

Research
Paper

Effect of bio-regulators on the quality of greengram

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ABSTRACT

An experiment was conducted at Millet Breeding Station, TNAU, Coimbatore during *Kharif* (July, 2006 - October, 2006) in CO 6 green gram with nine different treatments. The foliar spray of 0.1% humic acid with 0.1 ppm brassinosteroid treatment increased the seed quality parameter of grain protein content.

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Key words : Bio regulators, Greengram and seed protein

INTRODUCTION

Pulses play an equally important role in rainfed and irrigated agriculture by improving physical, chemical and biological properties of soil and considered as excellent crops for natural resource management, environmental security, crop diversification and consequently for viable agriculture. Foliar spray of NAA increased the seed protein content in black gram (Lakshamma and Subba Rao, 1996) and in soybean (Maccomick and Poll, 1979). However, according to Subbiah Reddy and Shah (1987), application of 50 ppm NAA did not influence the seed protein content significantly. Ravikumar and Kulkarni (1988) also reported that NAA had no effect on protein content in seeds. There was not much difference in the distribution of protein in seeds due to TIBA application. Kinetin treatment maintained a higher rate of protein synthesis and thereby, increased the protein content of wheat grain (Sekhon and Singh, 1994). Increase in grain protein content in pearl millet was reported with the application of SA (Rangacharya and Bawankar, 1991).

MATERIALS AND METHODS

A field experiment was conducted at Millet Breeding Station, TNAU, Coimbatore during *Kharif* (July, 2006 - October, 2006) in greengram (CO 6) with nine different

treatments in randomized block design with nine treatments and replicated thrice. Duration of the crop was 75 days. Sowing was done on 20.07.2006 with a spacing of 30 x 10 cm between rows and between plants. The soil was low in available nitrogen and phosphorus content and high in potassium content. The cultural management and plant protection measures were undertaken as and when needed. The treatment details were given below.

Treatments:

- T₁ - Control
- T₂ - HA 0.1 % alone
- T₃ - HA 0.1 % + 10 ppm benzyl adenine (BA)
- T₄ - HA 0.1 % + 100 ppm salicylic acid (SA)
- T₅ - HA 0.1 % + 0.1 ppm brassinosteroid (BR)
- T₆ - HA 0.1 % + micronutrient mixture
- T₇ - HA 0.1 % + micronutrient mixture + 10 ppm benzyl adenine (BA)
- T₈ - HA 0.1 % + micronutrient mixture + 100 ppm SA
- T₉ - HA 0.1 % + micronutrient mixture + 0.1 ppm BR

Sprays of 2 % DAP and 40 ppm NAA are common for all the above treatments. Time of sprays: First spray at peak vegetative phase and second spray at 10 days thereafter).

The protein content of the seed was estimated by the method given by Ali-Khan and Young (1973). The powdered seed material of 100 mg was taken in a 50 ml beaker with 25 ml of 1 N NaOH. The mixture was shaken for three minutes on wrist action shaker to disperse the protein. Then, 10 ml of the suspension was poured into a graduated test tube and used as a blank to compensate for the difference in the amount of total pigments extracted.

To the remaining suspension, 0.25 ml of 10 per cent $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ was added and the beaker was taken for an additional duration of five minutes to develop the colour complex. Then, it was poured into a separate test tube and along with its blank and left overnight to allow the dispersed material to settle down. The optical density of the clear supernatant solution was determined at 600 nm using Spectronic-20 Colorimeter against the blank.

The important seed protein characters contributing to the quality of greengram were recorded analyzed statistically.

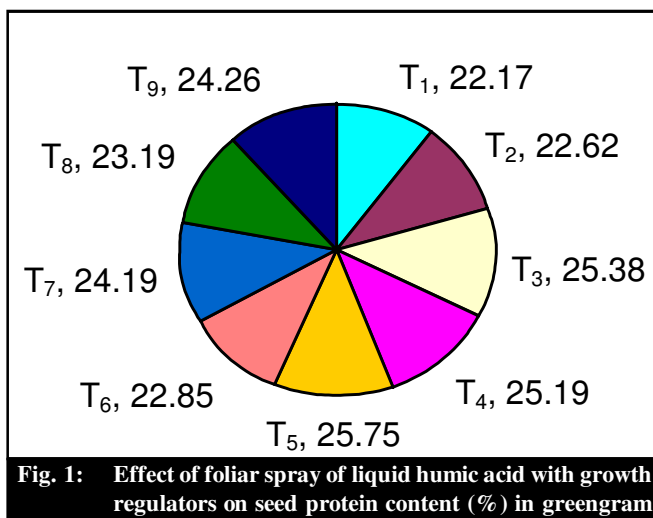
RESULTS AND DISCUSSION

Significant differences were observed in improving the grain protein content by the treatments. Treatment with 0.1 % HA + 0.1 ppm BR spray (T_5) was found to be superior with higher grain protein content of 25.75 % over the control (22.17). This was closely followed by the comparable value (25.38) with T_3 treatment (Table 1 and Fig. 1). Significant differences were observed for the seed

Table 1 : Effect of foliar spray of liquid humic acid with growth regulators on seed protein content (%) in greengram

Treatments	Seed protein content (%)
T_1	22.17
T_2	22.62
T_3	25.38
T_4	25.19
T_5	25.75
T_6	22.85
T_7	24.19
T_8	23.19
T_9	24.26
Mean	23.96
S.E.±	1.52
C.D. (P=0.05)	3.21

protein content by the different treatments. However, higher seed protein content was recorded by the BR treatment. Lakshmamma and Subba Rao (1996) reported an increased seed protein with NAA application in black



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