Experimental Techniques Used in Research of Differential Fertilization and Nutritive Substrates Effect On the Flowering Degree of Geraniums

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Abstract. Scientific information about fertilization of geraniums, in Romania, are not updated, geraniums fertilization being made by adapting the fertilization rules of other ornamental plants. The purpose of this paper is to provide relevant information about the experimental techniques used to obtain effective results.

Keywords: Soil, area, conditions, materials, organization

Introduction. Because the varieties and species of Pelargonium zonale and Pelargonium peltatum are extremely popular plants in the gardening area, cultivated as annuals in temperate climates, we consider that the subject of this paper is of real interest, especially for Romania. The constant introduction of new cultivars requires the commercial grower to continually customize cultural practices based on changing requirements of changing genotypes. Some new cultivars have been bred to be more tolerant to varying cultural practices, while other cultivars have been shown to be more susceptible to nutrient deficiencies and toxicities. The most important environmental factors impacting commercial floriculture production are pH, nutrient availability and water quality.

Aims and objectives. Scientific information about fertilization of geraniums, in Romania, are not updated, geraniums fertilization being made by adapting the fertilization rules of other ornamental plants. The purpose of this paper is to provide relevant information about the experimental techniques used to obtain effective results.

Material and Method. This paper is mainly based on a thorough literature review which aimed to establish final experimental techniques to provide conclusive results in the research of the effect of differentiated fertilization and nutrient substrates on the flowering degree of geraniums.

Geraniums and other greenhouse grown ornamentals are most commonly grown in containers that can only hold a small amount of medium, therefore the supply of nutrients and water is limited in comparison to plants grown in the field (Ku, 1994). The availability and concentration of certain nutrient species (NO$_3^-$, NH$_4^+$, and sparingly soluble P) can affect which ions are excreted by a plants roots (Marschner, 1996). The availability of nutrients in media is a major concern when developing a growing media for a commercial crop. The common components of “soiless” root media include peat, bark, and vermiculite, which affect nutrient availability and perlite, polystyrene and rock wool, which ensure good drainage by increasing aeration and water-holding capacity, but do not have a nutrient holding capacity (Biernbaum, 1992; Argo and Biernbaum 1996; Nelson; 1991). Peat, bark and vermiculite have high cation holding capacities and can readily exchange available nutrients between the uptake site on the roots and the soil solution (Marschner, 1996).

Results and Discussions. Partially because of the wide variability that exists when growers custom blend their own media, there has been no research investigating the differences between the physical and nutrient exchanging characteristics of a standard
geranium media and a custom blend media. Variable conditions at each greenhouse facility ranging from different soil types to different lime sources complicate development of standardized “custom field soil” blends of media.

However, research is needed to address the differences in buffering capacity, cation exchange and nutrient solubility that exist between the two media types.

Studiu bibliographic și obiectivele cercetărilor au condus la stabilirea tehnicilor experimentale. Astfel, The experiments were based on the following types of equipment and devices: materials used in the construction of greenhouses, planting material, vegetal material, materials used for rooting (rooting substrates), fertilizers, equipment used in fertilization, equipment used in irrigation. The research was conducted as a polyfactorial experiment with the following experimental factors: Factor 1 - varieties of Pelargonium zonale and Pelargonium peltatum species; Factor 2 - rooting substrate used, Factor 3 - type of fertilizer used). From the combination of the three experimental factors were obtained 32 experimental variants. Therefore were followed the factors of the experiment and the interaction between them as well as their influence on the varieties of Pelargonium zonale and Pelargonium peltatum included in the survey.

Establishing the materials used in experiments, organization of the experiments and the objectives related to them, have allowed the research in optimal conditions, enabling the data collection.

**Conclusion.** The use of appropriate materials and proper organization of experiments allowed us to obtain objective data useful in the formulation of conclusions and recommendations concerning investigated issues.

In order for the floriculture industry to thrive it must be proactive and develop the best methods of growing plants, manufacturing superior fertilizers and distributing quality products by making frequent adjustments to meet consumer demand.

**REFERENCES**