QUALITY OF SILAGES OF DIFFERENT ORIGIN AND VARIATION OF FIBRE COMPONENTS

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Summary. The study was designed to assess the quality of grass, cereal mixture and maize silage by reference methods and to determine the ratio of fibre components and regularities of its variation due to the peculiarities of phyto–raw materials. Silage quality investigations indicated an especially high quality variation for grass silage. The difference between the lowest and highest crude protein (CP) concentration values in the grass silage was as high as 15.27 percentage points, whereas in the silage produced from legumes this difference was 6.70, and for maize silage as low as 4.57 percentage points. The highest contents of neutral detergent fibre (NDF) and acid detergent fibre (ADF) fractions were found in the silage of perennial grasses (58.28 and 39.78 % of dry matter – DM) and in cereal silage (62.74 and 37.4 % DM). Cereal silage, and especially that of maize, contains less lignin (5.56 and 3.27 % DM, respectively), compared with perennial grass and legume silage (6.34 and 6.72 % DM, respectively). Distribution of fibre components in DM and fibre of various types of silage is different: in grass silage cellulose makes up 33.44 % DM and in legume silage 28.41 % DM, or 55.9 and 60.94 % of NDF, respectively. In cereal silage the share of cellulose in cell walls is also high 53.97 % NDF, in maize silage fibre the contents of hemicellulose and cellulose are similar 45.2 and 47.1 %, respectively. Although clover and lucerne silage have different contents of fibre, the ratio of hemicellulose and cellulose in fibre is similar: cellulose accounts for about 60 % of NDF, hemicellulose for about 25 % of NDF. The fibre of legumes is more lignified than that of other phyto–raw materials: lignin concentration is 6.72 % DM, or 13.5 % NDF. Clover silage contains less lignin than that of lucerne. The least content of lignin 7.67 % NDF was found in maize silage. The share of acid detergent insoluble protein (ADIP) in the group of grass silage was found to account for 1.27–19.73 % of the total crude protein content. On average, the highest fraction of this protein was identified in cereal silage (7.54 % CP). Legume silage was found to be especially rich in minerals, including calcium, whose average content in the samples of this group was 1.249 % DM. Maize silage has low contents of both crude protein and calcium. Average phosphorus content in conserved forage is very varied and does not always meet optimal nutrition requirements.

Keywords: silage, quality, fibre composition, lignin, acid detergent insoluble protein (ADIP), mineral components.