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Research Paper

Rice growth response in *Boro* and *Kharif* season under influence of number of seedling and hormone

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ABSTRACT

Field experiments were conducted in Replicated Split Plot Design at District Seed Farm "D" Block, Bidhan Chandra Krishi Viswavidyalya, Nadia, West Bengal, India during *Boro* and *Kharif* seasons of 2008-09, to assess the two plant growth regulators *viz*., GA_3 and phytonol, on growth and seed yield of rice crop cv. Shatabi (IET-4786) at panicle emergence stage. Besides untreated control, GA_3 was used at 10 ppm and 20 ppm, while for phytonol, it was used at 1ml and 2ml/3 l. of water. Significantly highest number of effective tillers/hill. (9.200), 100 seed weight (1.756g), yield/panicle (2.104g), and yield/ha (42.828 q) were recorded due to the treatment phytonol @ 2ml/3l. of water, as compared to control, while in a comparison between seasons, the maximum plant height was obtained during *Kharif* (97.43cm) as compared to boro(80.55cm), whether, reverse scenario was recorded in seed yield and other attributing characters. Single seedling transplanted plant produced maximum plant height and seed weight per panicle during *Kharif*, while the more number of tillers was obtained when plant was transplanted with triple seedlings.

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Key words : Phytonol, GA_3, Plant height, Seed index, 100-seed weight, Seed yield

INTRODUCTION

Rice (*Oryza sativa* L.) is an important cereal crop in developing countries, grown all over the world and it is the staple food of over half of the world's population, ranking second to wheat in terms of area cultivated as well as production. Out of total production of world, 91% yield is produced and consumed in Asia region, 5.8 % in America, 2.8 % in Africa and only 0.4 % in Europe. According to De Candolle (1886), India is the original home of rice due to availability of a large number of its wild forms.

Plant hormones and growth regulators are the chemicals that affect flowering, ageing, root growth, distortion and killing of leaves stems and other parts, prevent or promote stem elongation, prevent leafing and/or leaf fall and other conditions. Very small concentrations of these chemicals are capable enough to create major growth changes, as referred. GA_3 and phytonol (Tricontanol) are such chemicals differing in its site and mode of action. Its only commercial use is as a plant growth regulator, and it has been widely patented for this use. It is a totally nontoxic, plant growth bio-regulator without any residual effect, produces stronger seedlings with better root system and finally develops into vigorous plants leading to better yield. It has been reported to stimulate stem elongation (Deotale *et al*., 1998) and increase dry weight (Hore, 1982) as well as yield (Deotale *et al*., 1998). GA_3 has been reported to increase number of pods in chick pea (Mange, 1997) and spikelet in rice. It is clear that GAs are implicated in several aspects of floral initiation in certain thermo periodic and photoperiodic plants (Evans, 1990). In spite of the fact that plant growth regulators modify the physiological process, it influences growth and may increase the yield of crops.

These are used by the farmers on very limited scale. The main limitation is that these chemicals/growth regulators are effective only at specific concentration. Similarly the appropriate stage of application of these growth regulators is also very important to exploit its beneficial effects (Nagoshi and Kowashima, 1996; Ravi