

# Herbal and seaweed extracts on seed yield improvement in blackgram (*Vigna mungo* (L.) Hepper

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## SUMMARY

Foliar spraying of Sargassum seaweed extract @ 0.75% alone or in combination with DAP @ 2% or Lantana @ 10% with DAP @ 2% showed enhanced yield and yield attributing traits in blackgram.

**Key words :** Blackgram, Seed yield, Herbal extract, Seaweed extract, Spraying

Pulses are the world's major source of plant protein. The productivity of blackgram is declined due to inadequate plant stand, heavy flower drop and immature pod abscission leading to poor seed setting besides unfavorable environment, water and nutrient deficiencies at critical periods. Therefore, the solution to increase the productivity is to develop a method by which the seed vigour and viability could be maintained.

Biological inputs through seed and foliar nutrition are ideal for improving crop yield and environmentally safe. It is also gaining more attention in recent past years because of its biosafety nature. Hence, it is important to find out the organic sources for seed and foliar treatments, for effective maintenance of vigour and viability. Use of plant leaf extracts and other biological products for seed storage and germination improvement is well documented in many crops (Mohanasarida and Mathew, 2005; Ramamoorthy *et al.*, 2006; Sujatha, 2006). However, use of biological inputs along with inorganic component *viz.*, di-ammonium phosphate (DAP) on yield improvement in blackgram is limited. Since the DAP spray is essential for pulses and it can be tested along with biological materials for further yield improvement.

## MATERIALS AND METHODS

A study was conducted to assess the effect of DAP along with herbal leaf and seaweed extracts on seed yield in blackgram at Seed Science and Technology Unit during 2007-08 using randomized block design. The following foliar treatments using herbal or seaweed extracts in

combination with DAP were imposed on 30 and 45 days after sowing. The treatments were T<sub>1</sub> - Control (No spray), T<sub>2</sub> - DAP @ 2%, T<sub>3</sub> - Sweet basil leaf extract @ 10 %, T<sub>4</sub> - Lantana leaf extract @ 10%, T<sub>5</sub> - Sargassum extract @ 0.75%, T<sub>6</sub> - DAP @ 2% + Sweet basil @ 10%, T<sub>7</sub> - DAP @ 2% + Lantana @ 10%, T<sub>8</sub> - DAP @ 2% + Sargassum @ 10%, and T<sub>9</sub> - DAP @ 2% + Sweet basil @ 10% + Lantana @ 10% + Sargassum @ 0.75%. The data collected were subjected to statistical analysis (Panse and Sukhatme, 1967).

## RESULTS AND DISCUSSION

Sweet basil, Lantana leaf extracts and Sargassum seaweed extract along with DAP @ 2% spray showed significant effect in the yield improvement. Among the foliar treatments Sargassum seaweed extract @ 0.75% alone or in combination with DAP @ 2% has recorded higher number of pods plant<sup>-1</sup> (46.1, 47.7), pod yield plant<sup>-1</sup> (16.47 g, 16.49 g), seed yield plant<sup>-1</sup> (8.31 g, 7.96 g) and shelling percentage (58.6 %, 55.0 %). Also DAP @ 2% with Lantana @ 10% has showed the similar trend in enhancing the yield attributes *viz.*, number of pods plant<sup>-1</sup> (48.3), pod yield plant<sup>-1</sup> (15.38 g), seed yield plant<sup>-1</sup> (8.08 g) and shelling percentage (52.8 %) (Table 1).

Seaweed extracts contain growth promoting substances like auxins, gibberellins, trace elements, vitamins, amino acids and micronutrients (Williams *et al.*, 1981; Crouch and Staden, 1993; Ergon *et al.*, 2002) and when given through foliar spray, they supplement the limiting nutrients, as well as plant growth hormones leading to higher biomass and yield (Abetz, 1980). Use of herbal leaf extract on yield and quality enhancement was reported earlier by Sujatha (2006). This might be the reasons for the higher yield attributing characters in the present study. Also the positive influence observed with Lantana leaf extract as foliar spray may be due to the presence of the hormones, minerals and micro nutrients and its effects.

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**Table 1 : Effect of herbal and seaweed extract spray on yield traits in blackgram**

Spray treatments	No. of pods / plant	Pod length (cm)	No. of seeds / pod	Pod yield / plant (g)	Seed yield / plant (g)	Shelling %	Wt. of seed retained on 8/64" sieve (g)	Seed recovery %
T <sub>1</sub> - Control (No spray)	28.1	4.31	6.07	9.36	4.53	48.6	197.7	98.9
T <sub>2</sub> - DAP @ 2%	34.4	4.59	6.13	12.86	7.15	56.0	198.5	99.2
T <sub>3</sub> - Sweet basil leaf extract @ 10 %	30.8	4.38	6.00	12.93	6.16	48.8	197.5	98.9
T <sub>4</sub> - Lantana leaf extract @ 10%	31.5	4.48	6.13	12.40	5.48	49.6	196.2	98.1
T <sub>5</sub> - <i>Sargassum</i> extract @ 0.75%	46.1	4.50	6.00	16.47	8.31	58.6	198.9	99.4
T <sub>6</sub> - DAP @ 2% + Sweet basil @ 10%	32.0	4.49	6.00	12.71	5.86	49.9	197.6	98.8
T <sub>7</sub> - DAP @ 2% + Lantana @ 10%	48.3	4.48	5.93	15.38	8.08	52.8	198.7	99.4
T <sub>8</sub> - DAP @ 2% + <i>Sargassum</i> @ 10%	47.7	4.59	6.13	16.49	7.96	55.0	198.5	99.3
T <sub>9</sub> - DAP @ 2% + Sweet basil @ 10% + Lantana @ 10% + <i>Sargassum</i> @ 0.75%	35.5	4.53	5.87	11.13	5.42	49.9	198.8	99.5
S.E.±	3.13	0.15	0.43	1.39	0.66	3.32	0.83	0.42
C.D. (P=0.05)	6.63	NS	NS	2.96	1.41	7.05	NS	NS

NS-Non significant

However the actual contents in the extracts and its mechanism for the beneficial effect needs further study. Therefore, the result confirmed the possibility for the use

of the seaweed / herbal extracts for the improvement of yield in blackgram.

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