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Research Paper

Effect of plant growth regulator on yield and quality of irrigated cotton

S.S. PAGAR, B.S. GUNJAL AND S.S. CHITODKAR

See end of the article for authors' affiliations

Correspondence to :

B.S. GUNJAL
Department of Agronomy, College of Agriculture, DHULE (M.S.) INDIA

ABSTRACT

A field experiment was conducted during the *Kharif* season of 2003 to study the Effect of Plant Growth Regulator on Yield and Quality of Irrigated Cotton cv.NHH-44 under irrigated condition on medium black soil of M.P.K.V. Rahuri (Maharashtra).The sprays were applied at tiny square formation stage, first on bloom stage and followed by boll setting stage. Atonik seed treatment, Atonik foliar sprays @ 0.1%, 0.25% and 0.5% and NAA @ 20 ppm and 40 ppm significantly increased seed cotton yield over control. Yield increase due to foliar spray of NAA was(20 ppm) was 21.55% higher over control and 4.98% over FS of Atonik (0.25%) and NAA (20 ppm) significantly increased the staple length 0.82%, fineness 4.57% over the control. Atonik and NAA treatments also significantly increased the lint index, bundle strength and ginning (%) as compared to control, while seed- index was highest with control (6.88g.)

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Key words : Cotton, Atonik, NAA, Foliar spray

INTRODUCTION

Cotton is one of the most ancient and important commercial crop next to food grain. India ranks third in production of cotton lint but the productivity of lint cotton is the only 294 kg ha^{-1} (Anonymous, 2000).Among the various constraints of low productivity erratic behavior of rainfall, lack of improved technology, lack of organic manuring , unavailability of timely irrigation, lack of use of plant protection measures etc . The demand for clothing is also increasing and to fulfill this demand special attention needs to be given to increase the productivity of cotton crop which could be achieved only by using best quality seed, timely and sufficient quantity of irrigation Water, balance nutrient management, weed control followed by plant protection measures. Besides these techniques, use of plant growth regulators also needs to be adopted.

Plant growth regulators are organic compounds other than nutrients, which increases yield and improves quality through stimulation of plant metabolism resulting in better mineral uptake, assimilates flow and quicker synthesis of enzymes, membrane stress protectors, and other indispensable substances. It induces better root system and an improvement of cell membrane integrity and nutritional status renders plants less susceptible to the environmental pressure, reducing application of pesticide (Akram *et al.,* 2003).The application of plant growth regulators in cotton are in vogue. But the plant growth regulators *viz.,* Atonik and NAA were not tested in cotton crop to assign their effect on yield. Hence, these regulators were tested in cotton crop.

MATERIALS AND METHODS

An investigation was carried out during *Kharif* season of 2003 at Cropping Systems Research Project, Mahatma Phule krishi Vidyapeeth, Rahuri on medium black soil .The soil was slightly alkaline in reaction, low in available nitrogen (140.15kg ha^{-1}),medium in phosphorus (15.10 kg ha^{-1})and high in available potash (415.90 kg ha^{-1})

Eight treatment comparring of plant growth regulators, water spray along with control *i.e.* T_1- Seed treatment of Atonik 0.3% @ 3 ppm, T_2- Foliar Spray of Atonik 0.3 % @ 0.1%, T_3 - Foliar Spray of Atonik 0.3 %