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## Intake and Apparent Digestibility of Silages Obtained from Four Sunflower (*Helianthus annuus*) Genotypes

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**Presenter Information**

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## Intake and apparent digestibility of silages obtained from four sunflower (*Helianthus annuus*) genotypes

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**Key words:** intake, digestibility, ruminants, sunflower

**Introduction** The sunflower seeding is growing in Brazil although it is cultivated specifically at the end of rainy season due to the low water requirement. Parallel to seed production, which has been common in Brazil for a long time (Schafer & Westley, 1921), the use of sunflower for silage has also been growing after harvest of maize for example, keeping the soil covered and contributing for the sustainable production. However, more research is needed to test the different genotypes developed for silage production according to nutritional parameters, which were the objective of this study.

**Material and methods** This experiment was conducted at the Faculty of Veterinary of the Federal University of Minas Gerais State, Brazil to evaluate the intake and apparent digestibility of four sunflower genotypes (Rumbosol 91, Victoria 807, Victoria 627 e Mycogen 93338) using sheep. The experiment had a completely randomized design, using 5 sheep (replicate) and 4 treatments (genotypes) to measure the intake and digestibility of dry matter (DM), crude protein (CP), fat (EE), neutral detergent fibre (NDF), acid detergent fibre (ADF) and gross energy (GE).

**Results and discussion** The dry matter intake ranged from 59.9 (Mycogen 93338) to 85.0 g/body weight / day (Victoria 627). The protein intake varied from 3.79 (Mycogen 93338) to 5.62 g / body weight /day for Victoria 627. The GE intake varied from 120.0 (Rumbosol 91) to 200.8 g / body weight /day for Victoria. However, the highest GE value was obtained for Victoria 627 (Table 1). The apparent digestibility of DM was: 48.69% for Rumbosol 91 genotype, 49.52% for Victoria 807, 50.70% for Mycogen 93338 and 57.42% for Victoria 627 although no statistical difference was observed ( $p > 0.05$ ). For the apparent digestibility of GE, the results ranged from 44.9% for Rumbosol to 55.58% for Victoria 627 but without any difference among genotypes ( $p > 0.05$ ), Table 2. There was no statistical difference for the intake and digestibility of NDF. However, for ADF, the highest values were ( $p < 0.05$ ) founded for Victoria 627 (39.84%) and Mycogen 93338 (42.67%). The lowest value ( $p < 0.05$ ) for ADF intake was for Rumbosol 91 (12.62 g / body weight / day).

**Table 1** Mean values for DM intake (DMI), crude protein intake (CPI), fat intake (EEI), neutral detergent fibre intake (NDFI), acid detergent fibre (ADF), gross energy intake (GEI) and metabolic energy intake (MEI) of sunflower silages obtained from four genotypes.

Parameters	Genotypes				CV (%)
	Rumbosol 91	Victoria 807	Victoria 627	Mycogen 93338	
DMI (g/BW/day)	63.3 <sup>B</sup>	67.8 <sup>B</sup>	85.0 <sup>A</sup>	59.9 <sup>B</sup>	17.1
CPI (g/BW/day)	5.4 <sup>B</sup>	6.0 <sup>B</sup>	7.5 <sup>A</sup>	5.0 <sup>B</sup>	18.5
EEI (g/BW/day)	6.2 <sup>B</sup>	12.6 <sup>A</sup>	11.0 <sup>A</sup>	8.5 <sup>B</sup>	17.2
GEI (Kcal/BW/day)	252.0 <sup>B</sup>	340.0 <sup>AB</sup>	402.0 <sup>A</sup>	286.0 <sup>B</sup>	18.1
MEI (Kcal/BW/day)	90.0 <sup>C</sup>	146.0 <sup>B</sup>	192.0 <sup>A</sup>	124.0 <sup>BC</sup>	20.9
FDNI (g/BW/day)	31.6 <sup>A</sup>	35.2 <sup>A</sup>	35.4 <sup>A</sup>	27.6 <sup>A</sup>	18.8
FDAI (g/BW/day)	12.6 <sup>B</sup>	17.6 <sup>A</sup>	22.3 <sup>A</sup>	19.1 <sup>A</sup>	19.6

Means followed by different letters in the same line are different from SNK test ( $P < 0.05$ ). BW=body weight, CV=Coefficient of variation.

**Table 2** Mean value of apparent DM digestibility (ADMD), apparent crude protein digestibility (ACPD), apparent fat digestibility (AFD), apparent neutral detergent fibre digestibility (ANFAD), apparent acid detergent fibre digestibility (AADFD) and apparent gross energy digestibility (AGED) of sunflower silages obtained from four genotypes.

Parameters	Genotypes				CV (%)
	Rumbosol 91	Victoria 807	Victoria 627	Mycogen 93338	
ADMD (%)	48.7 <sup>A</sup>	49.5 <sup>A</sup>	57.4 <sup>A</sup>	50.7 <sup>A</sup>	10.9
ACPD (%)	44.5 <sup>B</sup>	53.8 <sup>AB</sup>	57.0 <sup>A</sup>	50.7 <sup>AB</sup>	12.0
AFD (%)	78.4 <sup>B</sup>	89.3 <sup>A</sup>	85.7 <sup>A</sup>	87.3 <sup>A</sup>	3.2
AFDND (%)	48.1 <sup>A</sup>	41.6 <sup>A</sup>	39.8 <sup>A</sup>	38.9 <sup>A</sup>	13.3
AADF (%)	23.0 <sup>B</sup>	23.8 <sup>B</sup>	39.8 <sup>A</sup>	42.7 <sup>A</sup>	19.7
AGED (%)	45.0 <sup>B</sup>	51.2 <sup>AB</sup>	57.0 <sup>A</sup>	51.3 <sup>AB</sup>	11.9

Means followed by different letters in the same line are different from SNK test ( $P < 0.05$ ). BW=body weight, CV=Coefficient of variation.

**Conclusion** The sunflower silages obtained from the four genotypes evaluated in this experiment demonstrated high quality in terms of chemical composition and intake and could be recommended for ruminant nutrition.