

“THE EFFECT OF SUBSTRATE TYPE ON VEGETATIVE GROWTH OF CUT FLOWER OF DAFFODIL”

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Introduction

Hydroponic culture systems have recently been of great interest and therefore on a growing trend due to their various advantages such as optimized function, production of homogenous and healthy product, reduction in human resources, etc. Specifications of different materials applied in substrate have direct and indirect impacts on the growth and production of a plant. Thus, a key factor in creating a soilless culture system is the choice of appropriate substrate. Peat moss is decomposing particles of organic materials produced in cold and humid climates. Coco peat is a composition created by continuous process of coconut shell, a spongy material which is physically speaking, similar to peat moss. Perlite is an aluminosilicate mineral of volcanic origin which can increase the substrate drainage and improve its ventilation. Amaryllis flower of Narcissus genus belongs to Amaryllidaceae family. It is a herbaceous plant and considered to be one of the most important cut flowers. Considering the importance of substrate and its effects on the environment as well as the expenses for flower producers, this project is aimed to study the effect of substrate type on vegetative growth of bulbous flower *N. pseudonarcissus*

Materials and Methods

Compressed blocks of coco peat were thoroughly soaked in water before being applied in order to swell. After 24 hours they were drained and used to fill three similar pots. Peat moss substrate was also made homogenous, and three similar pots were filled with it. Sand and Perlite were washed and mixed with leaf composts in equal proportions. Three pots were also filled with the last mixture. All pots were weighed before and after being filled. The pots were randomly labeled. Subsequently, the bulbs of *N. pseudonarcissus*, which were previously weighed and disinfected by fungicide benomyl for 10 seconds, were cultured in a way that the top part of the bulb would be placed out of the substrate. Then the pots were weighed and randomly placed in suitable environment, behind a north-facing window in an apartment in the city of Alavijeh in Esfahan. The plants were watered equally. This experiment was conducted with the selection of 9 pots in completely randomized design with 3 replications and 3 treatments. The irrigation was carried out once every three days. Simultaneously the lengths of leaves of each plant were measured at each irrigation and written down at 8 a.m. After 8 weeks, the bulbs were removed along with the leaves. The bulbs were weighed and the lengths of the leaves were measured. The data of the 8 weeks were collected, categorized and analyzed by MSTATC software. Averages were compared with one another using Duncan's multiple range test with probability level of 1%.

Results and Discussion

The aim of this project is to omit the soil and introduce a substitute substrate for production of Amaryllis flower in order to decrease illnesses and expenses as well as increasing the quality and quantity of production all over the country. In this experiment, coco peat substrate was applied since the results of Saberi (2006) demonstrated maximum function for tomatoes first in Perlite-Mica and second in coco peat substrate, and gained the maximum dry weight of aerial organs in coco peat and Perlite-Mica treatment. Comparing the averages of treatments demonstrated that coco peat and peat moss did not show any significant difference. On the other hand, Peat moss and soil showed significant difference. The former, i.e. Peat moss, was determined to be better than the soil mixture. And coco peat, also demonstrating a significant difference from the soil mixture, was likewise determined to be better than the soil mixture. Coco peat consists of equal proportions of Lignin and Cellulose and is rich in Potassium and Micronutrients, particularly Iron, Manganese, Zinc and Copper. In addition, the highest amount of

Nitrogen of the plant is observed in Coco peat substrate. Using Peat moss in the long run causes compaction. Reduction of Biomass in compositions containing Peat moss might be due to a reduction of substrate's aeration caused by the compaction of the Peat moss.

Traca-Marona, et al. (2005), similarly, came to the conclusion that maximum function for tomatoes can be found in Perlite-Coco peat and Coco peat substrates.

Taking the triangle of developing sustainable agriculture into consideration, the highest-yielding treatment with fewest expenses which causes the least damage to the environment must be applied. Coco peat is the best substrate for growing *N. pseudonarcissus* in comparison with the other two substrates, Peat moss and soil mixture thanks to its positive effect on the growth of plant's leaves, its fewer expenses and little harm to the environment.

Key words: *Narcissus pseudonarcissus*- Coco peat- peat moss- soilless culture- Cut Flower

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