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Assessment of TNAU vigour plus in pulses under rainfed condition in Theni district

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Abstract
The on farm testing (OFT) experiment was conducted at five farmer's field of Okkarapatti village of Andipatty block respectively during kharif season 2023-24. The experiment trail was conducted to assess the performance of TNAU Vigour plus in pulses under rainfed condition in Theni district. The following three treatments were used in three replications of the experiment, which was set up using a Randomized Block Design (RBD); T_1 - Farmers practice (Non application of growth promotors), T_2 - TNAU Vigour plus, T_3 - Bio-Pulse. There are growth promotors namely, Bio-Pulse and TNAU Vigour Plus were utilized in this research. When the field was being prepared, the appropriate fertilizer dosages were applied as a baseline. The size of each trail plot was 0.4 hectares. Direct field measurement and an interview schedule were used to gather primary data from the farmers. All the growth and yield components such as plant height, number of pod per plant, test weight, grain yield and straw yield (T_2) with values of 51.6 cm, 16, 41.2 g, 6.62 q/ha and 19.72 q/ha were higher with the application of TNAU Vigour plus (T_2) followed by, Bio-Pulse (T_3) with plant height (26), number of pods per plant (50.4 cm), test weight (38.6 g), grain yield (6.28 q/ha) and straw yield (18.20 q/ha). The highest B: C ratio (2.13) was recorded with the application of TNAU Vigour plus (T_2). The above study reveals that, TNAU Vigour plus could be considered as a better option for achieving higher production and profitability of Blackgram under rainfed condition in Theni district**.**

Keywords: TNAU vigour plus, bio pulse, yield attributes, blackgram and B:C ratio

Introduction
After cereals, pulses rank as the second most significant food crop. Pulses covered 85.40 million hectares worldwide, including larger areas in India, Niger and Myanmar. With an average production of 25.72 million tons and a productivity of 806 kg ha^{-1}, it is cultivated on 29.03 million hectares in India (India stat, 2021). In an effort to increase public knowledge of the nutritional benefits of pulses as part of long-term food and nutrient security, the UN declared 2016 to be a "International year of pulses" (Mohanty and Satyasai, 2015) [7]. A member of the Fabaceae family, blackgram (*Vigna mungo* L. Hepper) is one of India's most important pulse crops. It is widely known for its nutritional value, which includes 24% protein, 59.6% carbohydrate, 154 mg calcium, 385 mg phosphorus, 7.57 mg iron, 0.254 mg riboflavin, 0.273 mg thiamin per 100 g of black gram. It is cultivated on 4.6 million hectares in India, yielding 24.5 lakh tons and 533 kg ha^{-1} of productivity, respectively (Indiastat, 2020). Black gram is planted on 3.70 lakh hectares of land in Tamil Nadu, yielding 2.7 lakh tons and 622 kg ha^{-1} of productivity. About 19 per cent of India's total pulse acreage, or 23 per cent of the country's entire pulse production, is made up of blackgram. Blackgram and other pulse crops are not productive enough to satisfy the population's domestic needs. Due to the fact that blackgram is typically grown as a rainfed crop, fallow crop, bund and border crop that receives little moisture and no nutrients. A number of factors contribute to the low yield of blackgram, such as inadequate crop booster application, poor management practices, and an ongoing supply of macronutrients that causes micronutrient deficiencies. Therefore, it is necessary to increase blackgram yield with the use of crop boosters and appropriate, balanced nutrition. Fertilization must be balanced in order to increase crop productivity.

In order to improve farmers' income and yield, the ICAR introduced On Farm Testing to assess location-specific technology. The trail's primary focus is on recently released cultivars, technologies and farming management techniques in realistic farming environments. Venkatasubramanian *et al.* (2010) [10]. The trail's primary goal is to assess how well different crop boosters work under actual farming conditions. The goal of this study is to evaluate TNAU Vigour Plus performance in pulses grown in the Theni district under rainfed conditions.

Materials and Methods

During the 2023-2024 kharif season, five farmers' fields in Okkarapatti village of Andipatty block in Theni district participated in the on-farm testing (OFT) experiment. The purpose of the experiment trail was to evaluate the effectiveness of different crop boosters in blackgram grown in the Theni district's rainfed conditions. The trail area receives 832 mm of rain annually. The red sandy loam soil type used in the trail plots has a low organic carbon content (0.24 to 0.32%), available nitrogen (269 to 282 kg ha^{-1}), available phosphorous (7.15 to 8.24 kg ha^{-1}), and available potassium (159 to 165 kg ha^{-1}). The trail plot's soil pH (1:2 soil water suspension) and EC (1:2 soil water suspension) are 8.6 and 2.3 dS m^{-1}, respectively (Jackson, 1973). The following three treatments were used in three replicates of the randomized block design experiment.; T_1 - Farmers practice (Non application of growth promotors), T_2 - TNAU Vigour plus - Seeds are coated uniformly with formulation @ 20-25 ml per kg and shade dried for 30 min prior to sowing, T_3 - Bio-Pulse - Application of Bio-Pulse as seed bio priming with recommended dose of fertilizer. TNAU Vigour Plus and Bio-Pulse are the two crop boosters that were used in this trial. When the field was being prepared, the appropriate fertilizer dosages were applied as a baseline. The size of each trail plot was 0.4 hectares. Direct field measurement and an interview schedule were used to gather primary data from the farmers. Following the steps outlined by Gomez and Gomez (1984) [4], the numerous biometric observations, analytical data of soil and plant samples and the computed data were all subjected to statistical inspection.

The crop boosters that were tested under the OFT were Bio-Pulse and TNAU Vigour Plus. In accordance with the TNAU Crop Production Guide's suggested package of practices, appropriate need-based plant protection measures were used to combat pests and diseases.

Table 1: Particulars of various crop boosters used in blackgram cultivation

S. No	Treatments	Particulars
1	T_1 - Farmers practice	Non application of growth promotors
2	T_2 - TNAU Vigour plus	Seeds are coated uniformly with formulation @ 20-25 ml per kg and shade dried for 30 min prior to sowing
3	T_3 - Bio-Pulse	Application of Bio-Pulse as seed bio priming with recommended dose of fertilizer

Results and Discussion:

Growth and yield attributes:

The results of this study showed that several crop boosters had a substantial impact on growth parameters, yield attributes, yield and economics.

The plant height was significantly influenced by the application of crop boosters along with soil application of recommended dose of fertilizers. The highest plant height of 51.6 cm (T_2) was recorded in the application of TNAU Vigour plus followed by the application of Bio-Pulse (50.4 cm). The lowest plant height of 48.2 cm was recorded in Farmer practices (T_1). Plant height might have increased as a result of crop boosters' involvement in a number of physiological processes, including stomatal control, electron transport, enzyme activation, chlorophyll synthesis, etc. Dinesh Kumar Yadav *et al.* (2020) [3] and Banoth Murali Krishna *et al.* (2022) [2] both reported similar results.

The number of pods per plant was appreciably influenced by the application of crop boosters along with soil application of recommended dose of fertilizers. Among the various treatments, application of TNAU Vigour plus (T_2) has recorded maximum number of pods per plant (16). The minimum number of pods per plant (10) was recorded in control (T_1). It might be due the black gram crop received more nutrients via crop boosters, which resulted in more pods per plant. These outcomes concurred with those of Abu sayem *et al*. (2018) [1] and Saakshi *et al.* (2020) [8]

The highest grain yield (6.62 q/ha) and straw yield (19.72 q/ha) was recorded in application of TNAU Vigour plus (T_2) followed by the application of Bio-Pulse. These crop boosters led to greater photosynthates production and vigorous growth. Further with efficient partitioning of accumulated photosynthates resulted in enhanced yield attributes at adequate supply of major and micro-nutrients. These results are in conformity with the findings of Kannan *et al.* (2014) [5], Singh *et al.* (2011) [9] and Kushwaha *et al.* (2009) [6].

Table 2: Effect of various crop boosters on growth and yield of Blackgram under rainfed condition

Treatments	Plant height (cm)	No. of pods per plant	Test grain weight (g)	Grain yield (q ha^{-1})	Straw yield (q ha^{-1})
T_1 - Farmers practice	48.2	10	32.8	5.45	15.96
T_2 - TNAU Vigour plus	51.6	16	41.2	6.62	19.72
T_3 - Bio-Pulse	50.4	14	38.6	6.28	18.20
S Ed	0.65	0.84	1.12	1.50	6.62
CD (0.05%)	1.4	1.8	2.4	3.20	14.26

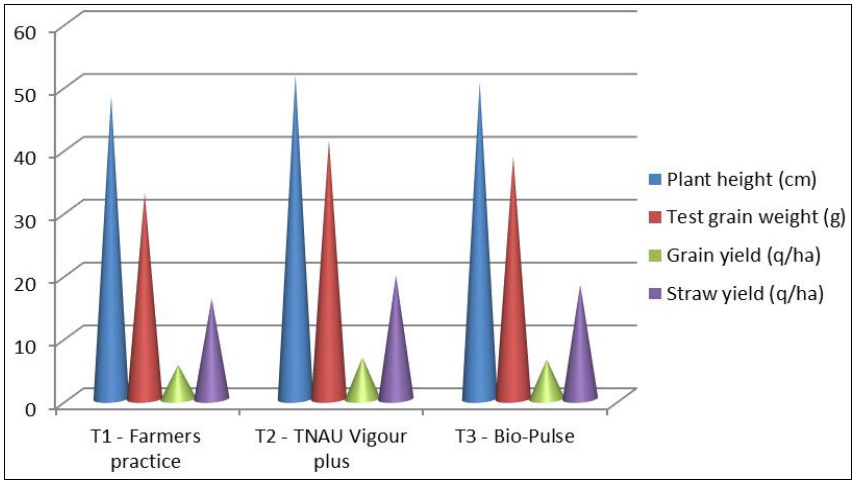

Fig 1: Effect of various crop boosters on growth and yield of Blackgram under rainfed condition

The economics of growing a given crop are important considerations when advising farmers to adopt a technology. Table 3. shows the information related to gross returns, net returns, and B: C ratios. With TNAU Vigour plus (T_2), the highest net return (Rs. 27000 ha^{-1}) and gross return (Rs. 46200 ha^{-1}) were seen. With TNAU Vigour plus (T_2), the highest B:C ratio (2.41) was observed.

Table 3: Economic parameters of different crop boosters in Blackgram under rainfed condition

Treatments	Cost of cultivation (Rs ha^{-1})	Gross returns (Rs ha^{-1})	Net returs (Rs ha^{-1})	B:C ratio
T_1 - Farmers practice	17400	37800	20400	2.17
T_2 - TNAU Vigour plus	19200	46200	27000	2.41
T_3 - Bio-Pulse	19200	43400	24200	2.26

Data statistically not analysed

Conclusion

According to the study mentioned above, TNAU Vigour Plus might be a better choice for increasing Blackgram productivity and profitability in the rainfed Theni District.

References

1. Sayem A, Habib A, Roy TS, Amin R. Effect of zinc and boron on growth parameters of blackgram (*Vigna mungo* L.). J Biosci Agric Res. 2018;17(01):1396-402.
2. Krishna BM, Kumar S, Priyanka G, Naik MV, Umesha C. Influence of boron and zinc on growth and yield of green gram (*Vigna radiata* L.). Pharma Innov J. 2022;11(3):1674-8.
3. Yadav DK, Singh D, Choubey AK, Raj RK. Effect of micro and secondary nutrients on growth and yield of blackgram (*Vigna mungo* L. Hepper). J Pharmacogn Phytochem. 2020;9(2):649-51.
4. Gomez KA, Gomez AA. Statistical procedures for agricultural research. 2nd ed. New York: John Wiley and Sons; 1984. 680 p.
5. Kannan P, Arunacham P, Kumar GP, Prabhaharan J. Response of black gram (*Vigna mungo* L.) to multi micronutrient mixtures under rainfed Alfisol. J Indian Soc Soil Sci. 2014;62(2):154-60.
6. Kushwaha AK, Singh S, Singh RN. Available nutrients and response of lentil (*Lens esculenta*) to boron application in rainfed upland soils of Ranchi. J Indian Soc Soil Sci. 2009;57(2):219-22.
7. Mohanty S, Satyasai KJ. Feeling the pulse: Indian pulses sector. NABARD Rural Pulses. 2015;X:1-4.
8. Saakshi R, Almad, Rathod PS, Rachappa V, Dodamaniand BM, Ananda N. Growth, yield and economics of pigeonpea as influenced by biofortification of zinc and iron. Int J Curr Microbiol Appl Sci. 2020;9(2):3088-97.
9. Singh KK, Praharaj CS, Choudhary AK, Kumar N, Venkatesh MS. Zinc response in pulses. Indian J Fertil. 2011;7(10):118-26.
10. Venkatasubramanian K, Sajeev MV, Singha AK. Concepts, approaches and methodologies for technology application and transfer - a resource book for KVKs. 2010:44.