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Studies Upon a Lettuce (*Lactuca sativa* L.) Sortiment Grown in Protected Culture

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Abstract. From the group of green vegetables, the lettuce is the most common and it can be used fresh or cooked. Although lettuce has a high nutritional value it also has a therapeutic value due to the content of amino acids and mucilage which help to keep normal digestion. Mineral salts (salts of: I, Mg, P, Fe, Cu, Zn) but also vitamins (A,B,C,D,E) give to the human organism strength to fight against infections and viruses. The experiment took place in 2011 in an unheated greenhouse, from USAMV Cluj-Napoca (Romania). It started at the end of March and it was harvested in May. 10 lettuce hybrids were used (Allegiance, Gentiliana, Lobi, Clarion, Crufia, Sprinter, Roderick, Limax, Lollo rossa-Zki, Lollo rosa-Mefim). The highest yield was obtained at Clarion hybrid, 52.83 t/ha, followed by Roderick hybrid, with 51.5 t/ha.

Keywords: culture, lettuce, plant growth, production protected, variety

Introduction. From the group of green vegetables, the lettuce is the most common and it can be used fresh or cooked. Although lettuce has a high nutritional value it also has a therapeutic value due to the content of amino acids and mucilages which help to keep normal digestion (Soare, 2008). Mineral salts (like I, Mg, P, Fe, Cu, Zn) but also vitamins (A, B, C, D, E) give to the human organism strength to fight against infections and viruses (Indrea *et al*., 1979; Indrea *et al*., 2007). Lettuce is grown in open filed, in early spring and late autumn and in protected environment for autumn and winter culture. It has a short period of vegetation that is why it is grown before or after the main cultures (Berar *et al*., 2012; Stan *et al*., 2003).

Variety grown in protected areas is different based on the culture period (Chaux and Foury, 1995). Cerne *et al*. (2000) have studied the effect of seedlings production upon plant growth, development and lettuce production saying that by producing seedlings, culture period is reduced by 15-25 days. Gruda and Schnitzler (2006), mention that, at lettuce, by increasing the size of alveolar pots, the production is not influenced. To prevent nitrates accumulation in lettuce leafs during winter cultures, is necessary to apply lower quantities of fertilizers, compared to summer cultures (Burns *et al*., 2004).

Aims and objectives. In the experiment, 10 varieties of lettuce were studied. The objectives followed were determination of plant growth and plant production, to establish which varieties do better in the conditions of Cluj-Napoca. Cluj county is situated in Nord-East Transylvania, between 23^o 39’ 47’’ and 47^o 28’ 44’’ north latitude and 23^o 39’ 22’’ and 24^o 13’ 46’’ east longitude. Cluj-Napoca city is in central-north-west part of Romania at an altitude of 345-360 m.

Materials and methods. During the experiment, organized in 2011, the following varieties were used: Allegiance, Gentiliana, Lobi, Clarion, Crufia, Sprinter, Roderick, Limax, Lollo rossa -Ski and Lollo rosa-Mefim. The culture was started by seedlings, that were sowed in 14.02.2011 and planting took place in 28.03.2011. Harvesting started in 08.05.2011. The protected area for the culture was not heated. During vegetation, the specified technology was applied and growth measurements were done, dynamics and production volume.

Results and Discussion. At planting, the seedlings had a uniform growth. Leaf numbers were between 6 (Lollo rossa) and 10 (Roderick, Limax). Medium plant height was between 7.8 and 9.0 cm, at crisp lettuces and 10.56-13.40 cm at variants with heads.

Before harvesting, the number of leafs were between 16.0 (Lollo rossa) and 31.0 (Sprinter). The medium height was between 16.6 cm at variant Roderick and 23 cm at variant Limax. The medium plant weight was between 260.3 g at Lobi and 485.6 g at Roderick. The varietie Limax, Sprinter, Crufia, Clarion, Allegiance had heads with weight with an average over 400 g.

During growth stages, crisps lettuces, realize in 10 days, a difference of 50-108 g and at the lettuces with heads 70-150 g. The varieties Crufia, Sprinter and Limax have accumulated in 10 days a weight between 130-150 g. In terms of weight accumulation was found that at 5 days the value of correlation coefficient was insignificant and after 10 days, the correlation coefficient indicated a tight connection between the two variables.

Yields was between 31.8 and 38.8 t/ha at crisp lettuce and between 42.6 and 52.8 t/ha, at head lettuce. The highest yields were at varieties Clarion-52.83 t/ha followed by Roderick- 51.50 t/ha.

The medium content in vitamin C, was between 3.23 mg/100 g at Lollo rossa and 7.06 mg/100 g at Crufia. Values of over 5 mg/100 g were registered at Allegiance, Sprinter, Roderick and Limax varieties.

Conclusion. The studied variants had the rosette diameter over 30 cm, which is very good, according to quality standards. Crisp lettuces had yields between 38-40 t/ha, and head lettuces 45-51 t/ha. The highest yields were obtained at Roderick, Crufia, Clarion and Limax (48-51 t/ha).

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