NUTRITIONAL QUALITY AND DIGESTIBILITY OF MAIZE HYBRID PLANTS FOR SILAGE

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In order to assess the silage potential of maize hybrids, the nutritional quality and the enzymatic in vitro digestibility of five local maize hybrids (ZP 707, ZP 7357, ZP 7072, ZP 7777, and ZP 6263) was tested in the laboratory of the Group for Food Technology and Biochemistry of the Maize Research Institute "Zemun Polje". The hybrids were grown at a total of four locations, one in Srem (Autonomous Province of Vojvodina) and three in Central Serbia. The hybrid 7001 was used as a standard. The selection of hybrids for this research was made on the basis of the actuality of individual hybrids and the market orientation of the Maize Research Institute. The following properties were investigated: dry matter content, lignocellulose fiber content, and in vitro dry matter digestibility of the whole plant. According to the achieved results, it can be concluded that hybrids ZP 707, ZP 7357, followed by ZP 7777 proved to be the maize genotypes highly preferable for the production of silage. All tested hybrids achieved better results than the standard in most locations. Hybrid ZP 707 on average had the highest in vitro dry matter digestibility (61.43 ± 1.86%), as well as the lowest content of all lignocellulosic fibers (NDF-52.76%, ADF-24.40%, ADL-2.58, hemicellulose-28.36, and cellulose-21.82%), which all indicates its potential as a silage maize form suitable for cultivation in different agro-ecological conditions. In terms of digestibility and dry matter content, the ZP 707 hybrid can be singled out as the most stable, i.e. it is appropriate for growing both in lowland areas and at higher altitudes. ZP 6263 proved to be the most inferior hybrid at most locations, while based on in vitro digestibility and dry matter content, ZP 7072 hybrid varied the most. The digestibility of the whole plant was negatively affected by the higher content of primarily lignin (ADL), followed by ADF and cellulose fraction share. Although it is optimal to harvest silage maize in the waxy maturity stage of grain ripeness, when the dry matter content of the whole plant is in the range between 30 and 35%, the harvest time in some hybrids in some locations was significantly exceeded, which affected the results of dry matter digestibility. The findings obtained in this study can be highly useful for future breeding programs directed toward creating new and improved silage maize hybrids.

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