PLANT SCIENCE TODAY
Vol 13(sp1): 01–06
https://doi.org/10.14719/pst.10004

eISSN 2348-1900

RESEARCH ARTICLE

Soil test-based integrated nutrient management enhances cotton yield, fertilizer efficiency and soil sustainability in the vertisols of Karaikal

S Sakthi Priyanka[1*], U Bagavathi Ammal[1], R Sankar[1], S Nadaradjan[2] & Pradip Dey[3]

[1]Department of Soil Science and Agricultural Chemistry, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal 609 603, UT of Puducherry, India

[2]Department of Plant Breeding and Genetics, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal 609 603, UT of Puducherry, India

[3]ICAR-Agricultural Technology Application Research Institute, Kolkata 700 097, West Bengal, India

*Correspondence email - ssakthipriyanka@gmail.com

Received: 12 June 2025; Accepted: 13 October 2025; Available online: Version 1.0: 19 January 2026

Cite this article: Sakthi PS, Bagavathi AU, Sankar R, Nadaradjan S, Pradip D. Soil test-based integrated nutrient management enhances cotton yield, fertilizer efficiency and soil sustainability in the vertisols of Karaikal. Plant Science Today. 2026; 13(sp1):01–06. https://doi.org/10.14719/pst.10004

Abstract

India's cotton farming, reliant on chemical fertilizers, faces soil degradation and yield decline. To combat this, a sustainable Soil Test Crop Response - Integrated Plant Nutrient System (STCR-IPNS) approach was adopted in vertisols of Karaikal district (*Typic Haplusterts*), to develop fertilizer prescription equation for cotton. A fertility gradient experiment was conducted with rice (ADT 45), wherein three strips were established by applying phosphorus and potassium at 150 and 100 kg ha^{-1} respectively, based on their fixing capacities, while nitrogen was applied as per the recommended dose. A field experiment with cotton hybrid RCH 659 BG II was conducted using four levels of nitrogen (N at 0, 60, 120 and 180 kg ha^{-1}), phosphorus (P_2O_5 at 0, 30, 60 and 90 kg ha^{-1}), potassium (K_2O at 0, 30, 60 and 90 kg ha^{-1}) and three levels of farmyard manure (FYM) (0, 6.25 and 12.5 t ha^{-1}) to optimize fertilizer use efficiency and enhance soil health. Maximum yield and growth parameters were achieved with NPK + 12.5 t ha^{-1} FYM. Using yield data, nutrient uptake, initial soil N, P, K levels and fertilizer doses, basic parameters were computed to develop fertilizer prescription equations. Nutrient requirement for cotton followed the order K_2O > N > P_2O_5. Nutrient contributions from soil (Cs) were higher for P_2O_5 followed by K_2O and N. Fertilizer contributions (Cf) followed K_2O > P_2O_5 > N, while FYM contributions (Cfym) were highest for N followed by K_2O and P_2O_5. Using these parameters, fertilizer prescription equations and nomograms were developed for target yields (31, 33 and 35 q ha^{-1}). Application of NPK with FYM at 12.5 t ha^{-1} resulted in fertilizer savings of 52, 30 and 48 kg ha^{-1} of N, P_2O_5 and K_2O respectively. The STCR-IPNS approach enhanced yield, nutrient use efficiency and soil fertility, making it ideal for sustainable intensification in vertisols of Karaikal district.

Keywords: fertilizer prescription equation; nutrient requirement; STCR-IPNS; targeted yield model

Introduction

Cotton, the "king of apparel fibers", is a crucial cash crop that supports rural livelihoods, powers the textile industry and contributes substantially to the national economy (1). Cotton, often referred to as "white gold", holds immense economic significance, particularly for farmers, due to its vital role in the agricultural and textile sectors (2). Beyond its fiber, cotton offers numerous valuable by-products such as cottonseed oil, meal, hulls and linters that find applications in the food industry, livestock feed and industrial sectors including paper and plastics, thereby broadening its economic relevance.

Despite its importance, conventional cotton cultivation in India predominantly relies on chemical fertilizers. While these fertilizers initially boost productivity, their prolonged and imbalanced use leads to the depletion of soil fertility, loss of microbial diversity and overall decline in soil health. This unsustainable practice necessitates an integrated approach to nutrient management, one that harmonizes the advantages of both organic and inorganic sources to ensure long-term soil fertility and productivity. By combining organic manures with chemical fertilizers, a more sustainable and efficient nutrient supply can be achieved, ensuring long-term productivity and environmental health.

Traditional blanket fertilizer recommendations often lead to over- or under-application, causing economic losses and reduced crop performance. Therefore, a site-specific and yield-targeted nutrient management strategy is needed. The Soil Test Crop Response-Integrated Plant Nutrient System (STCR-IPNS) approach addresses this need by prescribing fertilizer doses based on actual soil nutrient status and desired yield targets. This study aims to develop such tailored fertilizer recommendations for cotton, enabling farmers to apply precise nutrient quantities, enhance productivity, reduce input costs and maintain soil health ultimately supporting the sustainable intensification of cotton cultivation across India.

Materials and Methods

The present investigation consisted of two field experiments in two phases viz. fertility gradient experiment with rice variety (ADT 45) (Phase I), followed by test crop experiment with cotton hybrid (RCH 659 BG II) (Phase II). The experiment was conducted at farmer's holding of Karaikal district. The experimental area, which makes up 26.14 % of the area, is a coastal alluvial plain (PC1) with *Typic Haplusterts* soil, which is categorized as fine, smectitic and isohyperthermic. The soil properties are furnished in Table 1. To establish soil fertility variation in the gradient experiments, Ramamoorthy's inductive methodology was employed.

The gradient crop rice (ADT 45) was transplanted at a spacing of 20 cm x 15 cm. The objective of the experiment was to create wide variations in soil fertility within a single field to obtain reliable data across different fertilizer doses under uniform conditions. A gradient crop experiment was conducted prior to the test crop to minimize variability in soil, management and climatic factors. Initial soil characterization was carried out to fix N based on blanket recommendations, while P and K were determined based on the soil's fixing capacities. It received three different doses of fertilizer. Strip I was cultivated without any fertilizer application, serving as the control. Strips II and III treated with fertilizers at 150:343:121 and 300:686:242 kg ha^{-1} of N, P_2O_5 and K_2O respectively. Before planting and after the harvest of rice, 24 soil samples were collected, processed and analyzed for available N, P and K. Twenty-four grain and plant samples, eight from each strip were collected at harvest and processed for the analysis of N, P and K.

After the gradient rice crop was harvested, three strips were further split into 72 treatments. These treatments were randomized across three strips in both directions to assess nutrient response and support targeted yield modelling. Before the application of fertilizers pre-planting samples were collected from each sub plot and analyzed for available NPK. The IPNS which comprised three treatments–NPK alone, NPK + FYM OM (Organic matter) II and NPK + FYM OM IIIwas applied to the strips in accordance with the fractional factorial design. This allowed 21 fertilizer treatments to be randomly assigned, each of which was present in all three strips in both directions, along with three controls. The test crop cotton hybrid (RCH 659 BG II) provides the treatment structure of four levels of fertilizer and three levels of FYM. Fig. 1 depicts the treatment structure. Cotton plants were spaced at 60 cm × 45 cm to maintain optimum plant population. Routine cultural activities were performed after planting on a periodic basis. After crop maturity, plot-wise yield data were recorded and samples of post-harvest soil, plant material and seed cotton were collected and analyzed to determine the concentrations of N, P and K in each plot. The amount of NPK that cotton absorbed was then determined using the dry matter yield.

Table 1. Characteristics of initial surface soil sample of the experimental field

Sl. no.	Characters	Value
1.	Texture	Clay
2.	pH	7.40
3.	EC (dS m^{-1})	0.46
4.	$KMnO_4$-N (kg ha^{-1})	268.4
5.	Olsen-P (kg ha^{-1})	48.5
6.	NH_4OAc- K (kg ha^{-1})	351.0
7.	CEC (cmol (p^{+}) kg^{-1})	21.5
8.	P fixing capacity (kg ha^{-1})	150
9.	K fixing capacity (kg ha^{-1})	100

The parameters like nutrient requirement (NR) and per cent contributions from soil (Cs), chemical fertilizers (Cf) and farmyard manure (Cfym) were determined using data associated with yield, total nutrient uptake of NPK along with initial soil test values for available N, P and K. These calculations followed the approach outlined by Ramamoorthy (2). Utilizing these four key parameters, fertilizer prescription equations were formulated for cotton cultivation under both NPK-only and STCR-IPNS strategies. These equations can be used to predict the required nutrient dosages for different levels of available soil nutrients corresponding to specific seed cotton yield targets (T). Targeted yield models were developed using the Soil Test Crop Response-Tamil Nadu Agricultural University (STCR-TNAU) equation software. Multiple regression and correlation analyses were carried out to establish relationships among soil test values, fertilizer doses, nutrient uptake and yield.

Results and Discussion

A fertility gradient experiment was conducted to establish differential levels of soil nutrients (3). Pre-sowing mean values of $KMnO_4$-N, Olsen-P and NH_4OAc-K were 265.3, 262.5, 266.7 kg ha^{-1}; 47.5, 45.7, 46.4 kg ha^{-1}; and 344, 346, 345 kg ha^{-1} for strips I, II and III respectively. Post-harvest mean values increased to 240.5, 273.4, 296.1 kg ha^{-1} (N); 45.0, 52.6, 55.8 kg ha^{-1} (P) and 333, 370, 392 kg ha^{-1} (K), confirming fertility gradients (Fig. 2). Grain yields were 2180, 4400 and 5810 kg ha^{-1} and nutrient uptake also rose significantly, increasing from 43 to 104.3 kg ha^{-1} N, 9.6 to 28.9 kg ha^{-1} P and 31.5, 67.2, 82.9 kg ha^{-1} K in strips I, II and III respectively, showing significant response to increasing fertility levels (Table 2). These results confirm the successful creation of soil fertility gradients and demonstrate the direct correlation between nutrient supply and crop response (4, 5).

The growth and yield attributing parameters of the test crop, cotton namely plant height, number of branches per plant, number of bolls per plant and boll weight revealed that plant height recorded a mean value of 149.7 cm in Strip I, 153.0 cm in Strip II and 158.3 cm in Strip III (Fig. 3). The improved growth and yield may be attributed to the continuous mineralization of organic manures, which supply essential macro− and micronutrients, enhance soil nutrient availability and improve soil physical and biological properties (6, 7). The data on yield, uptake of NPK and soil test value were furnished in Table 3. The data revealed that strip III produced the highest seed cotton yield (36.65 q ha^{-1}), while Strip I produced the lowest (8.12 q ha^{-1}) (Fig. 4). The favourable influence of organics and inorganics on chemical, physical and biological properties of soil would have resulted in such maximum yields of cotton (8). The mean uptake value of N, P and K were 67.0, 19.9 and 69.3 kg ha^{-1} for Strip I, 87.9, 25.6 and 83.6 kg ha^{-1} for Strip II and 94.3, 26.9 and 87.7 kg ha^{-1} for Strip III respectively. The initial soil test data indicated a progressive

Table 2. Effect of graded levels of N, P_2O_5, K_2O on rice yield and nutrient uptake

Strip	Fertilizer dose (kg ha^{-1})			Yield (kg ha^{-1})	Nutrient uptake (kg ha^{-1})		
	N	P_2O_5	K_2O	Rice	N	P	K
I	0	0	0	2180	43.8	9.6	31.5
II	150	343	121	4400	79.2	20.2	67.2
III	300	686	242	5810	104.3	28.9	82.9

Table 3. Pre-sowing soil available NPK, yield and NPK uptake by cotton in various strips

Parameters (kg ha^{-1})	Strip I		Strip II		Strip III	
	Range	Mean	Range	Mean	Range	Mean
$KMnO_4$ -N	261.6–282.8	275.8	282.6–305.2	297.6	292.3–322.0	313.7
Olsen–P	48.8–61.8	57.8	55.6–77.8	70.1	60.2–83.8	74.6
NH_4OAc-K	348–390	376	350–418	408	367–439	428
Seed cotton yield (q ha^{-1})	8.12–33.00	21.04	9.20–34.65	23.20	10.90–36.65	26.10
N uptake	28.2–97.5	67.0	30.1–136.8	87.9	32.2–148.5	94.3
P uptake	6.8–29.1	19.9	7.9–41.2	25.6	8.4–42.2	26.9
K uptake	33.6–94.1	69.3	36.9–107.2	83.6	41.2–112.4	87.7

	STRIP III		STRIP II		STRIP 1		
OM III	$N_0P_2K_2$	$N_2P_3K_3$	$N_1P_2K_1$	$N_3P_3K_1$	$N_1P_1K_2$	$N_2P_3K_2$	OUTS
	$N_1P_1K_1$	$N_3P_1K_1$	$N_2P_0K_2$	$N_3P_2K_3$	$N_1P_2K_2$	$N_3P_2K_1$	
	$N_2P_1K_2$	$N_3P_2K_2$	$N_2P_2K_2$	$N_3P_3K_3$	$N_2P_1K_1$	$N_3P_3K_2$	
	$N_2P_2K_1$	$N_0P_0K_0$	$N_2P_2K_3$	$N_0P_0K_0$	$N_2P_2K_0$	$N_0P_0K_0$	
OM II	$N_1P_1K_2$	$N_2P_3K_2$	$N_0P_2K_2$	$N_2P_3K_3$	$N_1P_2K_1$	$N_3P_3K_1$	
	$N_1P_2K_2$	$N_3P_2K_1$	$N_1P_1K_1$	$N_3P_1K_1$	$N_2P_0K_2$	$N_3P_2K_3$	
	$N_2P_1K_1$	$N_3P_3K_2$	$N_2P_1K_2$	$N_3P_2K_2$	$N_2P_2K_2$	$N_3P_3K_3$	
	$N_2P_2K_0$	$N_0P_0K_0$	$N_2P_2K_1$	$N_0P_0K_0$	$N_2P_2K_3$	$N_0P_0K_0$	
OM I	$N_1P_2K_1$	$N_3P_3K_1$	$N_1P_1K_2$	$N_2P_3K_2$	$N_0P_2K_2$	$N_2P_3K_3$	
	$N_2P_0K_2$	$N_3P_2K_3$	$N_1P_2K_2$	$N_3P_2K_1$	$N_1P_1K_1$	$N_3P_1K_1$	
	$N_2P_2K_2$	$N_3P_3K_3$	$N_2P_1K_1$	$N_3P_3K_2$	$N_2P_1K_2$	$N_3P_2K_2$	
	$N_2P_2K_3$	$N_0P_0K_0$	$N_2P_2K_0$	$N_0P_0K_0$	$N_2P_2K_1$	$N_0P_0K_0$	

Level	N (Kg ha^{-1})	P_2O_5 (Kg ha^{-1})	K_2O (Kg ha^{-1})	FYM (t ha^{-1})
0	0	0	0	0
1	60	30	30	6.25
2	120	60	60	12.5
3	180	90	90	-

Fig. 1. Experimental layout and treatment structure.

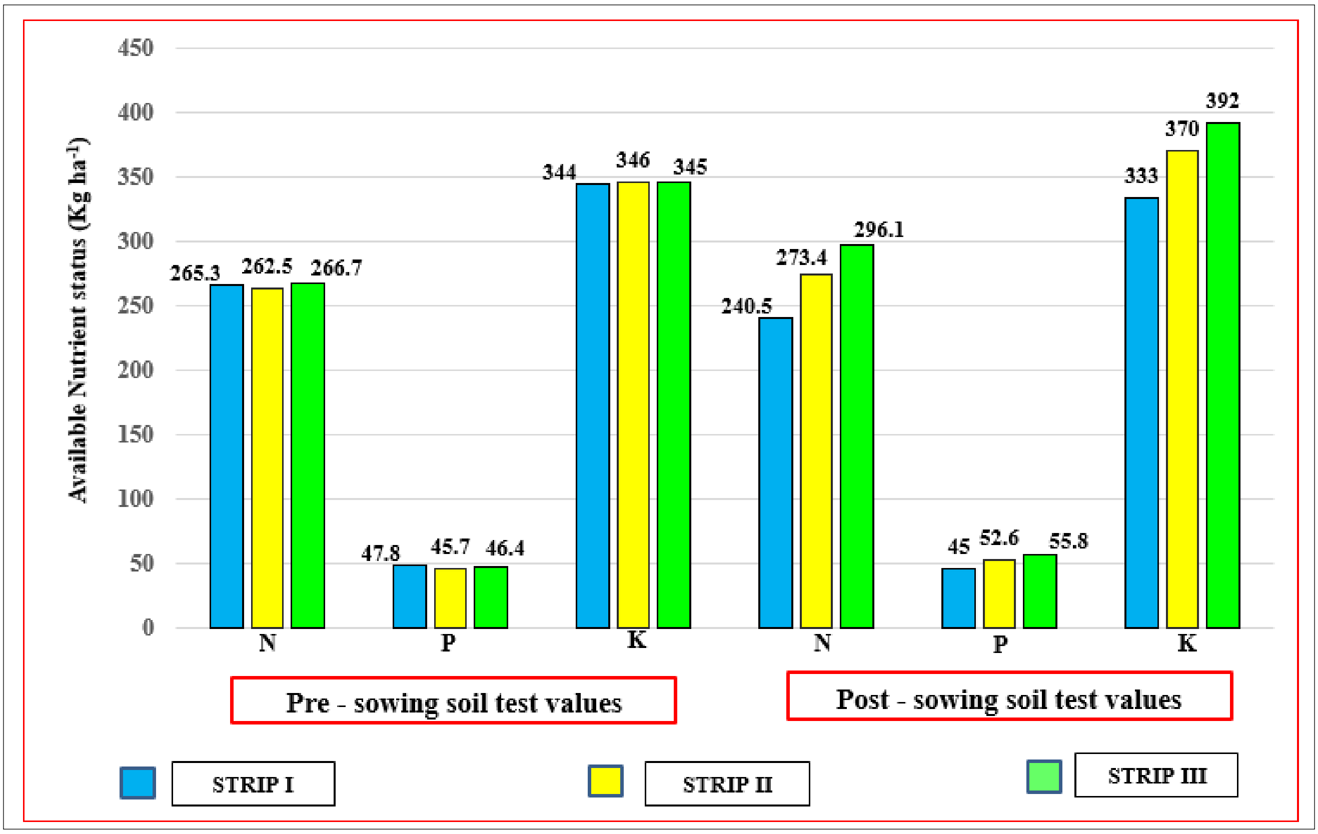

Fig. 2. Pre-sowing and post-harvest soil available nutrient status in different strips of gradient experiment.

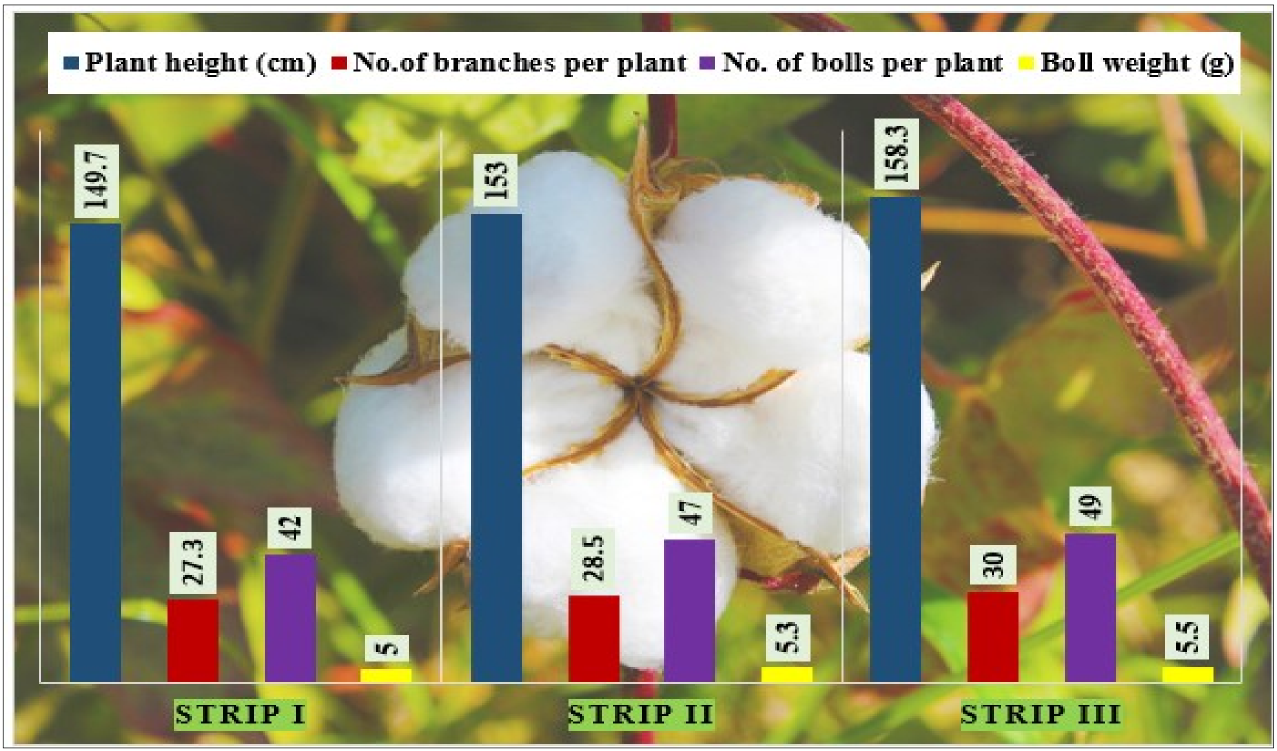

Fig. 3. Effect of STCR-IPNS on plant height, number of branches per plant, bolls per plant and boll weight.

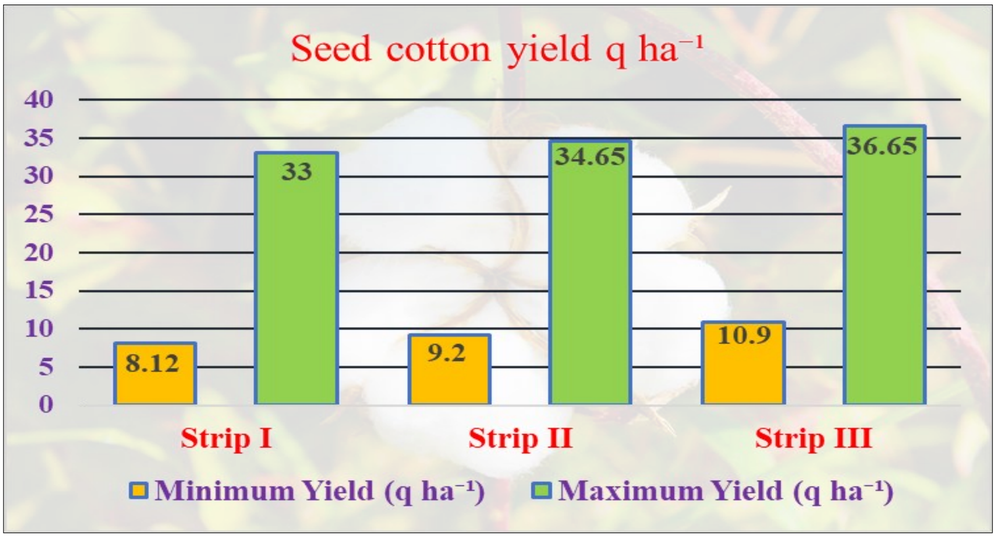

Fig. 4. Effect of STCR-IPNS on seed cotton yield.

increase in nutrient levels across the three strips. The mean values of available N, P and K were 275.8, 57.8 and 376 kg ha^{-1} for Strip I, for Strip II, the mean available N, P and K value were 297.6, 70.1 and 408 kg ha^{-1}and for Strip III, the available values were 313.7, 74.6 and 428 kg ha^{-1} respectively.

Basic parameters

The targeted yield model for cotton calculates basic parameters based on crop yield, nutrient uptake (NPK), soil test results and fertilizer dosages. The key parameters are NR, Cs, Cf and Cfym (Table 4).

The NPK required to bring out a quintal of cotton was calculated as 3.49 kg, 2.37 kg and 4.22 kg respectively. A similar trend was observed, indicating that the major demand for K occurs during the boll set stage. Consequently, even in soils with high available K, an in-season K deficiency may develop due to the intense uptake during rapid boll development and filling (9). The contribution from soil to N, P and K was calculated as 10.82 %, 14.03 % and 10.88 % respectively, with the highest contribution observed for P, followed by K and N (10). The contributions from fertilizer for N, P and K was calculated as 47.90 %, 68.35 % and 98.20 % which is highest for K_2O followed by phosphorus and nitrogen. The contributions from FYM for N, P and K was calculated as 38.45 %, 21.25 % and 26.04 % respectively, with a greater contribution observed for nitrogen, followed by potassium and phosphorus. Similar trends in FYM contribution (Cfym) have been reported previously (11).

Table 4. Nutrient requirement, per cent contribution of nutrients from soil, fertilizer and FYM for cotton

Parameters	Basic data		
	N	P_2O_5	K_2O
NR (kg q^{-1})	3.49	2.37	4.22
Cs	10.82	14.03	10.88
Cf	47.90	68.35	98.20
Cfym	38.45	21.25	26.04

Soil test-based fertilizer prescription equations for targeted yield of cotton

The prescription equations were developed under inorganic and inorganic + organic (IPNS) with the use of basic parameters (Table 5). A ready reckoner was created for various test values to achieve yield targets of 31, 33 and 35 q ha^{-1} with prescription equation. Table 6 presents the ready reckoner developed for the yield target of 33 q ha^{-1}. As soil test values and FYM concentration increased, the required amount of fertilizer N, P and K get decreased (12).

The results indicated that to yield 33 q ha^{-1} of cotton, for a soil test value of 280 kg ha^{-1} of $KMnO_4$ - N, under NPK alone the fertilizer N dose was 177 kg ha^{-1}, with regards to P, for a soil test value of 20 kg ha^{-1} of Olsen - P, the fertilizer P_2O_5 dose was 105 kg ha^{-1} and in case of K, for a soil test value of 200 kg ha^{-1} of NH_4OAc-K, the fertilizer K_2O dose was 115 kg ha^{-1} respectively. Under NPK with FYM at 6.25 t ha^{-1} and 12.5 t ha^{-1}, the results indicated that to achieve a cotton yield of 33 q ha^{-1}, the required nitrogen fertilizer doses were 151 and 125 kg ha^{-1} respectively, based on a soil test value of 280 kg ha^{-1} $KMnO_4$-N. For phosphorus, with a soil test value of 20 kg ha^{-1} Olsen-P, the fertilizer P_2O_5 dose were 90 and 75 kg ha^{-1} respectively. For potassium, at soil test values of 200 kg ha^{-1} NH_4OAc-K the fertilizer K_2O dose was 92 and 68 kg ha^{-1} respectively.

It was clearly observed that there was a saving of 26, 15 and 24 kg ha^{-1} of N, P_2O_5 and K_2O respectively, with the application of FYM at 6.25 t ha^{-1} and a saving of 52, 30 and 48 kg ha^{-1} respectively, with FYM at 12.5 t ha^{-1}. The findings indicate that IPNS is more effective than using inorganic fertilizers alone for achieving higher yield and nutrient uptake in cotton. The fertilizer recommendations based on STCR provide guidance on achievable yield targets through sound agronomic practices. This approach not only boosts yield but also increases profitability by lowering cultivation costs through efficient fertilizer use. The formulated fertilizer prescription equation can thus be effectively utilized to recommend fertilizer doses for achieving targeted cotton yields in the vertisols of Karaikal.

Table 5. Soil test based fertilizer prescription equation for cotton

Particulars	NPK alone	IPNS (NPK + FYM)
FN	7.29 T - 0.23 SN	7.29 T - 0.23 SN - 0.80 ON
FP_2O_5	3.47 T - 0.47 SP	3.47 T - 0.47 SP - 0.71 OP
FK_2O	4.30 T - 0.13 SK	4.30 T - 0.13 SK - 0.32 OK

where, T is the yield target in q ha^{-1}; SN, SP and SK respectively are alkaline $KMnO_4$-N, Olsen-P and NH_4OAc-K in kg ha^{-1}; ON, OP and OK are the quantities of N, P and K supplied through FYM in kg ha^{-1} and FN, FP_2O_5 and FK_2O are fertilizer N, P_2O_5 and K_2O in kg ha^{-1} respectively.

Conclusion

The STCR-IPNS approach significantly enhanced cotton growth, yield and nutrient uptake while improving fertilizer use efficiency. Soil test-based fertilizer prescription equations and nomograms developed under STCR provided precise, yield-targeted recommendations. Integration of FYM with chemical fertilizers resulted in higher productivity, better soil fertility maintenance and notable fertilizer savings. Prediction equations for post-harvest soil test values proved reliable for guiding nutrient management of subsequent crops. Overall, the IPNS-based STCR approach ensures sustainable soil fertility, reduced input costs and improved productivity in cotton cultivation.

Acknowledgements

The authors would like to extend their sincere gratitude to Pandit Jawaharlal Nehru College of Agriculture and Research Institute, located in Karaikal district, Puducherry, for their support during data collection. Special thanks are also due to the staff of the Soil Science department for their valuable contributions to this work.

Authors' contributions

SSP carried out the research and thesis work. UBA guided the conduct of the experiment, thesis writing and corrections. RS and SN assisted in correcting the thesis. PD served as the Project coordinator of the STCR scheme. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interest to declare.

Ethical issues: None

References

1. Vora VD, Rakholiya KD, Rupapara KV, Sutaria GS, Akbari KN. Effect of integrated nutrient management on Bt cotton and post-harvest soil fertility under dry farming agriculture. Asian J Agri Res. 2015;9 (3):1819-94. https://doi.org/10.3923/ajar.2015.350.356
2. Parmar RM, Parmar KB, Jadeja AS. Effect of integrated nutrient management on yield and yield attributing characters of Bt cotton (*Gossypium hirsutum* L.) under north-west agro climatic zone of Gujarat. Int J Chem Stud. 2018;7(1):2362-5.
3. Ramamoorthy B, RK Narasimham, Dinesh RS. Fertilizer application for specific yield taregts on Sonora 64 (wheat). Indian Farming. 1967;17:43-5.

Table 6. Ready reckoner for yield target of 33 q ha^{-1} under NPK alone and IPNS

Soil test values	Targeted yield (33 q ha^{-1})								
$N:P_2O_5:K_2O$ (kg ha^{-1})	NPK alone			NPK + 6.25 t FYM ha^{-1}			NPK + 12.5 t FYM ha^{-1}		
	FN	FP_2O_5	FK_2O	FN	FP_2O_5	FK_2O	FN	FP_2O_5	FK_2O
280:10:100	177	110	129	151	95	105	125	80	81
300:12:120	173	109	126	147	94	102	121	79	79
320:14:140	168	108	123	142	93	100	116	78	76
340:16:160	164	107	121	138	92	97	112	77	73
360:18:180	159	106	118	133	91	94	107	76	71
380:20:200	155	105	115	129	90	92	103	75	68
400:22:220	150	104	113	124	89	89	98	74	65

4. Santhi R, Bhaskaran A, Natesan R. Integrated fertilizer prescriptions for beetroot through inductive cum targeted yield model on an Alfisol. Commun Soil Sci Plant Anal. 2011;42:1-8. https://doi.org/10.1080/00103624.2011.591466

5. Ramu C. Soil test crop response studies under integrated plant nutrition system for rice [M.Sc. (Ag.) thesis]. Karaikal: PAJANCOA & RI; 2014.

6. Nehra PL, Kumawat PD, Nehara KC. Integrated nutrient management in hirsutum cotton. J Cotton Res Dev. 2004;18(2):177-9.

7. Iqbal S, Luqman M, Nasrullah HM, Ullah A, Akram HM. Response of cotton to application of organic and inorganic source of nutrients in semi-arid climate. Sarhad J Agric. 2020;36(3):929-38. https://doi.org/10.17582/journal.sja/2020/36.3.929.938

8. Nalayini P, Sankaranarayanan K, Anandham R. Bio-inoculants for enhancing the productivity and nutrient uptake of winter irrigated cotton (*Gossypium hirsutum* L.) under graded levels of nitrogen and phosphatic fertilizers. Indian J Agron. 2010;55(1):64-7. https://doi.org/10.59797/ija.v55i1.4718

9. Gormus O, Yucel C. Different planting dates and potassium fertility effects on cotton yield and fibre properties in the Cukurova region, Turkey. Field Crops Res. 2002;78:141-9. https://doi.org/10.1016/S0378-4290(02)00121-1

10. Muralidharudu Y, Rathore A, Subba Rao A. 18th progress report of the All India Coordinated Research Project for Investigations on Soil Test Crop Response. Bhopal: IISS; 2007.

11. Agila A, Santhi R, Maragatham S, Swarna Priya R. Inductive cum targeted yield model based Integrated fertilizer prescriptions for tomato (*Solanum lycopersicum* L.) under drip fertigation on an alfisol. J Appl Nat Sci. 2021;13(3):1065-71. https://doi.org/10.31018/jans.v13i3.2883

12. Sellamuthu KM, Santhi R, Maragatham S, Dey P. Soil test and yield target based balanced fertilizer prescription for rainfed maize on an Alfisol. Res Crops. 2016;17(2):231-9. https://doi.org/10.5958/2348-7542.2016.00040.1

Additional information

Peer review: Publisher thanks Sectional Editor and the other anonymous reviewers for their contribution to the peer review of this work.

Reprints & permissions information is available at https://horizonepublishing.com/journals/index.php/PST/open_access_policy

Publisher's Note: Horizon e-Publishing Group remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Indexing: Plant Science Today, published by Horizon e-Publishing Group, is covered by Scopus, Web of Science, BIOSIS Previews, Clarivate Analytics, NAAS, UGC Care, etc
See https://horizonepublishing.com/journals/index.php/PST/indexing_abstracting

Publisher information: Plant Science Today is published by HORIZON e-Publishing Group with support from Empirion Publishers Private Limited, Thiruvananthapuram, India.