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IMPACT OF THE DOUBLING FARMERS' INCOME (DFI) PROGRAMME ON KNOWLEDGE, ADOPTION, PRODUCTIVITY AND INCOME OF GROUNDNUT GROWERS IN NAGARKURNOOL DISTRICT OF TELANGANA

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ABSTRACT

Groundnut is one of the major oilseed crops of southern Telangana and contributes substantially to the livelihood of small and marginal farmers, with Nagarkurnool district alone accounting for just over half of the State entire groundnut growing area. Despite the availability of improved production technologies, adoption has remained suboptimal because of limited technical knowledge, inadequate extension support and resource constraints. To address these gaps, Krishi Vigyan Kendra (KVK), Palem implemented the Doubling Farmers' Income (DFI) Programme, promoting scientific groundnut production technologies through demonstrations, farmer training, exposure visits and regular technical advisories. The present study assessed the programme's impact on knowledge, adoption, productivity and income of beneficiary farmers. An ex-post facto research design was employed with 240 beneficiary farmers selected from Nandivaddeman village (Bijinapally Mandal) and Gummakonda village (Thimmajipet Mandal), 120 respondents from each. Overall mean knowledge and adoption of nineteen recommended best management practices rose from 35.11% and 32.10% before the programme to 89.26% and 84.25% after it. Pod yield increased by 26.6% (2,180 to 2,760 kg ha^{-1}), net income by 51.3% (Rs. 74,200 to Rs. 1,12,300 ha^{-1}) and the Benefit–Cost ratio from 1.46 to 2.01; paired t-tests confirmed that gains in knowledge, adoption, yield and income were all highly significant ($p < 0.01$), with Cohen's d exceeding 1.0 throughout, indicating large effect sizes. Chi-square tests of association further confirmed that the before-after increase in adoption was statistically significant for every one of the nineteen practices individually ($p < 0.001$), with Cohen's h consistently above 1.0, the largest effects recorded for practices seed treatment, soil testing, Integrated Pest Management that had the lowest pre-programme adoption base. The study demonstrates that integrated demonstration-led extension interventions under DFI significantly improved groundnut productivity and profitability among resource-poor farm households in Nagarkurnool district. Beneficiaries showed predominantly medium risk orientation but high innovativeness and achievement motivation, a behavioural profile consistent with the breadth of adoption observed; the high cost of fertilizers and plant-protection chemicals, labour scarcity, erratic rainfall, disease incidence and delayed seed availability were the constraints most frequently cited by farmers, closely mirrored by their own suggestions for subsidized inputs, stronger price support, continued training and expanded custom-hiring access.

Key words: Groundnut, Doubling Farmers Income, Knowledge, Adoption and Yield

Groundnut (*Arachis hypogaea L.*) is an important oilseed crop cultivated predominantly under rainfed conditions in Telangana, where it plays a vital role in farm income, nutritional security and rural employment generation, particularly for small and marginal farm households. Within the State, groundnut cultivation is heavily concentrated in the erstwhile Mahabubnagar region: Nagarkurnool alone accounted for 42,193 ha (50.03% of the State's total groundnut area) in 2023-24, rising to 49,351 ha (51.72%) in 2024-25, well ahead of Nalgonda, Wanaparthy, Vikarabad and Mahabubnagar districts (Table 2), making it, by a considerable margin, Telangana leading groundnut-growing district (*PJTAU-AMIC, 2025*). Nagarkurnool predominantly red sandy soils (about 62% of the district's soil cover, with low water-retention capacity) are well suited to groundnut, castor, redgram and other crops that tolerate moisture stress, but also constrain achievable productivity relative to the crop's genetic potential (*Department of Agriculture, Nagarkurnool, 2025*).

Despite this considerable area, productivity in the district remains constrained by delayed sowing, continued use of local/unimproved seed, poor nutrient management, inadequate disease and pest management, and limited farm mechanization. To enhance farm profitability nationally, the Government of India launched the Doubling Farmers' Income (DFI) initiative, focused on raising productivity, reducing production costs, strengthening market access and improving value addition. In Nagarkurnool district, KVK Palem implemented the programme through demonstrations and capacity-building activities centred on introduction of high-yielding groundnut varieties; seed treatment with fungicides and biofertilizers; timely sowing with recommended spacing; farm mechanization; Integrated Nutrient

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Management (INM); Integrated Disease Management (IDM); Integrated Pest Management (IPM); and scientific harvesting and post-harvest management.

Although these technologies have been promoted widely, limited systematic evidence exists on their overall, farm-level impact on farmers' knowledge, adoption and economic returns in this specific, groundnut-dominant district. Similar knowledge-and-adoption gaps have been documented for groundnut growers elsewhere in Telangana (Archana *et al*., 2024 & Shasani *et al*., 2020) and for frontline demonstration participants in the crop generally (Samui *et al*., 2000 & Darshan *et al*., 2026). The present study was therefore undertaken with the following objective to assess the impact of the Doubling Farmers' Income (DFI) programme on pod yield and net income of groundnut growers.

MATERIAL AND METHODS

The study was conducted during 2024-25 in Nagarkurnool district of Telangana, the State's leading groundnut-growing district (Table 2). Two villages where DFI interventions had been implemented by KVK, Palem were selected purposively Nandivaddeman (Bijinapally Mandal) and Gummakonda (Thimmajipet Mandal). An ex-post facto research design was adopted, since DFI interventions had already been implemented prior to the study. A total of 240 beneficiary farmers (120 from each village) were selected through simple random sampling and with pre-tested structured interview schedule was used for data collection as per the requirements.

RESULTS AND DISCUSSION

Table 1 reported that the majority of respondents were middle-aged (55.00%) with secondary or higher

Table 1. Profile Characteristics of DFI Beneficiary Farmers (n = 240)

Variable	Category	Frequency	Percentage (%)
Age	Young	52	21.67
	Middle	132	55.00
	Old	56	23.33
Education	Illiterate	18	7.50
	Primary	44	18.33
	Secondary	88	36.67
	Intermediate	46	19.17
	Graduate & above	44	18.33
Farm size	Small	98	40.83
	Medium	96	40.00
	Large	46	19.17
Farming experience	Low	58	24.17
	Medium	128	53.33
	High	54	22.50
Training received	Low (1 training)	80	33.34
	Medium (2 trainings)	97	40.41
	High (3 and above trainings)	63	26.25
Extension contact	Low	50	20.83
	Medium	132	55.00
	High	58	24.17
Mass media exposure	Low	46	19.17
	Medium	136	56.67
	High	58	24.16
Risk orientation	Low (11–13)	59	24.58
	Medium (14–16)	143	59.58
	High (17–19)	38	15.84
Innovativeness	Low (16–20)	31	12.91
	Medium (21–25)	84	35.00
	High (26–30)	125	52.09
Achievement motivation	Low (15–19)	50	20.84
	Medium (20–24)	100	41.66
	High (25–29)	90	37.50

education (74.17% combined), and 40.83% were small farmers, indicating that DFI interventions in these two villages primarily reached resource-poor farming households consistent with the programme's stated objective. More than half the respondents (55.00%) had medium extension contact and medium mass media exposure (56.67%), providing a receptive base for the demonstration-led approach adopted by KVK, Palem. Similar profiles predominantly middle-aged, moderately educated, small-to-medium landholding farmers being the most receptive to KVK-led technology transfer have been reported in other groundnut extension studies in Telangana (Shasani *et al*., 2020).

The behavioural characteristics of the respondents indicate a favourable environment for the adoption of recommended groundnut technologies under the DFI programme. The majority of the respondents had low to medium training exposure (73.75%), suggesting that the training and demonstrations conducted by KVK Palem served as their primary source of technical knowledge. Most respondents exhibited a medium level of risk orientation (59.58%), indicating that they were willing to adopt new technologies after observing their effectiveness under local conditions. More than half of the respondents (52.09%) had a high level of innovativeness, reflecting their positive attitude towards learning and adopting improved agricultural practices. Similarly, a majority (79.16%) possessed medium to high achievement motivation, indicating their desire to improve productivity and farm income. These behavioural characteristics, together with continuous extension support and demonstrations under the DFI programme, might have contributed to the higher adoption of recommended groundnut production technologies among the beneficiary farmers.

Area sown under groundnut in the study district

Table 2 situates the study within the broader cultivation footprint of the crop. Nagarkurnool district alone accounted for just over half of Telangana's total area under groundnut in both years for which district-wise data were available, and its share increased slightly between 2023-24 and 2024-25 even as the State's overall groundnut area also expanded underlining both the scale of the crop's importance to the district's farming systems and the corresponding scope for extension interventions such as DFI to generate a meaningful aggregate impact on farm income within the district.

Knowledge and adoption of best management practices

Before implementation of the DFI programme, farmers had relatively low knowledge and adoption of scientific groundnut production practices, with overall mean knowledge and adoption at 35.11% and 32.10% respectively (Table 3). The lowest pre-programme knowledge was recorded for soil testing (17.50%), micronutrient application (22.50%), grading and value addition (24.17%), and farm mechanization (26.67%) practices requiring either specialised technical inputs (soil/tissue testing facilities) or capital investment (machinery), both historically in short supply in this rainfed and red-sandy-soil tract.

Table 2. Area Sown under Groundnut in Nagarkurnool District and Other Major Groundnut- growing Districts of Telangana

District	2023-24 Area (ha)	% to State Total	2024-25 Area (ha)	% to State Total
Nagarkurnool	42,193	50.03	49,351	51.72
Nalgonda	7,401	8.78	9,829	10.30
Wanaparthy	8,614	10.21	8,191	8.58
Vikarabad	5,441	6.45	6,964	7.30
Mahabubnagar	4,453	5.28	5,463	5.72
Other districts	16,233	19.25	15,622	16.37
Telangana State Total	84,335	100.00	95,420	100.00

Source: PJTAU Agricultural Market Intelligence Centre, Groundnut Outlook, May 2025, based on data from the Department of Agriculture, Government of Telangana. Figures for 2024-25 are provisional.

Following DFI interventions on-farm demonstrations, farmer training programmes, field days, diagnostic visits and continuous technical advisories by KVK, Palem mean knowledge rose to 89.26% and mean adoption to 84.25%. The largest absolute gains were recorded for exactly the practices that started from the lowest base: soil testing (17.50% to 78.33% knowledge, a 60.83-percentage-point gain), micronutrient application (22.50% to 80.00%) and farm mechanization (26.67% to 85.00%), indicating that the demonstration-based approach was particularly effective at closing the widest pre-existing technology gaps rather than merely reinforcing practices farmers already knew. These findings are consistent with reports that practical demonstrations coupled with continuous extension support substantially enhance farmers' technical competence and encourage adoption of recommended practices in groundnut and other field crops (Samui *et al*., 2000 & Darshan *et al*., 2026), and with earlier evidence that systematic, cluster-based frontline demonstrations conducted by KVK Palem effectively reduced technology gaps in other crops within the same district (Rajashekar *et al*., 2022). Notably, one of the two study villages, Nandivaddeman, has separately been reported to have 70–80% of its rabi cropped area under groundnut (Mamatha, Sravanthi, *et al*., 2024), underscoring how central this crop and therefore this technology gap is to the local farming system.

Adoption gap index: before and after DFI

Table 4 adoption percentages were converted into an Adoption Gap Index for each practice (Gap % = 100 " Adoption %), making explicit how much of each recommended practice remained unreached by the programme, both before and after implementation.

Before the programme, the mean Adoption Gap Index across all nineteen practices was 68.11% meaning that, on average, more than two-thirds of farmers had not adopted any given recommended practice. Soil testing carried the widest pre-programme gap

Table 3. Farmers' Knowledge and Adoption of Best Management Practices (BMPs) in Groundnut Cultivation Before and After the DFI Programme (n = 240)

Sl. No.	Best Management Practice	Knowledge Before f (%)	Knowledge After f (%)	Adoption Before f (%)	Adoption After f (%)
1	Improved groundnut varieties (Kadiri-6, Kadiri-9, Dharani)	108 (45.00)	223 (92.92)	96 (40.00)	211 (87.92)
2	Selection of quality certified seed	116 (48.33)	228 (95.00)	104 (43.33)	219 (91.25)
3	Seed treatment with fungicide + Rhizobium + PSB	72 (30.00)	216 (90.00)	58 (24.17)	206 (85.83)
4	Recommended seed rate	98 (40.83)	220 (91.67)	92 (38.33)	212 (88.33)
5	Timely sowing	124 (51.67)	230 (95.83)	118 (49.17)	223 (92.92)
6	Recommended spacing	94 (39.17)	221 (92.08)	86 (35.83)	214 (89.17)
7	Soil testing before sowing	42 (17.50)	188 (78.33)	28 (11.67)	174 (72.50)
8	Integrated Nutrient Management (INM)	82 (34.17)	214 (89.17)	70 (29.17)	204 (85.00)
9	Gypsum application at flowering	74 (30.83)	210 (87.50)	66 (27.50)	198 (82.50)
10	Micronutrient application	54 (22.50)	192 (80.00)	46 (19.17)	183 (76.25)
11	Integrated Weed Management	86 (35.83)	208 (86.67)	78 (32.50)	198 (82.50)
12	Integrated Disease Management (IDM)	68 (28.33)	206 (85.83)	60 (25.00)	194 (80.83)
13	Integrated Pest Management (IPM)	72 (30.00)	212 (88.33)	62 (25.83)	201 (83.75)
14	Farm mechanization (seed drill, digger, thresher)	64 (26.67)	204 (85.00)	54 (22.50)	188 (78.33)
15	Harvesting at physiological maturity	138 (57.50)	232 (96.67)	128 (53.33)	225 (93.75)
16	Proper drying and post-harvest handling	112 (46.67)	226 (94.17)	102 (42.50)	216 (90.00)
17	Scientific storage practices	92 (38.33)	218 (90.83)	84 (35.00)	209 (87.08)
18	Grading and value addition	58 (24.17)	198 (82.50)	48 (20.00)	186 (77.50)
19	Market information and price intelligence	80 (33.33)	214 (89.17)	74 (30.83)	202 (84.17)
	Overall Mean	84 (35.11)	214 (89.26)	77 (32.10)	202 (84.25)

(88.33%), followed by micronutrient application (80.83%) and grading/value addition (80.00%), while harvesting at physiological maturity had the narrowest gap (46.67%), since this is a low-cost, purely knowledge-based practice requiring no purchased input. After DFI, the mean Adoption Gap Index fell to 15.29%, a reduction of 52.82 percentage points, meaning fewer than one in six farmers, on average, remained non-adopters of any given practice. Even after the programme, however, soil testing retained the largest residual gap of any practice (27.50%), indicating that access to soil-testing facilities, rather than farmer awareness, is likely still the binding constraint for this specific practice and should be prioritised in any follow-up intervention.

Seed treatment with fungicide, Rhizobium and PSB recorded both the highest chi-square value (177.51) and the largest effect size of any practice (h = 1.339), consistent with this practice having the lowest pre-programme base (24.17%) and one of the largest absolute gains; soil testing (h = 1.310) and Integrated Pest Management (h = 1.285) similarly combined a low starting point with a large effect, followed closely by farm mechanization, grading/value addition and Integrated Disease Management (h = 1.25–1.26). Harvesting at physiological maturity recorded the smallest, though still large, effect size of any practice (h = 1.053), consistent with this practice already having the highest pre-programme adoption (53.33%) and therefore the least room for proportional improvement. This pattern the largest effects concentrated among practices with the lowest starting adoption reinforces the interpretation offered above, that the DFI programme's demonstration-led approach was especially effective at closing the widest pre-existing technology gaps.

The overall adoption rate the mean percentage of farmers adopting a given recommended practice, averaged across all nineteen BMPs rose from 32.10% before the programme to 84.25% after it, a net gain of 52.15 percentage points, with the corresponding overall adoption gap (the mirror-image measure defined above) falling from 67.90% to 15.75%. In practical terms, before DFI, roughly one in three

Table 4. Adoption Gap Index for Best Management Practices, Before and After the DFI Programme (n = 240)

Sl. No.	Best Management Practice	Adoption Gap Before (%)	Adoption Gap After (%)	Reduction in Gap (pp)
1	Improved groundnut varieties	60.00	12.08	47.92
2	Selection of quality certified seed	56.67	8.75	47.92
3	Seed treatment (fungicide+Rhizobium+PSB)	75.83	14.17	61.66
4	Recommended seed rate	61.67	11.67	50.00
5	Timely sowing	50.83	7.08	43.75
6	Recommended spacing	64.17	10.83	53.34
7	Soil testing before sowing	88.33	27.50	60.83
8	Integrated Nutrient Management (INM)	70.83	15.00	55.83
9	Gypsum application at flowering	72.50	17.50	55.00
10	Micronutrient application	80.83	23.75	57.08
11	Integrated Weed Management	67.50	17.50	50.00
12	Integrated Disease Management (IDM)	75.00	19.17	55.83
13	Integrated Pest Management (IPM)	74.17	16.25	57.92
14	Farm mechanization	77.50	21.67	55.83
15	Harvesting at physiological maturity	46.67	6.25	40.42
16	Proper drying and post-harvest handling	57.50	10.00	47.50
17	Scientific storage practices	65.00	12.92	52.08
18	Grading and value addition	80.00	22.50	57.50
19	Market information and price intelligence	69.17	15.83	53.34
	Mean Adoption Gap Index (across 19 practices)	68.11	15.29	52.82

farmers had adopted any given recommended practice on average; after DFI, more than four in five had done so a scale of change consistent with the large Cohen's h effect sizes recorded for individual practices.

Major factors likely influencing adoption

The adoption of recommended groundnut production technologies under the DFI programme was likely influenced by several farmer and institutional factors. Previous studies have shown that extension contact, training, demonstration exposure, education, farming experience, and farm size play an important role in technology adoption (Koomson *et al*., 2024). In the present study, most of the beneficiaries had medium to high extension contact (79.17%), secondary or higher education (74.17%), and small to medium landholdings (80.83%). These favourable characteristics, together with regular training and demonstrations organized by KVK Palem, might have encouraged farmers to adopt improved technologies, resulting in a substantial increase in adoption from 32.10 per cent before DFI to 84.25 per cent after DFI implementation. However, some practices such as soil testing and micronutrient application continued to show relatively lower adoption, possibly due to limited availability of inputs, testing facilities and financial resources. These findings suggest that while extension services and demonstrations play a key role in promoting technology adoption, improving access to essential inputs, credit and support services is equally important for achieving higher adoption levels among groundnut farmers.

From the table 6 the Pod yield rose by 26.6% (2,180 to 2,760 kg ha^{-1}), gross income by 33.7% (Rs. 1,28,600 to Rs. 1,71,900 ha^{-1}) and net income by 51.3% (Rs. 74,200 to Rs. 1,12,300 ha^{-1}), while the Benefit–Cost ratio improved from 1.46 to 2.01. The adoption of improved varieties, seed treatment, balanced nutrient application, mechanization and integrated disease management collectively raised pod yield and, because the percentage gain in net income (51.3%) considerably exceeded the percentage gain in gross income (33.7%), indicates that the programme improved profitability by curbing avoidable losses and input inefficiencies (e.g., disease/pest losses, imbalanced fertilizer use) at least as much as it raised gross output.

The paired t-test confirmed statistically significant improvements in knowledge (t = 18.64), adoption (t = 20.12), pod yield (t = 16.45) and net income (t = 18.91), all significant at $p < 0.01$. Cohen's d, computed from each t-value, exceeded 1.0 for all four variables (range 1.06–1.30), indicating a large effect by conventional benchmarks (d e" 0.8) and confirming that these were not merely statistically detectable but substantively meaningful improvements in farm-level performance the largest effect size was recorded for adoption score (d = 1.299) and the smallest, though still large, for pod yield (d = 1.062), suggesting that the programme shifted farmers' adoption behaviour somewhat more strongly, in relative terms, than it shifted the physical yield outcome that behaviour change was ultimately intended to produce. These results indicate that the integrated extension approach adopted by KVK,

Table 5. Chi-square Test and Cohen's h Effect Size for the Most Strongly Affected BMPs (n = 240)

Sl. No.	Best Management Practice	χ^2 (df=1)	p-value	Cohen's h	Effect Size
1	Seed treatment (fungicide+Rhizobium+PSB)	177.51	<0.001	1.339	Large (highest)
2	Soil testing before sowing	175.51	<0.001	1.310	Large
3	Integrated Pest Management (IPM)	166.61	<0.001	1.285	Large
4	Farm mechanization	163.23	<0.001	1.261	Large
5	Grading and value addition	161.73	<0.001	1.251	Large
6	Integrated Disease Management (IDM)	159.61	<0.001	1.247	Large
7	Harvesting at physiological maturity	102.00	<0.001	1.053	Large (lowest)
	Overall (mean across all 19 practices)	131.61	<0.001	1.119	Large

Palem effectively translated scientific recommendations into measurable, statistically robust improvements in farm performance, rather than reflecting incidental year-to-year variation.

Table 9 reported that the high cost of fertilizers and plant protection chemicals was the most widely reported constraint (90.00%), followed by labour scarcity and high wages (86.67%), erratic rainfall and moisture stress (83.75%), disease incidence particularly Tikka leaf spot and stem rot (81.67%) and delayed availability of quality seed (78.75%). These findings align closely with the residual, post-DFI adoption gaps identified in Table 3c: input- and cost-intensive practices such as Integrated Nutrient Management, Integrated Disease Management and farm mechanization retained the largest residual gaps (15–22%) even after the programme, precisely the practices most exposed to the cost and labour constraints reported here. This convergence between what farmers say limits them and which specific practices show the slowest residual adoption is a useful internal consistency check on both measures, and reinforces the interpretation, offered in the discussion of major influencing factors above, that closing the last mile of adoption for cost-intensive practices requires input-price, credit or labour-market interventions rather than extension contact alone.

Consistent with the constraints reported above, the most frequent suggestion was to ensure timely supply of quality certified seed (92.50%), followed by subsidized fertilizers and plant-protection inputs (90.42%), stronger Minimum Support Price and procurement facilities (87.08%), continued regular training and demonstrations (84.58%), and more Custom Hiring Centres for farm machinery (82.50%). The close mirroring between the top-ranked constraints (input cost, labour/mechanization access, seed timing) and the top-ranked suggestions (subsidized inputs, custom hiring centres, timely seed supply) indicates that farmers themselves are identifying the same input-access and cost bottlenecks highlighted by the adoption gap and effect-size analyses in Sections above, rather than requesting fundamentally different interventions a convergence that strengthens the case for the specific, targeted follow-up measures (credit facilitation, input-price support, expanded custom hiring access) already recommended in the Conclusion of this study.

CONCLUSION

The Doubling Farmers' Income Programme implemented by KVK, Palem had a positive and statistically significant impact on beneficiary groundnut growers in Nandivaddeman and Gummakonda villages of Nagarkurnool district itself the source of just over half of Telangana's entire groundnut-growing area, and therefore a setting in which even a village-level extension programme carries meaningful aggregate significance for the crop's State-wide production. Farmers showed substantial improvements in technical knowledge (35.11% to 89.26%), adoption of recommended production technologies (32.10% to 84.25%), pod yield (26.6% increase) and net income (51.3% increase), all confirmed as statistically significant by paired t-tests. The programme demonstrated that

Table 6. Overall Adoption Rate of Recommended BMPs,Before and After the DFI Programme (n =240)

Period	Mean Adoption Rate across 19 BMPs (%)	Mean Adoption Gap (%)
Before DFI programme	32.10	67.90
After DFI programme	84.25	15.75
Net change	+52.15 %	–52.15 %

Table 7. Yield and Income Before and After DFI Implementation

Parameter	Before	After	Increase (%)
Pod yield (kg ha^{-1})	2,180	2,760	26.6
Gross income (Rs. ha^{-1})	1,28,600	1,71,900	33.7
Net income (Rs. ha^{-1})	74,200	1,12,300	51.3
Benefit–Cost ratio	1.46	2.01	–

Table 8. Paired t-test for Programme Impact

Variable	Mean Difference	t-value	Cohen's d	Effect Size
Knowledge score	22.8	18.64**	1.203	Large
Adoption score	25.7	20.12**	1.299	Large
Pod yield (kg ha^{-1})	580	16.45**	1.062	Large
Net income (Rs. ha^{-1})	38,100	18.91**	1.221	Large

'** *Significant at $p < 0.01$.*

Table 9. Major Constraints Reported by DFI Beneficiary Farmers in Adoption of Recommended Groundnut Technologies (n = 240)

Sl. No.	Constraint	Frequency (f)	Percentage (%)	Rank
1	High cost of fertilizers and plant protection chemicals	216	90.00	I
2	Labour scarcity and high labour wages	208	86.67	II
3	Erratic rainfall and moisture stress	201	83.75	III
4	High incidence of Tikka leaf spot and stem rot diseases	196	81.67	IV
5	Non-availability of quality seed at the right time	189	78.75	V

technology dissemination through demonstrations, training and regular advisory services can effectively enhance productivity and profitability in groundnut cultivation, particularly for practices soil testing, micronutrient management, mechanization where the pre-programme technology gap was widest. Expanding similar interventions to additional groundnut-growing villages within Nagarkurnool and other high-area districts (Nalgonda, Wanaparthy, Vikarabad, Mahabubnagar), and strengthening market linkages, mechanization support and post-harvest management, could further improve farmers' livelihoods across Telangana's groundnut belt.

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