

Range in grain and silage corn productivity under seed treatment with plant hormone extract

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Introduction The animal production, in general aspects, have essential premises to present evolution in its system, being probably the intensification the most important of them, showing up directly proportional to the profitability, if tried in the correct way. In the beef cattle, specifically in the finishing step, the confinement is maybe the most adapted system in this case, overcoming in number of animals per area the grazing finishing and, as Ueno, 2012, even the profitability per area by the corn grain sale. This research work aimed to enquire the range of grain and biomass in the silage corn culture, with harvest point in R4, under the influence of seed treatment with plant hormone extract (HAF PLUS).

Materials and methods The research was conducted in the Animal production center (NUPRAN) of the ambiental and agrarian sector of the Universidade Estadual do Centro-Oeste (UNICENTRO), at 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 1100 m, mean annual precipitation of 1944mm, 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 utilized the corn hybrid SG 6030Y, planted in November/2012 with between lines spacing of 0.4m, 4cm of depth and seed per meter distribution aiming a final population of 80,000 plants.ha⁻¹, in a total area of 6400 m². The base fertilization constituted by 500 kg .ha⁻¹ of NPK in the formulation 08-30-20 (N-P₂O₅-K₂O). After 30 days of plantation 160 kg.ha⁻¹ of N, as urea (45-00-00) was also applied. 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 *Labdacyhalothrin* (Karate: 150 ml.ha⁻¹) for the control of *Spodoptera frugiperda*.

The evaluation occurred by collecting plants while was being made the silage. The area was divided in 2 blocks, one without hormonal seed treatment and the other with the addition of HAF PLUS, where each block was divided in 3 plots, being thereby collected 3 subsamples in each plot, randomly. In the act of collecting, it was measured 10 meters, in order to choose 3 median plants of the sample and realize the count of the plants, to estimate the total population. Of the nine plants per plot resulting from sampling, all of them were weighted and had leaves measured to calculate the leaf area index, as the methodology of Guimarães et al. (2002), and, just after, were chosen 3 median plants, from which two were fragmented in stem, leaves, bracts and cobs and grains, and one was completely fragmented. This material was weighted and forwarded to the oven, in order to obtain dry matter. The obtained data was submitted to analysis of variance with comparison of means at 5% of significance, by the statistical program SAS (1993).

Results and Discussion Significant ranges in fresh biomass, dry biomass and grains, verifiable in table 1, demonstrated that is really effective the action of stimulate the growing searched with the seed treatment utilizing the additional of plant hormonal extract HAF PLUS, these data that shown to be similar to the founded by (Santana, 2012), that reports corn plant biometric indices increase provided by the same product, as number of grain rows per ear, number of grains per ear and mass of 100 grains in g.

The importance of defining the leaf area of a plant is given by the existence of a straight relationship between it and the transpiration and photosynthesis rates, since affects the capacity of realizing gas exchange and intercepting the sun radiation, thus implying in an important way to estimate the productive capacity of the cultivation (Guimarães et al., 2002).

Table 1 Estimates production of fresh biomass per ha (PMV, kg ha⁻¹), dry biomass per ha (PMS, kg ha⁻¹), grain production per ha (PG, kg ha⁻¹), leaf area index (IAF, m²), plant stature, ear height, plants population and plant weight, of corn destined for silage, with harvest point in R4, under the influence of seed treatment with plant extract (HAF PLUS).

Parameter	Plant hormonal extract		Mean	CV	P>F
	With	Without			
PMV, kg ha ⁻¹	84451.00 ^a	70082.00 ^b	77266.67	10.14	0.05
PMS, kg ha ⁻¹	28147.00 ^a	24501.00 ^b	26324.33	12.22	0.04
PG, kg ha ⁻¹	11198.00 ^a	9926.00 ^b	10562.33	9.56	0.05
IAF, m ²	0.72 ^a	0.59 ^b	0.65	10.35	0.04
Plant stature, m	2.51 ^a	2.45 ^a	2.48	2.85	0.36
Ear height, m	1.49 ^a	1.41 ^a	1.44	3.14	0.18
Plants population, ha ⁻¹	72944.00 ^a	76111.00 ^a	74527.00	3.52	0.27
Plant weight, kg	1.16 ^a	0.92 ^b	1.04	5.80	0.04

Means within a row followed by different superscripts differ by the test F as 5%.

Conclusion The results found in this research, where was observed variation in the plant weight followed by a considerable increase in the productivity, lead to believe that was, probably, provided by the superior leaf area index.

References

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