

**KELADI SHIVAPPA NAYAKA UNIVERSITY OF
AGRICULTURAL AND HORTICULTURAL SCIENCES,
IRUVAKKI, SHIVAMOGGA, KARNATAKA**



Trial report on
Studies on Bio-efficacy of VAAYU on chilli

Study Sponsored by

**YK Laboratories
Kuntloor (V), Abdullapurmet (M),
R.R. District, Hyderabad 501505**

Study Conducted by

**Dr. Bharathkumar MV
Scientist (Horticulture),
ICAR KVK, Shivamogga**

Trial Report
On
Studies on Bio-efficacy of VAAYU on chilli

Study Sponsored by,
YK Laboratories
Kuntloor (V), Abdullapurmet (M),
R.R. District, Hyderabad 501505

Study Conducted by,



KELADI SHIVAPPA NAYAKA UNIVERSITY OF
AGRICULTURAL AND HORTICULTURAL SCIENCES,
IRUVAKKI, SHIVAMOGGA, KARNATAKA

1. About the Trial

Product	:	VAAYU
Crop	:	Chilli
Project title	:	Studies on Bio-efficacy of VAAYU on chilli
Objective	:	1. To Study the bioefficacy of Vaayu on Chilli 2. To optimise the dosage for Chilli
Name of Institute	:	Keladi Shivappa Nayaka University Of Agricultural And Horticultural Sciences, Iruvakk, Shivamogga, Karnataka
Name of Scientists	:	PI: Dr. Bharathkumar MV Scientist (Horticulture), ICAR KVK, Shivamogga Co-PI: Dr. Devaraju Associate Professor (Horticulture) Extension Education Unit, Madikeri
Name of sponsoring organization	:	YK Laboratories Kuntloor (V), Abdullapurmet (M), R.R. District, Hyderabad 501505
Season	:	Kharif 2024
Location	:	ICAR KVK, Shivamogga
Year	:	2024-25
Variety	:	Arka Tejasvi


Scientist (Horticulture)
ICAR-KVK, Shivamogga.

Design of Experiment	:	Randomized Block design
Date of Transplanting	:	12 th June 2024
Replications	:	Four
No. of Treatments	:	Five
Plot size	:	4.5 X 4 sq. m.
Total No. of Plots	:	20
Spacing (R X P)	:	60 cm X 45 cm
Fertilizers Recommendation for Chilli crop	:	150:75:75 kg NPK per hectare
Plant Protection	:	As per Recommended package of practice
Method of application	:	Foliar application
Number of Applications	:	3
Frequency of application	:	12-15 Days interval
Date of treatment(s) application	:	Application Date 1 st : 2 nd July 2024 2 nd : 17 th July 2024 3 rd : 2 nd August 2024
Time interval between spray application	:	First at 20 DAT (Days After Transplanting); 2 nd at 35 DAT; 3 rd at 50 DAT
Number of Pickings (harvest)	:	5 (Five)


Scientist (Horticulture)
ICAR-KVK, Shivamogga.

2. Treatment Details:

1. Treatment 1: Control (No input& Spray) (T1)
2. Treatment 2: Recommended University practices + VAAYU 3ml/lit spray (T2)
3. Treatment 3: Recommended University practices + VAAYU 5ml/lit spray (T3)
4. Treatment 4: Recommended University practices + VAAYU 6ml/lit spray (T4)
5. Treatment 5: 100 % Recommended University practices – Recommended Dose of Fertilizers (RDF) (T5)

3. Observations recorded

A. Quantitative

1. **Plant height (cm):** Plant height was measured from ground level to the tip of the plant at 120 days after transplanting (DAT) and expressed in centimeters.
2. **No. of branches/plant:** Observations on the number of branches from each of the tagged plants was recorded during the plant height measurement i.e. at 120 days after transplanting (DAT).
3. **Days to 50% flowering (No. of days):** Number of days taken for 50% of the plants to start flowering in a treatment is recorded from all the replications.
4. **50 fruit weight (g):** 50 random fruits were weighed randomly from the treatments and recorded during the fifth picking.
5. **Fruit length (cm):** Average fruit length from 10 randomly selected fruits of each replication in a treatment is recorded during the final picking.
6. **Number of fruits per plant:** Number of fruits from labeled plants in each replications of a treatment is recorded over number of harvests and average data is presented.
7. **Fruit yield (t/ha):** The weight of fruits harvested from each picking was recorded from each plot (including the tagged plants) and total yield per plot was obtained by adding the yields of all the harvests and expressed in grams per plot. Yield per hectare was calculated by using the following formula and expressed in tons per hectare.

$$\text{Yield /ha (q)} = \frac{\text{Yield /plot (g)} \times 10,000}{\text{Plot area} \times 1000 \times 100}$$


 Scientist (Horticulture)
 ICAR-KVK, Shivamogga.

B. Qualitative

General health of crop (poor / normal / good): Disease and pest incidence in each treatment is evaluated and expressed as general crop health.

Note: Treatment and Replication wise data collected were averaged, analyzed statistically and presented as final results in Table 1 to 3; whereas qualitative observations recorded during the conduct of trial are presented in Table 4.

Methodology:

A field experiment was conducted at ICAR Krishi Vigyan Kendra, Shivamogga. The experiment was laid out in Randomized Block Design with five treatments replicated four times each. Transplanting of chilli variety Arka Tejasvi was done on 12.06.2024. After transplanting, foliar applications of Vaayu were given as per the treatment details and all other recommended cultural practices were followed as per the Recommended University practices (RDF) uniformly in the field except for the control (T1) wherein no inputs were provided including the sprays. The fruits were harvested at green vegetable stage and the observation on plant height, number of branches, days for 50% flowering, 50 fruit weight, fruit length, number of fruits per plant and fruit yield per hectare were recorded as mentioned under the section "observations recorded".

The data pertaining to "Studies on Bio-efficacy of VAAYU on chilli" are presented in Table 1 to 4. It is evident from the data present in tables that various treatments under present investigation exhibited significant effect on all the parameters studied during the investigation. Among various treatments T3 - Recommended University practices with VAAYU 5ml/lit spray at 20th day after transplanting followed by 2nd and 3rd spray at 15 days interval recorded superior performance with the most of the characters under study.


Scientist (Horticulture)
ICAR-KVK, Shivamogga.

General view of the experimental plot of Vaayu




Scientist (Horticulture)
ICAR-KVK, Shivamogga.

4. Result:

4.1. Effect of VAAYU on Growth of Chilli Crop:

1. From the data presented in table 1 it is observed that plant height was recorded in the range of 52.01 cm (T1 – absolute control) to 64.11 cm (T4-Three foliar applications of Vaayu at 6.00 ml/lit) followed by T3 with significant difference.
2. Even the lowest dosage i.e. Vaayu @ 3 ml per litre, recorded higher plant growth (61.22 cm) than Treatment 5 (100 % University recommended practices – 57.42 cm), yet the difference was non-significant.
3. There was an increase the number of branches per plant with application of VAAYU (T2 to T4) and all treatments with application of Vaayu were significantly superior over T1 and T5. However, T3 recorded significant difference among all others but on par with T4.

Table 1: Observations on effect of VAAYU on Growth of Chilli Crop

Treatments	Plant Height (cm)	No. of branches
1. Treatment 1: Control	52.01	8.62
2. Treatment 2: RDF (T5) + Vaayu 3ml/lit	61.22	12.46
3. Treatment 3: RDF (T5) + Vaayu 5ml/lit	63.21	13.65
4. Treatment 4: RDF (T5) + Vaayu 6ml/lit	64.11	13.05
5. Treatment 5: 100 % University recommended practices (RDF)	57.42	10.25
SEm	1.35	0.36
CD (5%)	4.16	1.12

4.2. Effect of VAAYU on Earliness and Quality of Chilli Crop:

1. From the data presented in table 2 it is presented that application of Vaayu significantly increased the earliness in chilli as the days taken for 50 per cent of plants to flower was very minimum in T3 (40.25 DAT) and was statistically significant over T1 (Control) and T5 (RDF). Though the number of days taken by T2 and T4 were less than T5, they were non-significant.
2. Weight of 50 fruits was used to calculate the average weight of Chilli and the lowest dosage of Vaayu i.e., 3ml per litre (T2) was found to increase the average weight of chillies over T1 and T5. Treatment 3 recorded a highest '50 fruit weight' of 285.88g


 ICAR-KVK, Shivamogga.

followed by T4 (275.27g) and both were on par statistically. However significant difference was observed in T3 over rest of the treatments.

3. Fruit length was longest in Treatment 3 (Vaayu @ 5ml per lit + RDF) with 9.48cm and was statistically significant from all other treatments. T4 recorded a significant difference from the T2, T5 and T1 and the differences between T5 and T2 were statistically non-significant.

4.3. Effect of VAAYU on Yield of Chilli Crop:

Application of Vaayu significantly increased the number of fruits and overall yield in chilli and the data is presented in table 3. It was observed from the data that, maximum number of fruits (164.58) was recorded in T3 (RDF + three foliar applications of product Vaayu at 5ml/lit) which was significantly superior over T1 and T5. The lowest number of fruits was recorded in T1-control (136.98).

The applications of Vaayu product improved fruit yield significantly. The highest yield was recorded in T3 - RDF + three foliar applications of product Vaayu @ 5ml/lit, 1st at 20th day after transplanting, 2nd and 3rd at 15 days interval (27.23 t/ha) followed by T4 (25.85 t/ha) T2 (24.62 t/ha) and T5 (22.45t/ha). The minimum yield was recorded in treatment T1 - control (19.88 t/ha).

Table 2: Observations on effect of VAAYU on Earliness and Quality of Chilli Crop

Treatments	Days to 50% flowering	50 fruit weight (g)	Average fruit weight (g)	Fruit length (cm)
1. Treatment 1: Control	48.75	210.69	4.21	7.53
2. Treatment 2: RDF (T5) + Vaayu 3ml/lit	44.25	256.87	5.14	8.17
3. Treatment 3: RDF (T5) + Vaayu 5ml/lit	40.25	285.88	5.72	9.48
4. Treatment 4: RDF (T5) + Vaayu 6ml/lit	41.75	275.27	5.51	8.95
5. Treatment 5: 100 % University recommended practices (RDF)	45.25	238.14	4.76	8.05
SEm	1.18	7.36	-	0.16
CD (5%)	3.65	22.68	-	0.50


Scientist (Horticulture)
ICAR-KVK, Shivamogga.

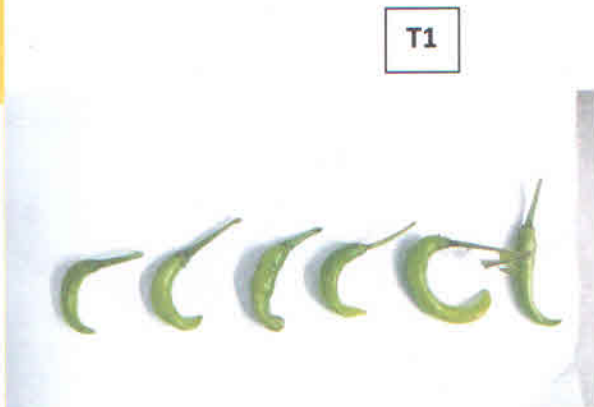
Performance of best treatment (T3) and control (T1) of Vaayu



T3: University practices + Vaayu @5ml/lit



T1: Control




Scientist (Horticulture)
ICAR-KVK, Shivamogga.

4.4 Qualitative Observations

Visual observations were recorded on the effect of Vaayu on general crop health, flower and fruit initiation, presented in Table 4. It is evident from the observations that application of Vaayu improved the general health of crop, and also into early flowering and fruiting especially in Treatments 3 and 4.

Table 3: Observations on effect of VAAYU on Yield of Chilli Crop

Treatments	No. of fruits/plant	Yield (t/ha)
1. Treatment 1: Control	136.98	19.88
2. Treatment 2: RDF (T5) + Vaayu 3ml/lit	152.43	24.62
3. Treatment 3: RDF (T5) + Vaayu 5ml/lit	164.58	27.23
4. Treatment 4: RDF (T5) + Vaayu 6ml/lit	159.78	25.85
5. Treatment 5: 100 % University recommended practices (RDF)	149.12	22.45
SEm	4.76	0.55
CD (5%)	14.66	1.68

Table 4: Visual Observations Recorded During the Trial Period

Treatments	Crop health	Flower initiation	Fruit initiation
1. Treatment 1: Control	Poor	Late	Late
2. Treatment 2: RDF (T5) + Vaayu 3ml/lit	Normal	Normal	Normal
3. Treatment 3: RDF (T5) + Vaayu 5ml/lit	Good	Early	Early
4. Treatment 4: RDF (T5) + Vaayu 6ml/lit	Good	Early	Early
5. Treatment 5: 100 % University recommended practices (RDF)	Normal	Normal	Normal


 Scientist (Horticulture)
 ICAR-KVK, Shivamogga.

4.5 Phytotoxicity:

No phytotoxicity effects were observed amongst treatments after applications of the product VAAYU at different concentrations.

5. Conclusion:

Thus, from the present investigation, it was observed that the effect of Vaayu product was found to be beneficial for yield improvement in Chilli. The treatments improved various growth, quality, yield attributing characters and general crop health as compared to control. Among various treatments tried, T3 - three foliar applications of product Vaayu @ 5ml/lit, 1st at 20th day after transplanting, 2nd and 3 at 15 days interval along with the University practices performed better. Further, it helped to improve general health of crop, with good effect i.e. early flower initiation, fruit initiation when compared with all other treatments.



Principal Investigator

(Bharathkumar M V)

Scientist (Horticulture)
ICAR-KVK, Shivamogga.

*Forwarded to the Director of Research for further
needful.*



Professor & Head
Department of Horticulture
College of Agriculture, Shivamogga
KSNUAHS, Iruvaki, Shivamogga.



Director of Research,
Keladi Shivappa Nayaka University of
Agricultural and Horticultural Sciences
Iruvaki, Shivamogga-577 412.

Appendix: Fertilizer application schedule

RDF for Chilli crop: 150:75:75

(Half of N, complete P & K at transplanting and rest of N top dressed twice at 30 & 45 DAT)

Treatment details	Nutrients recommendation (RDF) for Chilli crop			Basal fertilizer requirement kg/ha (Half of N, complete P & K)				Basal Kg/plot of 18.25 m ² (Half of N, complete P & K)			Top dress of N at 30 and 45 DAT (kg/plot)	
	N	P ₂ O ₅	K ₂ O	DAP	MOP	N by DAP	Rest of N by Urea	DAP	Urea	MOP	Urea at 30 DAT	Urea at 45 DAT
T1 - Control	0	0	0	0	0	0	0	0	0	0	0	0
T2	150	75	75	156	125	28	101	0.285	0.184	0.228	0.148	0.148
T3	150	75	75	156	125	28	101	0.285	0.184	0.228	0.148	0.148
T4	150	75	75	156	125	28	101	0.285	0.184	0.228	0.148	0.148
T5 - University practices (RDF)	150	75	75	156	125	28	101	0.285	0.184	0.228	0.148	0.148

Scientist (Horticulture)
ICAR-KVK, Shivamogga.