

Research
Paper

Effect of plant growth regulators and their application methods on growth and yield of onion (*Allium cepa* L.) cv. GUJARAT WHITE ONION-1

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ABSTRACT

An experiment was carried out during *Rabi* season for the years 2007-08 and 2008-09 in sandy loam soils at Horticultural Research Farm, Department of Horticulture, B. A. College of Agriculture, Anand Agricultural University, Anand in Randomized Block Design (Factorial) with three replications. The plant growth regulators like GA₃ and NAA each @ 50, 100 and 150 mg/l were tried as root dipping, foliar spray as well as their combinations and compared with control. The application of GA₃ @ 50 mg/l significantly increased plant height and improved leaf length and number of leaves per plant, on pooled basis as compared to control. While, GA₃ @ 100 mg/l significantly increased weight and volume of bulb as well as equatorial and polar diameter of bulb and finally bulb yield on pooled basis. In case of methods of application, non-significant difference was noticed for yield and yield attributes. Based on monetary return and B.C.R., application of GA₃ @ 50 mg/l as root dipping + foliar spray and NAA @ 100 mg/l as foliar spray gave higher B.C.R. of 1: 3.50 and 1: 3.48 with net realization of Rs.1,73,328 and Rs.1,62,466 per hectare, respectively and more remunerative than the rest of the treatments.

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Key words : Onion, Plant growth regulator, Application method

INTRODUCTION

Onion (*Allium cepa* L.) is one of the important underground bulbous vegetable crops of Alliaceae family. It is successfully grown in tropical, subtropical and temperate parts of the world. Onion is rich in carbohydrates and mineral like phosphorus and calcium (Aykroyd, 1963). The growth and yield of crops plants are mainly influenced by genetically and cultural factors. The first factor deals with the various plant breeding techniques used for the improvement of crop varieties. The second factor deals with supply of adequate nutrition, growth substances and plant protection etc. Plant growth regulators are known to regulate and modify various physiological processes within the plant and thereby they help to increase the yield (Weaver, 1972). The growth regulators are applied as seed treatment, root dipping and foliar application etc. to improve yield and quality of produce. In India very little work has been done in onion crop and, therefore, an attempt has been made to study the effect of plant growth regulators and their methods of application on growth and yield of

onion.

MATERIALS AND METHODS

The field experiment was carried out during *Rabi* seasons of the years 2007-08 and 2008-09 in sandy loam soils at Horticultural Research Farm, Department of Horticulture, B.A. College of Agriculture, Anand Agricultural University, Anand in Randomized Block Design (Factorial) with three replications. Two plant growth regulators *viz.*, GA₃ and NAA each @ 50, 100 and 150 mg/l were tried with three methods of application *i.e.* root dipping, foliar spray as well as their combination and compared with control. For root dipping treatments, seedlings were dipped for 8 hours before transplanting while, the foliar spraying treatments were given at 45 days after transplanting. The observations on growth parameters were recorded at 90 days after planting, while yield was recorded at harvest. The economics of the treatments were also worked out on the basis of total cultivation cost and gross realization.