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SPECIFIC INVESTMENT FOR GROWING THE *Hedera helix* L. VARIETY USED TO IMPROVE DEGRADED LAND

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Abstract

The main objective of this study is to determine the input costs of growing ivy (Hedera helix L.), the biological material that will be used for degraded land improvement. 244 woody cuttings were planted in plastic pots with a depth of 10 cm and a diameter of 5 cm. Three substrates were used: peat, garden soil and a mixture of peat and garden soil at a ratio of 1: 1. For the peat substrate version, the rooting percentage of ivy cuttings (34.5%) was the largest registered. The costs for peat versions involved 12.59 lei per substrate. The total input costs totalled 40.59 lei for198 samplings; out of the total costs, the highest were for substrate pots. Under the conditions of this study, the input cost per cultivated ivy sample was 0.17 lei. The ivy samples recommended for degraded land improvement by vegetation covering installations are samples with soil garden + peat, due to substrate costs and rooting percentage. The lowest input costs were obtained for soil garden, but these options also registered the highest biological material losses.

Key words*: culture substrate, economic efficiency, ivy, soil erosion, slope.*

INTRODUCTION

English ivy (*Hedera helix* L.) ginseng family Araliaceae is native to most of Europe and western Asia (Marin, 2001; Ferris, 1968; Kaufman et al., 2007; Stănescu et al., 2014; Scott, 2010; Lust, 2014; Santier, 2014; Wichtl, 2004; Crivellaro et al., 2013) and is a very decorative vine that has two growth forms. In the juvenile stage, it is an evergreen, perennial vine growing as long as 100 ft. (30 m) or as tall as the structures or trees on which it climbs (Bossard et al., 2000; Woodward et al., 2011; Ditomaso et al., 2007).

Adventitious root is produced by climbing plants to cling to a support. Ivy produces short roots that cling to a wall or to tree bark, which enables the ivy to climb. The plant does not need a thick stem to support it (Bird, 2014; Knight, 2007).

It can also be used for erosion control and slope stabilization or to cover large areas, because of its propensity to root at leaf nodes, although its shallow root system renders it ineffective. It kills other ground-growing plants, leaving a bare soil surface that offers little resistance to water flow (Woodward et al., 2011; Mayer, 2010; Clarke et al., 2006; Sool, 2005; Stavretovic, 2007).

Leaves are simple, alternate, ovate or chordate, lobed or not, apices acute or obtuse, venation palmate, the upper surfaces glossy while the undersides are hairy or scaly (Knight, 2007). Maturing at about 10 years into erect plants or branches with unlobed leaves and terminal flowers clusters that yield blackish to purplish berries (Miller et al., 2010; Derickx et al., 2013; Woodward et al., 2011). Hundreds of cultivars vary in leaf size and color (Kaufman et al., 2007). English ivy is long-lived with reports of one plant over 400 years old.

MATERIALS AND METHODS

The cuttings 244 woody cuttings were planted in plastic pots with 10 cm depth and having a diameter of 5 cm. It was used three substrates: peat, garden soil and a mixture of peat and garden soil in ratio of 1: 1 (Figure 1).

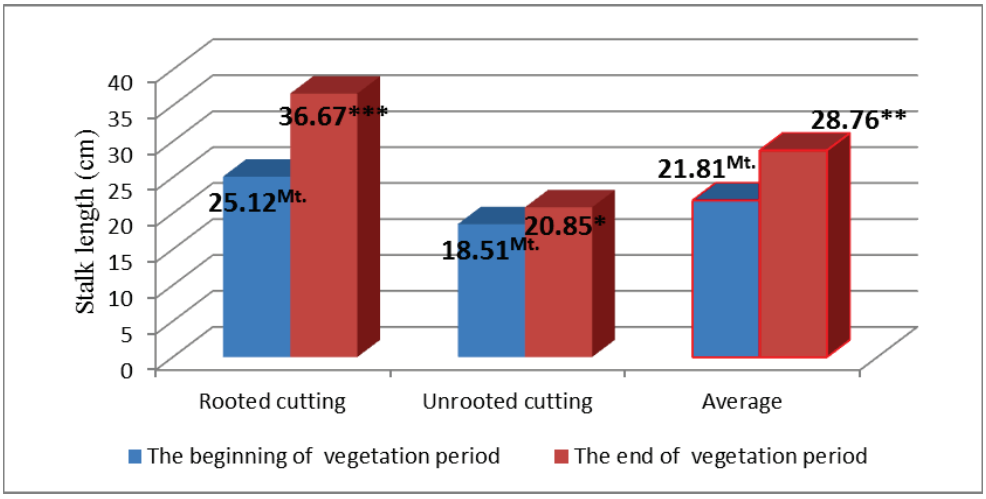
The plants were placed outside in an area. The plants were watered only on days when rainfall was not recorded.

The amount of water used in a 6 months period was 246 liters.

Figure 1. General aspects from experimental field

RESULTS AND DISCUSSIONS

In the Figure 2 are represented values by regarding rooted cutting and unrooted at the beginning the end of the period vegetation regarding to the growths of the length stalk of species *Hedera helix*. It is observed that at the beginning of the period vegetation to sample witness it's recording an average difference of 21.81%. For the end of the period vegetation it's recording an average of 28.76 and the significance from the point of view statistically it is distinguished significant.

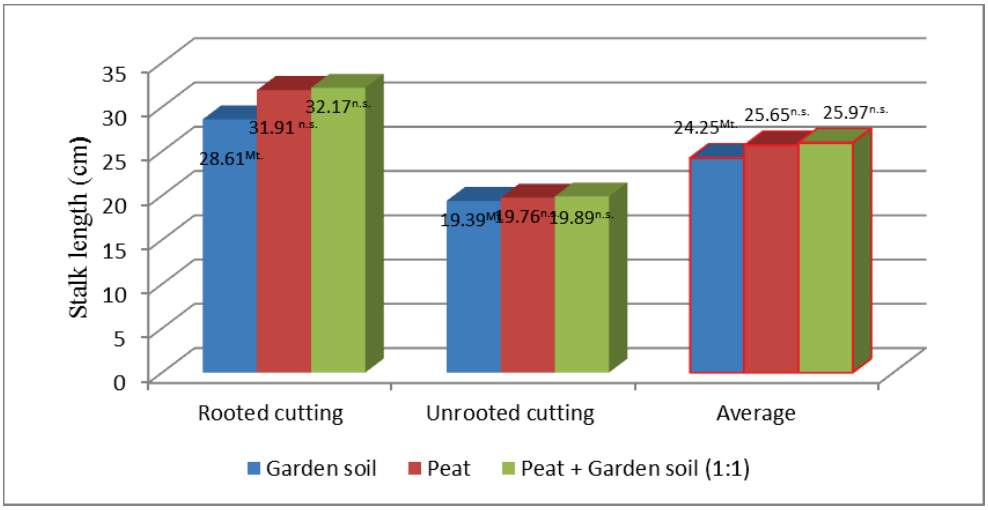


LSD (p 5%)	1.55
LSD (p 1%)	3.58
LSD (p 0.1%)	11.38

Figure 2. Stalk length to the specie *H. helix* regarding rooted cutting and unrooted at the beginning the end of the period vegetation

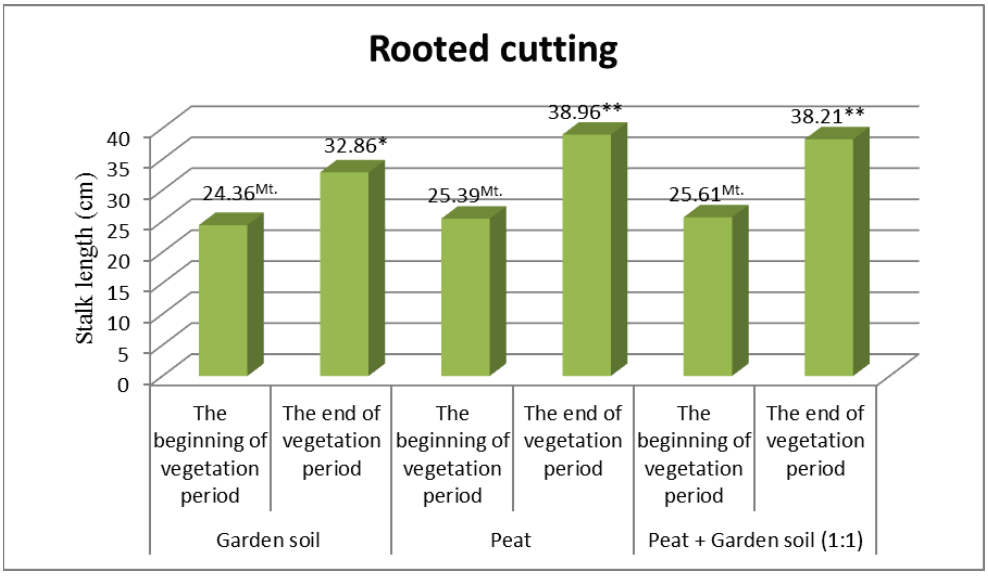
In the Figure 3 are are represented values by regarding rooted cutting and unrooted to the three substrates. It is observed the most rooted cutting it was recorded at substrates formed from peat + garden soil with 32.17% and the lowest percentage was recorded to the one formed by garden soil.

In the Figure 4 are represented values by regarding rooted cutting to stalk length of *Hedera helix*. It is observed the most increase a stalk was recorded at a substrates formed from peat with 38.96 cm and significance it is distinguished significant. To the substrate formed by garden soil increase stalk it was of 32.86 cm from the point of view statistical it is significant.



LSD (p 5%)	5.14
LSD (p 1%)	7.47
LSD (p 0.1%)	11.21

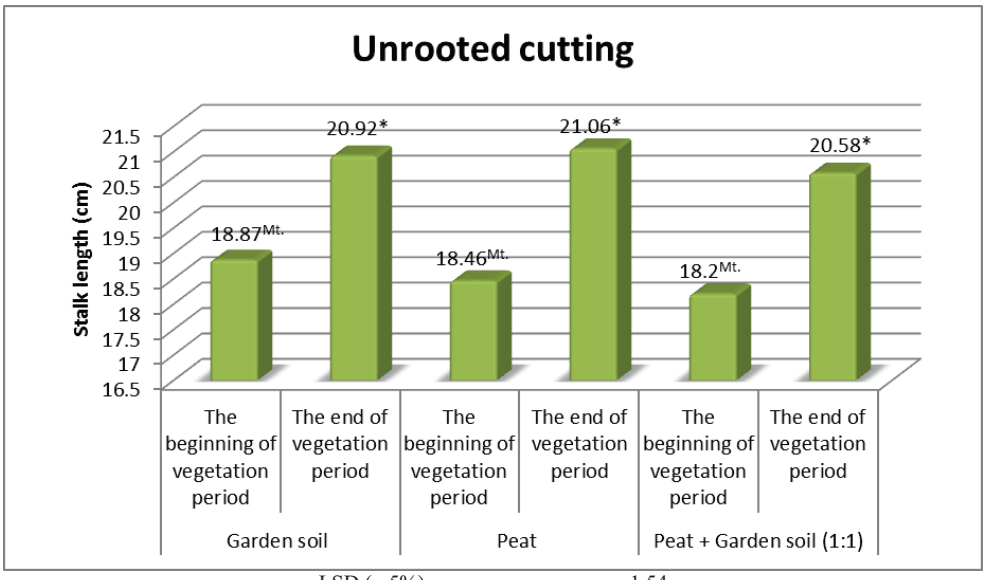
Figure 3. Stalk length to species *Hedera helix* regarding rooted cutting and unrooted to the three substrates



LSD (p 5%)	7.27
LSD (p 1%)	10.57
LSD (p 0.1%)	15.85

Figure 4. Stalk length to species *H. helix* regarding rooted cuttings to the tree substrates

In the Figure 5 are represented unrooted cutting to stalk length of *Hedera helix* at the beginning and the end of the period vegetation to the three substrates. It is observed the most regarding unrooted at substrates formed peat and soil garden. In the Figure 6 are represented average regarding rooted cutting and unrooted to the three substrates.



LSD (p 5%)	1.54
LSD (p 1%)	2.25
LSD (p 0.1%)	3.37

Figure 5. Stalk length to species *Hedera helix* regarding unrooted cuttings to the tree substrates

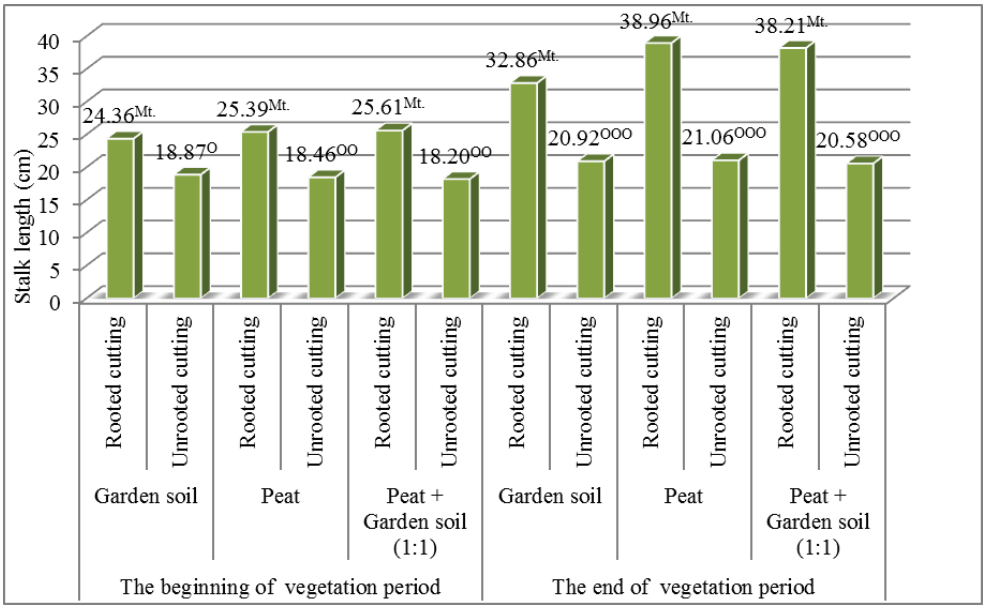


Figure 6. Stalk length of species *Hedera helix*

CONCLUSIONS

The total input costs cumulated 40.59 lei per 198 samplings, from total costs the highest costs were with substrate pots (in total 28 lei). In the conditions of this study resulted 0.17 lei input cost per cultivated ivy sample. The ivy samples recommended for degraded land

improvement through cover vegetation installation is the samples from variants with soil garden + peat (1: 1), due to substrate costs and rooting percentage. The lowest input costs were obtained for variants with soil garden (input cost for soil garden = water cost + substrate pot cost), but for this variants was recorded the highest biological material losses.

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