# EFFECT OF GROWTH REGULATORS AND CUTTINGS PERIOD ON ROSE RHIZOGENESIS

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Due to its variety of colors and adaptability to the conditions of different geographical regions, the rose is superior to other ornamental plants. Its beauty and aroma have been admired since the ancient civilizations of China, West Asia and North Africa (more than 5000 years ago) [1]. Roses have been human companions in wars and peace. It has been used for centuries as a symbol of youth, love, romance and perfect beauty. It is a source of inspiration in poems and songs, artists depict it on canvases, so it can be noted that the rose plays an important role as a symbol of human existence.

Varietal roses are propagated by cuttings, budding, grafting and layering. However, the simplest and most common method of growing roses is to use stem cuttings [2]. Cuttings are the easiest way to propagate desirable rose varieties, but the success rate of this method is limited for many varieties due to insufficient root formation. Plant growth regulators can promote the rooting of many ornamental plants, including roses [3].

Today, more than 60% of roses grown are self-rooted. However, about 35 years ago, most roses were grown on rootstocks to produce plants with more aesthetically pleasing flowers and leaves, as well as a strong root system [4]. The trend towards an increase in the share of native roses will continue as breeders develop new varieties with improved characteristics and resistance to biotic and abiotic factors [5]. Roses grown on their own roots can be grown much faster, in about 12 months, without the inconvenience and additional labor costs associated with grafting, which is desirable for producers. Also, the main advantage of growing such roses is the exclusion of wild growth removal from the complex of agrotechnological measures. It should be noted that in the case of freezing to the soil level, root-owning rose plants are easily renewed even from a single bud preserved in the soil [4, 5].

Nowadays, grafting is more widely covered in the literature as a traditional method of rose propagation. At the same time, the problems of cuttings and cultivation of root roses are less studied at the present level [5, 6]. However, the method of green cuttings is quite well-known, but has not yet been widely implemented in Ukraine [5].

Scientists O. O. Tkachuk and N. V. Yavorska mention that the propagation of rootstock roses is still carried out using outdated methods and they need to be improved [5]. Therefore, it is important to improve traditional and introduce modern technologies for the production of self-rooted planting material.

The success of rooting of cuttings depends on the species and variety, the condition of the wood for grafting, the type of cuttings, the time of year, and many other factors

[4-9]. Synthetic chemicals that promote rooting have proven to be the most reliable way to stimulate the formation of additional roots in cuttings [10, 11].

The goal of the research was to improve the technology of rose propagation by stem cuttings using various rhizogenesis stimulants. The rooting was carried out in two periods of mass flowering of roses: the first and second decades of June and the first and second decades of September. The research was conducted on rose varieties: Amelia, Barkarole, Chippendale, Hans Gonewein Rose, Lexhcaep, Pomponella.

For efficient use of the greenhouse area and to intensify the cuttings, the cuttings were grown in cassettes with 104 compartments (cassette size 36×56 cm, cell size 35×35×50 mm). Leafy soil, sand, and agroperlite were used as substrates in equal proportions.

The cuttings were prepared according to conventional technology. Each experiment had six variants and a control. Cuttings without treatment were taken as control. In three variants of the experiment, the cuttings were treated with indoleic acid at a concentration of 25 mg per 1 liter, 50 mg/l and 100 mg/l. The prepared cuttings were kept in the respective solutions for 12 hours. In other variants of the experiment, the cuttings were kept for 12 hours in solutions of naphthylacetic acid with a concentration of 25 mg per 1 liter, 50 mg/l and 100 mg/l.

As a result of cuttings, the best rooting rates were observed in the summer (first to second decade of June). The highest rooting rate of rose cuttings compared to the control was observed when using NOC at a concentration of 25 mg/l - 97.5% in the Pomponella variety. Also, this variety had an average and the highest rooting rate of 93.2% compared to other varieties. And the worst rate was observed in the Barkarole variety - 75.4%. According to the average indicators of the action of growth regulators, the Barkarole variety had the worst rooting rate - 79.9%.

The patterns of action of growth regulators on certain genotypes are preserved regardless of the time of year. Thus, the best average effect of growth regulators was observed on the Pomponella variety and amounted to 78.4%, while the worst indicator was on the Barkarole variety - 60.3%.

Studies have shown that the use of growth regulators contributes to a significant increase by 2.76 - 4.84 units of the number of primary roots on rose cuttings compared to the control without treatment. The largest number of primary roots (12.0 pcs.) was recorded in cuttings treated with IMC, 50 mg/l, and the smallest number of roots (2.25 pcs.) - in control cuttings that were not treated with a growth regulator in the summer. However, these indicators in the autumn period were lower than in the control group when using a number of concentrations of growth regulators.

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