Physical composition of corn plants under different seed treatments aiming silage production

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Introduction The initial development and posterior improve in the performance of silage and grain corn culture many times is given by the use of agricultural defensives in the seed treatment, which provides some conditions of protection and productive potential to the plant.

The use of organomineral fertilizer in seed treatment and/or leaf application have being an option to potentiate the physiological development of the plant. There is also a great significance in the use of these fertilizers when is desired to obtain high yields and quality of the harvested product, being able to contribute for the stability of the system, improving the organic material levels in the ground, encouraging the producer to persist in the direct planting system (Santana, 2012).

This research had the objective of evaluate the physical composition variation of corn plants under different seed treatment aiming silage production.

Materials and Methods The research was conducted at the Animal production center (NUPRAN) of the environmental and agrarian sector of the Universidade Estadual do Centro-Oeste (UNICENTRO), Guarapuava, PR. The climate of Guarapuava, PR, is the Cfb (subtropical humid mesothermal), without a dry season, with warm summers and moderate winters as the Köppen classification, in altitude of nearly 1.100 m, mean annual precipitation of 1.944 mm, mean annual minimal temperature of 12.7°C, mean annual higher temperature of 23.5°C and air relative humidity of 77.9%.

It was evaluated the biomass production, physical composition and dry matter levels of the hybrid silage corn: SG 6030Y. The corn (*Zea mays*, L.) culture was implanted in October/November of 2012, in the direct planting system. In the tillage was utilized the between lines space of 0.4 m, depth of 4 cm and seeds distribution per meter looking for a final density of 80 hundred plants.ha^{-1}, in a total area of 6400 m^2. The base fertilizing constituted by 500 kg.ha^{-1} of NPK in the formulation 08-30-20 (N-P_2O_5-K_2O), and in coverage, 30 days after the implantation were applied 160 kg.ha^{-1} of N, as urea (45-00-00). The corn crop management, until 30 days after the plants emergence, involved practices for weed control utilizing herbicide based in *Atrazina* and *Simazina* (Siptran: 7.5 L. ha^{-1}) and the insecticide based in *Lambdacyhalothrin* (Karate: 150 ml.ha^{-1}) for the control of *Spodoptera frugiperda.*

For collecting the plants was made divisions in 3 blocks per seed treatment (conventional and organomineral), where in each block 3 plants has been collected, randomly, resulting in a total of 9 plants for the conventional sample and 9 for the sample with the additional seed treatment. All of them were measured and weighted for determination of the plant high and ear high (m) and the productive potential of fresh and dry matter and grains (.ha^{-1}). Plant composition was determined by components segmentation: stems, leaves, bracts more cobs and grains, were selected two plants from 9 of each sample, and that one was fragmented separating the components, and the other was completely fragmented. All the fragmentation was realized in the moment of the silage preparing (R4). The whole plant samples and the structural components of each treatment was obtained in a

homogeneous and representative way; weighted and dried in an oven at 55°C. After 72 hours in an oven, samples were weighted again for determinate dry matter (AOAC, 1984). Data were submitted to analysis of variance with comparison of means at 5% of significance, by the statistical program SAS (1993).

Results and Discussion By the variance analysis, observed in Table 1 there was no significant difference ($P<0.05$), by the F test, in respect as the corn plant components proportion, with or without seed treatment. But related to the fresh biomass, was observed that the use of vegetal hormonal extract increased the biomass and grain productivity, whereas the variation coefficient for fresh and dry biomass.ha^{-1}, grains.ha^{-1} and leaf area index was respectively 10.14%, 12.22%, 9.56 % and 10.35%, when comparing with normal treatment.

Table 1 Stems, leaves, bracts with cobs (B+C) and ears proportion in the dry matter and dry matter level of each plant component, for silage corn under different seed treatments.

	Plant composition (%)			
	Stem	Leaves	B+C	Grains
Conv. Seed treat.	14.0 a	21.1 a	24.4 a	40.5 a
Org. Seed treat.	14.1 a	20.5 a	25.5 a	39.8 a
Mean	14.08	20.80	24.95	40.16
CV	4.78	2.45	2.94	3.47
PR>F	0.87	0.32	0.20	0.61

	Dry matter levels (%)				
	Stem	Leaves	B+C	Grains	Whole plant
Conv. Seed treat.	19.27 a	28.90 a	33.46 a	55.61 a	34.88 a
Org. Seed treat.	19.78 a	28.76 a	35.70 a	55.71 a	33.34 a
Mean	19.52	28.82	34.57	55.66	34.10
CV	4.84	3.35	3.82	2.83	2.87
PR>F	0.57	0.87	0.17	0.94	0.19

Letters, in column, followed by different means differ from each other by the F test as 5%.

Conclusion In view of the non variant plant composition and dry matter levels in the different component of the plant, in despite of the higher production of fresh and dry biomass and grains, is acceptable to conclude as being the evaluated parameters not relevant to the corn productivity.

Reference

Santana, C.T.C. 2012. Comportamento de milho (Zea mays L.) e propriedades físicas do solo, no sistema de plantio direto, em resposta a aplicação de fertilizante organomineral. MS Thesis. Universidade Estadual Paulista Júlio de Mesquita Filho, Botucatu.