# PRODUCTION SEEDLINGS OF ROSES BY GRAFTING WITH BUD FOR HYBRID TEAS AND CLIMBING ROSES CULTIVARS

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***Abstract:*** *Rosa (Rosaceae) is one of the most economically important genus of ornamental, aromatic and medicinal plants with about 200 species and 20,000 cultivars widely distributed all over the world. Roses are cultivated for ornamental purposes, perfumery industries and medical properties. They are used as garden plants, cut flowers or indoor plants. Most garden roses are hybrids grafted on to a hardy rootstocks. Rootstock can influence the scion in terms of growth and development in various aspects most important are adaption in pH values, drainage condition of the soil, climatic factors, disease resistance, plant longevity, compatibility, productivity and flower quality. Generally in Kosovo roses propagation by grafting with buds, during a year produced about 80-100 thousand seedlings. The goal of this research was to study level of computability for some Hybrid Tea Roses and Climbing, a same rootstock of Rosa canina. 'Laxa', which has a wide use in our country. In this study are included seven cultivars shrubs and climbing roses such as: Princess de Monaco, Summer Sunshine, Red Lady, Mister Lincoln, Maria Callas, Ena Harkness and Iceberg. Propagation of grafting was conducted in August, in the form T-budding, on a same rootstock of Rosa canina 'Laxa'. The experiment was conducted during 2009-2010, tested in a commercial farm in Prishtina, Kosovo. During the vegetation are measured these parameters: number and diameter of roots, length of flower stems, diameter of structural shoots, number of flowers, etc. There was found a significant level of compatibility between rootstock with all tested varieties. This confirms the ability of using this rootstock in large scale commercial rose production in Kosovo climatic and soil condition. Significant mutual effect were also founded between the rootstock and the commercial varieties according to the length and diameter of the flowering shoots, flower diameter and the dray matter of both rootstock and scion part.*

***Key words***: *Rosa canina, rootstock, grafted, stems.*

## INTRODUCTION

Rose, a woody perennial, of various sizes, has a great diversity in its growth habit, flower form, color, fragrance and period of blooming. Roses are conventionally propagated by cutting, budding, grafting and layering. Cuttings and budding would be the simplest way to increase the desirable rose varieties. Plant propagation by grafting is one of the oldest horticultural practices and one that has intrigued the gardening and non-gardening public alike. Roses are usually propagated by budding, which is one of the many grafting techniques. Generally in Kosovo roses propagated by budding, during a year produced about 80-100 thousand seedlings. In Kosovo the most frequent rootstocks for roses are species *Rosa canina* 'Laxa'.

A rose rootstock can influence the scion in terms of growth and development in various aspects. Most important are adaptation to certain pH values and drainage conditions of the soil, climatic factors, disease resistance, plant longevity, compatibility, productivity and flower quality (EDWARDS, 1965). Production of roses depends on cultivar, rootstock and growing conditions. The use of rootstocks can be highly positive compared with their own roots, especially in the open (VECERA,1967).

Differences in flower quality as influenced by rootstock were reported by (PESSALA, 1977 ), while differences in colour due to rootstock were found by (DE VRIES 1993).Varies and Dubois observed that in grafted plants, vigor of the genotype used as a stock is transferred to the scion and this influences growth and productivity. The roses is polycarpic, self- inductive plant, which initiates flowers autonomously on every growing shoot after a certain length is obtained, without needing a specific photoperiod or temperature( ZIESLIN AND HALVEY, 1984). The rootstock of choice varies by region and climate. The most commonly used varieties of rootstock include *Dr*. Huey, R. multiflora, Manetti, Rosa canina inermis,etc. Wholesale rose growers select rootstock based upon various characteristics, including ease of use and rate of success for field grown roses. The most preferred rootstock for colder climates is R. multiflora and for warmer climates *Dr*. *Huey*. *Rosa canina* the species is hardly if ever used in commercial rose production, at least in Western Europe. *Rosa canina* 'Laxa' was introduced as a horticultural cultivar in 1890 by Otto Froebel of Zurich, Switzerland. The species is distributed over much of Europe and Asia Minor. The goal of this research was to study level of computability for some Hybrid Tea Roses and Climbing, a same rootstock of *Rosa canina* 'Laxa', which has a wide use in Kosovo climatic and soil condition.

## MATERIAL AND METHODS

The Hybrid Tea rose ('Princess de Monaco', 'Summer Sunshine', 'Red Lady',' Mister Lincoln', 'Maria Callas') and climbing roses ('Ena Harkness' and 'Iceberg'), were grafted in one rootstock. Propagation of grafting was conducted in August, with buds in the form T-budding, at high of 5 cm from soil level, on a same rootstock of *Rosa canina* 'Laxa'. The experiment was conducted during 2009-2010. The plants were planted in soil in raised beds on April, 2009 near Theranda city 60 Km east of Prishtina, Kosovo and are tested in a commercial farm.

During the vegetation are measured these parameters: plant height, number and diameter of roots, length of flower stems, diameter of branches, number branches, number of flowers, etc.

The grafted plants and the own rooted were planted in open fields in distance 60x15 cm, with respect to watering, fertilization and disease protection the plants were cultivated as usual in practical growing. Scheme of experiment was a randomized complete block design with four replications. All data was analyzed for variance using the statistical package Genstat, Systat or SPPS, further analysis using rang test with a critical level (P- value) of 5%.

Figure 1. Kosovo in relation with the rootstock other countries

Figure 2. Produced Seedlings from *Rosa canina*'Laxa'

## RESULTS AND DISCUSSION

### Length and diameter of flower stems (bush development)

Interaction between rootstock and hybrid rose cultivars and data concerning bush development was analyzed per period (season).

Different cultivars produced average length of flower stems on *Rosa canina* 'Laxa', among the cultivars Ena Harkness produced maximum length of flower stems (112.4 cm) followed by Iceberg (109.5 cm) and Mister Lincoln (74.5cm) height.

Diameter of stems influenced by Rootstock, was maximum by Princess de Monaco (9.4 mm), followed by Ena Harkness (9.3 mm) and Maria Callas (8.4 mm) diameter, (Figure 3). The present results, recently confirmed by KOOL and VAN DE POOL (1991) and DE VRIES (1993) show that effect rootstock influence formation structural shoots.

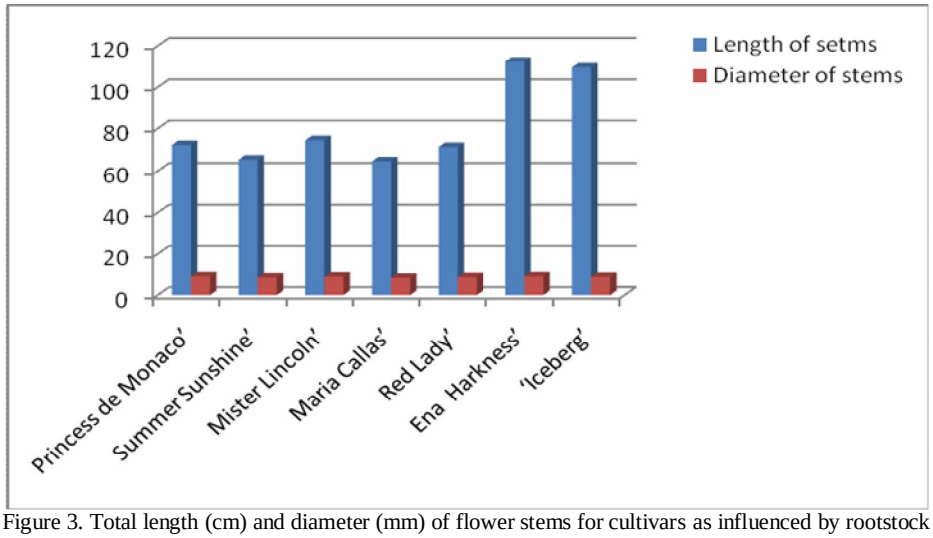


Figure 3. Total length (cm) and diameter (mm) of flower stems for cultivars as influenced by rootstock *Rosa canina* 'Laxa'

*Table 1.*

Analysis of variance for length and diameter of flower stems for cultivars as influenced by rootstock Rosa canina 'Laxa'

| Source of variation | Length of flower stems | | Diameter | |
|---|---|---|---|---|
| | Value F | Probability | value F | Probability |
| Year | 1098,46 | 0,000 | 2921,29 | 0,000 |
| Cultivars | 1615,88 | 0,000 | 375,71 | 0,000 |

### Number of branches and diameter of structural shoots 60 cm above ground level

The formation of vigorous shoots an the basal part of the plant, known bottom-break an renewal canes, structural shoots 60 cm above ground level and 5 mm diameter, play an important role in growing roses, production and quality of flowers.

It show that the number of branches as influenced by rootstock for cultivars, varied a maximum structural shoots (5.9) for Maria Callas, followed by Iceberg (5.7) and (4.8) for

Summer Shine number of branches per plant.

Number of flowers is different among the cultivars varied from maximum (12.5) in Iceberg cultivars, followed by Maria Callas (12.3) and Princess de Monaco (11.5) flowers per plant. The effect of the rootstock on the number and diameter of branches was confirmed recently (KOOL AND VAN DE POL, 1992), (Figure 4).

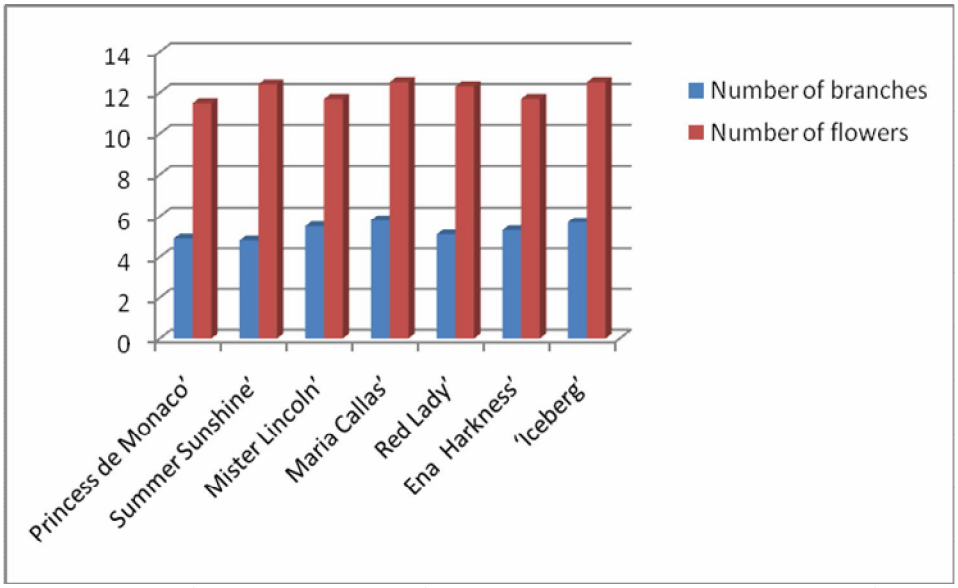


Figure 4. Number of branches and diameter of structural shoots 60 cm above ground level as influenced by rootstock *Rosa canina* 'Laxa'

**Length, number and diameter of roots**

Difference between cultivars for length of the roots varied from a maximum of (37.2 cm) Ena Harkness cultivar, followed by (36.6 cm) Princess de Monaco, and minimum was for cultivar Red lady by (32.2cm). Number of roots is different among the cultivars varied from maximum (6.4) for Mister Lincoln cultivars, followed by Ena Harkness (6.2) and the lowest by Red lady (5.4) roots per plant.

Diameter of roots was maximum from (6.7 mm) Red Lady cultivars, followed by Maria Callas (6.4 mm) and Iceberg (5.4 mm) diameter of roots (Figure 5).

*Table 2.*

Analysis of variances number and diameter of roots

| Source of variation | Number of roots | | Diameter of roots | |
|---|---|---|---|---|
| | Value F | Probability | Value F | Probability |
| Year | 1028,86 | 0,000 | 2943,09 | 0,000 |
| Cultivars | 1632,21 | 0,000 | 3453,22 | 0,000 |

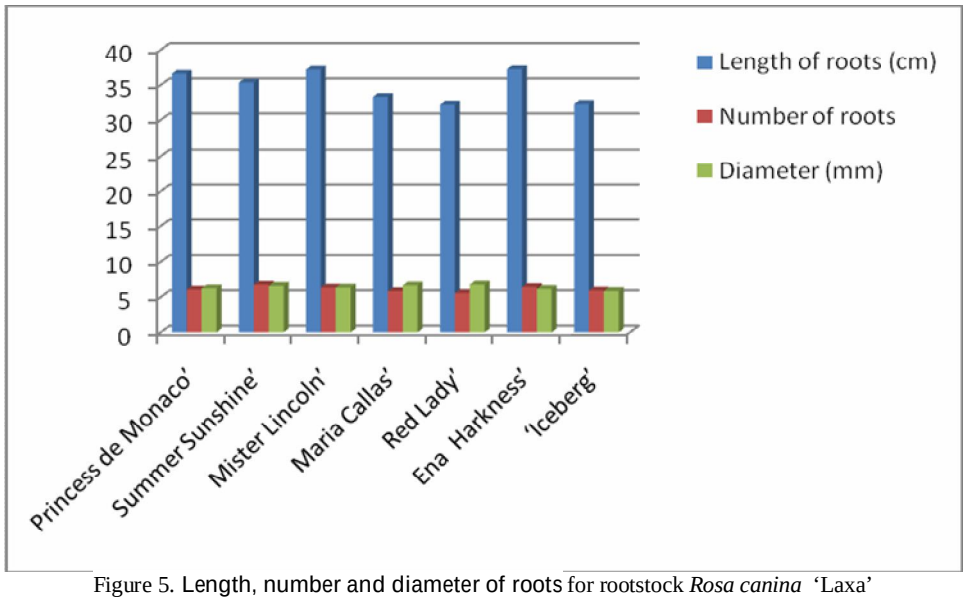


Figure 5. Length, number and diameter of roots for rootstock *Rosa canina* 'Laxa'

## CONCLUSIONS

There was found a significant level of compatibility between rootstock *Rosa canina* 'Laxa' with all tested cultivars. This confirms the ability of using this rootstock in large scale commercial rose production in Kosovo climatic and soil condition. Significant mutual effect were also founded between the rootstock and the commercial varieties according to the length and diameter of the flowering shoots, flower diameter and the dray matter of both rootstock and scion part. Rootstocks has a great effect in adaptation to certain pH values and drainage conditions of the soil, climatic factors, disease resistance, plant longevity, productivity and flower quality. Therefore, recommend this kind of rootstock for growth of roses to be used in the future. However, the spreading other kind of rootstock is important in our country.

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