole plant corn as low-moisture forage or raw material, our report investigated the yield and the moisture content of each part from the early to the post-mature period, and the differences among hybrids. The difference between stages of ensiling a suitable stage and post-maturity were also compared. Results showed that the mean fresh weight of the four hybrids decreased about 0.2 mt/ha per day before 49 days after silking and about 0.9 mt/ha per day after 49 days, that mainly due to the loss of stover weight. The fresh weight of ears rose slightly before 49 days. The dry weight increased by about 0.19 mt/ha per day before 49 days after silking, and the increase was mainly from the increase of the ears, and the dry weight of stover decreased slightly. The dry weight of ears and stover were equivalent at 42 days after silking, after which the ears rose and the stover fell. The total dry weight did not decrease significantly after reaching a high point in 49-56 days, and only 2% of the dry weight was lost by 70 days. The mean moisture contents were 80.5%, 70.4%, 49.5%, and 41.2% at 14 days, 35 days, 63 days and 70 days after silking, while there were significant differences among hybrids at 63 days. In terms of plant parts, the moisture content of stover decreased slowly in the early stage and quickly in the later stage, and there were significant differences among hybrids in the later stage. The water content of the ear drops fast in the early stage and slow in the late stage. Comparing those of 70 days with 35 days, the moisture content can be reduced by 29%, which can reduce the energy cost of drying. Although the fresh weight was reduced from 50.5 mt/ha to 31.2 mt/ha, the dry weight was increased from 15.0 mt/ha to 18.1 mt/ha. It said that the delay in harvesting has the disadvantages of prolonging the use of farmland and increasing risks, but the increase in total dry yield and the reduction in moisture content have advantages in unit yield cost. Genotypic differences of moisture loss rate in the later period should be taken into consideration.

Key words: Maturity, Forage corn, Yield, Moisture content.

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