

Effect of humic acid on rainfed upland cotton (*Gossypium hirsutum*)

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Input cost is increasing day-by-day and it necessitates to develop low-cost technologies for higher returns, especially in rainfed situation. Chandrasekaran (1989) reported that soil application of humic acid as potassium humate might influence the crop growth indirectly through formation of complexes with ammonium rendering the nitrogen slowly available and also through the formation of complexes with iron and zinc rendering them absorbable by the plant roots. Seed soaking in 1.5% humic acid and foliar spraying of humic acid improve the crop growth and yield in summer-irrigated cotton (*Gossypium* sp.) (AICCIP, Coimbatore, 1994). There is limited information regarding the use of humic acid for rainfed cotton. Hence the present study was undertaken to find out the effect of humic acid treatment on seed-cotton yield of upland cotton (*G. hirsutum* L.) under rainfed situation.

A field experiment was conducted during the winter season (*rabi*) of 1991–92 at Kovilpatti, with 12 treatments in randomized block design replicated thrice. The treatments compared were the control (T_1), application of farmyard manure @ 12.5 tonnes/ha (T_2), seed soaking in water for 12 hr (T_3), seed soaking in 0.5% humic acid for 12 hr (T_4), seed soaking in 1% humic acid for 12 hr (T_5), seed soaking in 1.5% humic acid for 12 hr (T_6), foliar spray

of water at squaring and flowering stages (T_7), foliar spray of 0.25% humic acid at squaring and flowering stages (T_8), foliar spray of 0.5% humic acid at squaring and flowering stages (T_9), foliar spray of 1% humic acid at squaring and flowering stages (T_{10}), seed soaking in 0.5% humic acid and foliar spray of 0.5% humic acid at squaring

Table 1. Effect of humic acid on growth and yield of rainfed upland cotton

Treatment	Plant height (cm)	Sympodia/plant	Bolls/plant	Seed-cotton yield (q/ha)
T_1	57.0	8.8	4.1	8.19
T_2	64.5	10.7	4.5	8.95
T_3	62.3	10.6	4.8	9.59
T_4	63.5	10.3	4.9	10.94
T_5	68.3	11.3	5.1	10.97
T_6	62.8	9.9	4.7	9.01
T_7	63.5	10.4	5.0	10.16
T_8	65.3	10.4	5.0	10.16
T_9	64.3	10.3	4.7	8.96
T_{10}	59.3	10.3	4.2	9.32
T_{11}	60.0	9.7	4.4	8.83
T_{12}	60.6	9.3	4.7	9.18
CD (P = 0.05)	3.1	1.6	0.1	1.35

Details of treatment are described in text

and flowering stages (T_{11}) and seed soaking in water and foliar spray of water at squaring and flowering stages (T_{12}). The experimental site was clay loam, having pH 7.5 with low available N (89 kg/ha), medium P_2O_5 (10.7 kg/ha) and medium K_2O (246 kg/ha). 'MCU 10' upland cotton was used at test variety, adopting all cultivation practices as per recommendation. Foliar spray of humic acid and water was given @ 800 liters/ha.

Humic acid treatment and water treatment significantly improved the growth characters like plant height and sympodial branches and yield components (Table 1). Seed soaking in 1% humic acid solution recorded significantly higher plant height (68.3), sympodial branches (11.3/plant) and bolls/plant (5.1). All the treatments increased the seed-cotton yield compared with the untreated control. Seed soaking in 1%

humic acid solution recorded significantly higher seed-cotton yield (10.97 q/ha) over the untreated control, which was closely followed by foliar spray of 0.25% humic acid at squaring and flowering stages. The yield increase might be due to higher values of sympodial branches and bolls/plant in the treated plots.

Hence it can be concluded that use of humic acid will be a low monetary input for increasing the cotton yield in rainfed situation.

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Effect of chemical defoliants on earliness, seed-cotton yield and quality of upland cotton (*Gossypium hirsutum*) under irrigated condition

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The farmers of Ghataprabha Left Bank Canal area of Karnataka state take up 2 crops a year. The cotton (*Gossypium* sp.) crop during rainy season is normally

followed by wheat during winter. As cotton crop occupies a part of winter season, the wheat yield is reduced owing to delayed sowings. Therefore to facilitate early

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