

## Plant's physical structural components harvested as silage (*Zea mays* L.)

E. D. Mendes<sup>1</sup>, M. Neumann<sup>2</sup>, A. Goldoni<sup>3</sup>, M. G. Coelho<sup>4</sup>, D. Cecchin<sup>5</sup>, B. K. Auer<sup>6</sup>

<sup>1</sup>Midwest State University UNICENTRO, Guarapuava, Paraná 85040-080, Brazil, Email: esthermendesmedvet@hotmail.com, <sup>2</sup>Midwest State University UNICENTRO, Guarapuava, Paraná 85040-080, Brazil, Email: mikaelneumann@hotmail.com, <sup>3</sup>Midwest State University (UNICENTRO), Guarapuava, Paraná 85040-080, Brazil, Email: amanda\_goldoni@hotmail.com, <sup>4</sup>Midwest State University UNICENTRO, Guarapuava, Paraná 85040-080, Brazil, Email: mariinagcoelho@gmail.com, <sup>5</sup>Midwest State University UNICENTRO, Guarapuava, Paraná 85040-080, Brazil, Email: dani\_el135@hotmail.com, <sup>6</sup>Midwest State University UNICENTRO, Guarapuava, Paraná 85040-080, Brazil, Email: biancakaroliny@hotmail.com.

**Introduction** The culture of election for silage is corn (*Zea mays* L.), for its superiority production per area, easy cultivation, high digestibility and energy concentration, always focusing in the corn hybrids choice to obtain the highest production as possible (Reinehr et al. 2012). According to Neumann et al (2002) due the lack of information as the agronomic conduct, production and quality of the materials offered by different companies, the choice of the hybrid for silage has been controversy, because beside the agronomic parameters, the portions of the plant fractions also influence the final quality of the silage. The aim of this study was to evaluate the plant's physical structure, from corn hybrids growned at Guarapuava's region PR.

**Material and methods** The experiment was developed at Animal Production Center (NUPRAN) of the Agricultural and Environmental Sciences Department from the Midwest State University UNICENTRO, located in Guarapuava, PR. Physical Structural components were evaluated from corn hybrids for silage: SG 6030 YG, LG PRO 6036, PRO 6038 LG, BRAS 3010, PL 6880 and PL 1335. Samples of the physical structural components from whole plant (original material) of each treatment were obtained in a homogeneous and representative form, weighed and dried in a forced-air oven at 55 °C. After 72 hours of drying in forced-air oven, they were weighed again to determine dry matter (DM), according to AOAC (1984). The design of the blocks was completely randomized with four replicates consisting of six treatments: SG 6030 YG, LG PRO 6036, PRO 6038 LG, BRAS 3010, PL 6880 and PL 1335. The collected data for each parameter were subjected to variance analysis with average comparison at the significance level of 5% by Tukey test, through the SAS (1993).

**Results and discussion** Table 01 shows the physical structure of the plant, and for the components as leaves, grains, and bracts and cob. Among the hybrids tested, it was not found statistic difference ( $P>0.05$ ), with average values of 19.5%, 41.1% and 17.6 % respectively. The stem structure of the plant showed statistic difference ( $P<0.05$ ) and hybrid PL6880 had the highest share 25.6%, when compared to hybrids LG PRO 6038, PRO 6036 LG, SG 6030 YG, BRAS 3010 and PL 1335 which had 21.9%, 21.2%, 20.1%, 20.0% and 22.2% respectively.

According to Beleze et al. (2003), based on the growth behavior of plants, that explain the changes in internal conditions of plant growth (plant composition and nutrients translocation) associated with the environment conditions (temperature, humidity, insolation and winds). Thus, the effect on the percentage of the plant dry matter can be explained by plant maturity changes, when happens nutrient transport between plant fractions. This fact explains that although the hybrid PL6880 had the greater amount of stem dry matter it had the lowest percentage of grain component in the plant, probably because the nutrients translocation in this hybrid was slower than in other corn hybrids.

**Table 1** Average levels of plant's physical structural composition, % of dry matter (DM) on plant

Hybrids	Components			
	Physical structural participation, % of DM on plant			
	Stem	Leaf	Bracts/Cob	Grain
LG 6038 PRO	21.9 <sup>b</sup>	19.1 <sup>a</sup>	17.0 <sup>a</sup>	42.1 <sup>a</sup>
LG 6036 PRO	21.2 <sup>b</sup>	21.3 <sup>a</sup>	16.8 <sup>a</sup>	40.7 <sup>a</sup>
SG 6030 YG	20.1 <sup>b</sup>	19.2 <sup>a</sup>	16.1 <sup>a</sup>	44.6 <sup>a</sup>
BRAS 3010	20.0 <sup>b</sup>	19.9 <sup>a</sup>	18.0 <sup>a</sup>	42.0 <sup>a</sup>
PL 6880	25.6 <sup>a</sup>	18.8 <sup>a</sup>	20.3 <sup>a</sup>	35.4 <sup>a</sup>
PL 1335	22.2 <sup>b</sup>	18.5 <sup>a</sup>	17.5 <sup>a</sup>	41.8 <sup>a</sup>
Average	21.8	19.5	17.6	41.1
P>F	0.0226	0.1656	0.2841	0.1530
CV %	9.73	7.69	13.91	10.77

Averages in the same columns followed by different letters for each variable differ by Tukey test at 5%.

CV: Coefficient of Variation.

**Conclusion** The average levels of plant's physical structural composition, for the components leaves, grain, cobs and bracts did not differ significantly among the hybrids LG6038PRO, LG3036PRO, SG6030YG, BRAS 3010, PL6880, PL 1335, but the stem component of hybrid PL6880 stood out, probably because its lower rate of nutrients deposition when compared with other hybrids.

### References

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