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Growth and Trends in Food Crops and Commercial Crops in Telangana

*** Dr Anugu Anil Reddy**
Lecturer in Economics,Vasishtha Degree & PG College, Kamareddy Dist.,Telangana
anuguanill@gmail.com

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Abstract

Telangana's agricultural growth since state formation has been uneven across crops. This article compares annual cultivated area, production and average yield from 2014–15 to 2024–25 using the Reserve Bank of India's Handbook of Statistics on Indian States 2024–25. The analysis covers foodgrains and a selected commercial crop basket comprising cotton, nine oilseeds and sugarcane. Compound annual growth rates and log linear regressions are calculated from eleven annual observations. Foodgrain area rose from 2.613 million to 5.919 million hectares, while production increased from 7.115 million to 21.635 million tonnes. The corresponding endpoint growth rates were 8.52 and 11.76 percent per year. Much of this expansion came from rice, which occupied about 81 percent of foodgrain area in 2024–25. Cotton output grew at 4.30 percent annually, although its area increased by only 0.57 percent. Oilseeds and sugarcane lost area, and the commercial basket as a whole recorded a small endpoint decline. The regression comparison also shows foodgrain area gaining relative to this basket. These estimates describe the recorded crop pattern; eleven observations cannot establish the effects of individual government programmes. The results point to the need for better water productivity in rice, viable markets for pulses and oilseeds, and closer attention to the risks associated with commercial crops. Crop growth must also be assessed against farm returns and resource use before wider claims about agricultural progress can be made.

Keywords: Telangana, foodgrains, commercial crops, cropping pattern, compound annual growth rate, time trend regression, crop productivity.

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1. Introduction

How widely has Telangana's agricultural expansion been shared across crops? The answer matters because an increase in foodgrain output can be driven largely by one crop, leaving other parts of the farming economy on a different course. The period from 2014–15, the first crop year after state formation, to 2024–25 offers eleven annual observations with which to examine this question. This article follows the area and output of major field crops and asks how their relative positions changed over that period.

Farmers choose crops within the limits imposed by soil, rainfall, water access and the resources available to their households. Expected prices, procurement and the cost of cultivation also enter that decision. The annual crop totals analysed here are the combined outcome of many such decisions. They reveal what changed at the state level, but do not identify the separate influence of irrigation, price support or any particular scheme. The discussion of these influences is therefore interpretive rather than a measurement of policy effects.

The categories need some care. Rice is a food crop even when a farmer produces it mainly for sale, and oilseeds serve both household consumption and industrial demand. For this study, food crops are represented by the official foodgrain aggregate of cereals and pulses. The commercial comparison covers cotton, nine oilseeds and sugarcane, using the non foodgrain groupings in the RBI handbook (Reserve Bank of India, 2025). Horticulture and spices are excluded. Conclusions about this selected basket should consequently not be read as conclusions about every commercial crop grown in Telangana.

2. Significance of the study

Separating area growth from yield growth makes the source of additional output easier to understand. A crop can produce more because it occupies a larger seasonal area, because production per hectare improves, or because both occur. These possibilities have different implications for land and water use. The distinction is equally useful when output falls: a crop may be losing cultivated area even while its average yield is improving.

Crop level evidence also adds something that the foodgrain total cannot show. Changes in pulses matter for the composition of food production, while oilseed cultivation affects the raw material available to oil processors. Cotton and sugarcane raise different questions about quality, marketing and processing. The annual tables in this article allow these differences to be examined directly and provide the inputs needed to reproduce the growth calculations.

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3. Review of literature

Akula, Bandumula and Rathod (2022) studied Telangana rice over 1990–91 to 2019–20. They combined compound growth estimates with instability and decomposition analysis, reporting overall annual growth of 2.1 percent in area, 3.7 percent in production and 1.5 percent in yield. Their approach is useful here because it treats expansion and variability as separate features of crop performance. Their estimates refer to a different period, however, and are not a benchmark against which the present eleven year estimates can be compared without qualification.

Movement between crops is the focus of Saritha et al. (2023), who applied a Markov chain method to Telangana data for 2000–01 to 2020–21. Their work draws attention to a limitation of net growth figures: an increase in one crop's area does not identify the crops or land uses from which that area came. The present study estimates changes in state totals. It does not reconstruct the movement of individual fields from one crop to another.

Rajini Devi et al. (2020), writing in the journal's 2019 volume, examined Karimnagar over 1966–67 to 2016–17. Their findings describe continuing changes in crop allocation, including movement towards cotton and turmeric. That district experience is a reminder that crop patterns vary within Telangana. It would be misleading to assume that an earlier trend in Karimnagar describes the later experience of the whole state.

The Government of Telangana's Socio Economic Outlook 2023 places paddy and cotton within the discussion of agricultural support and irrigation. It supplies institutional context for interpreting the crop series. For numerical consistency, this article instead draws all annual observations from a single edition of the RBI handbook (Reserve Bank of India, 2025). Neither source, by itself, supplies a counterfactual against which the effect of a government intervention can be measured.

This article brings the foodgrain and selected commercial series together for 2014–15 to 2024–25. Its contribution is the comparison across crops within one reporting source, with area, production and derived yield shown separately. It also distinguishes the rate connecting the first and last observations from the rate fitted to the full annual series. That distinction becomes important for crops whose output fluctuated considerably between the two endpoints.

4. Statement of the problem

Aggregate foodgrain growth does not answer whether Telangana's major crops advanced together. A large rise in rice cultivation could outweigh losses elsewhere, while a small endpoint change in cotton area could conceal substantial movements in the intervening years. Without

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examining the annual series, these different experiences are easily lost in a general account of agricultural growth.

The problem addressed here is to determine which crop groups expanded, how far output growth was accompanied by higher average yields, and whether foodgrain area grew more rapidly than the selected commercial basket. The analysis also asks how much the answer depends on the growth measure used. Its scope is physical crop performance; evidence on profitability and policy causation would require additional variables and a different research design.

5. Objectives of the study

1. To describe annual area and production trends in foodgrains and selected commercial crops from 2014–15 to 2024–25.
2. To estimate endpoint CAGRs of area, production and derived average yield for each crop group.
3. To compare annual log linear trends and evaluate the difference between foodgrain and selected commercial crop area growth.
4. To interpret changes in crop composition and offer evidence linked suggestions for agricultural development.

6. Methodology

6. 1 Research design and sources

The analysis uses annual secondary data for Telangana from the Reserve Bank of India (2025), Handbook of Statistics on Indian States 2024–25. Production is taken from Tables 58 and 60–65, and area from Tables 67, 69–71 and 76–78. The handbook credits the Ministry of Agriculture and Farmers Welfare as the underlying source. Each series contains eleven observations, from 2014–15 through 2024–25. No values have been interpolated. All source tables were accessed on 8 November 2026, and the appendix identifies the relevant tables and retrieval addresses.

One edition of the handbook is used throughout so that the calculations do not mix observations from different rounds of revision. State publications inform the background discussion but are not used to replace selected annual figures. The extracted RBI tables do not label the estimation status of every 2024–25 entry. Those entries are therefore treated as the estimates published in this edition, without assuming that all are final. If the underlying series is revised, the reported growth rates and regressions will also need revision.

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6 .2 Coverage and measurement

Analytical category	Coverage and unit
Food crops	Total foodgrains, with rice, coarse cereals and pulses separately examined. Foodgrains also include wheat.
Selected commercial crops	Cotton plus nine oilseeds plus sugarcane. Basket area is their sum and is not total commercial crop area.
Area	Thousand hectares in source and annual tables. Graph 1 converts to lakh hectares by dividing by 100.
Production	Thousand tonnes except cotton, measured in thousand bales of 170 kg each. Rice is rice output, not unhusked paddy output.
Derived yield	Production divided by area; kg per hectare after unit conversion. Foodgrain and oilseed yields are crop mix averages.

Annual crop area can include the same field in more than one season. Its growth may therefore reflect additional seasonal cultivation as well as an increase in the physical land cultivated. A separate measurement issue concerns output. Cotton is reported in bales, oilseeds in tonnes and sugarcane as cane biomass. No combined commercial production total is calculated: adding these quantities would obscure the differences between the products, even after conversion to a common weight unit.

6. 3 Compound annual growth rates

The endpoint annual compound growth rate is CAGR = 100 × [($X_{2024–25}$ / $X_{2014–15}$)^(1/10) − 1]. The denominator is ten annual intervals, not eleven observations. This measure shows the constant annual rate connecting the observed endpoints. It does not imply that the crop grew at that rate in each intervening year. Annual growth, when discussed, is 100 × (X_t / $X_{t–1}$ − 1).

Yield is calculated as production divided by area. For tonne based crops, the ratio of source quantities is multiplied by 1,000 to obtain kg per hectare. Cotton's ratio is multiplied by 170 because one bale contains 170 kg of lint. A numerical consistency check follows from production = area × yield: (1 + gP) = (1 + gA)(1 + gY), with all growth rates expressed as

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proportions. This identity describes accounting relationships, not independent causal contributions.

6 .4 Regression comparison

For each series, ordinary least squares estimates $\ln(X_t) = \alpha + \beta t + u_t$, where t = 0 for 2014–15 and t = 10 for 2024–25. The fitted annual compound rate is $100 \times [\exp(\beta) - 1]$. It uses all eleven annual observations and therefore differs from endpoint CAGR. R squared measures fit to the logged series; it is not evidence of causality or forecasting accuracy.

For a direct area comparison, the model is $D_t = \ln(F_t / C_t) = \delta + \gamma t + v_t$, where F is foodgrain area and C is the sum of cotton, oilseed and sugarcane areas. The null hypothesis is $\gamma = 0$. This paired annual ratio approach retains the contemporaneous relationship between the two crop groups and avoids treating them as independent samples. A positive γ indicates that the foodgrain to commercial area ratio increased over time.

Regression uncertainty uses a Newey West (1987) heteroskedasticity and autocorrelation consistent covariance estimator with one annual lag, Bartlett weight 0.5 at lag one, and the finite sample multiplier $n/(n - 2)$. Approximate 95 percent intervals use the t critical value with nine degrees of freedom. This is an exploratory correction: eleven observations are too few for strong asymptotic guarantees, dependable unit root testing or elaborate multivariable models. Confidence intervals and p values should therefore be read cautiously. No policy impact regression or production forecast is attempted.

7 .Analysis of the study

7. 1 Annual cultivated area

Table 1 Annual crop area in thousand hectares

Year	Rice	Coarse cereals	Pulses	Food grains	Oilseeds	Cotton	Sugarcane
2014–15	1,415.0	784.0	408.1	2,613.1	496.0	1,713.0	38.0
2015–16	1,046.0	657.0	472.0	2,180.0	450.0	1,773.0	35.0

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Year	Rice	Coarse cereals	Pulses	Food grains	Oilseeds	Cotton	Sugarcane
2016–17	1,682.2	911.0	695.0	3,293.2	522.0	1,409.0	29.0
2017–18	1,962.0	707.0	572.0	3,245.0	374.0	1,897.0	35.0
2018–19	1,932.0	608.0	511.0	3,056.0	321.0	1,839.0	40.0
2019–20	2,011.0	661.0	517.0	3,194.0	339.0	2,127.0	26.0
2020–21	3,186.4	361.0	591.7	4,145.1	335.0	2,358.0	22.0
2021–22	3,654.9	486.1	594.0	4,742.0	375.0	1,889.0	28.0
2022–23	4,662.1	588.0	443.0	5,696.1	342.0	1,972.9	28.0
2023–24	4,685.2	604.0	330.0	5,623.2	304.0	1,818.0	27.0
2024–25	4,809.5	753.8	353.5	5,919.3	285.4	1,812.3	20.6

Source: RBI (2025), Tables 67, 69–71 and 76–78; Telangana rows. Foodgrains include the separately displayed rice, coarse cereals and pulses, plus wheat. These columns must not be summed together. All figures use the selected publication vintage.

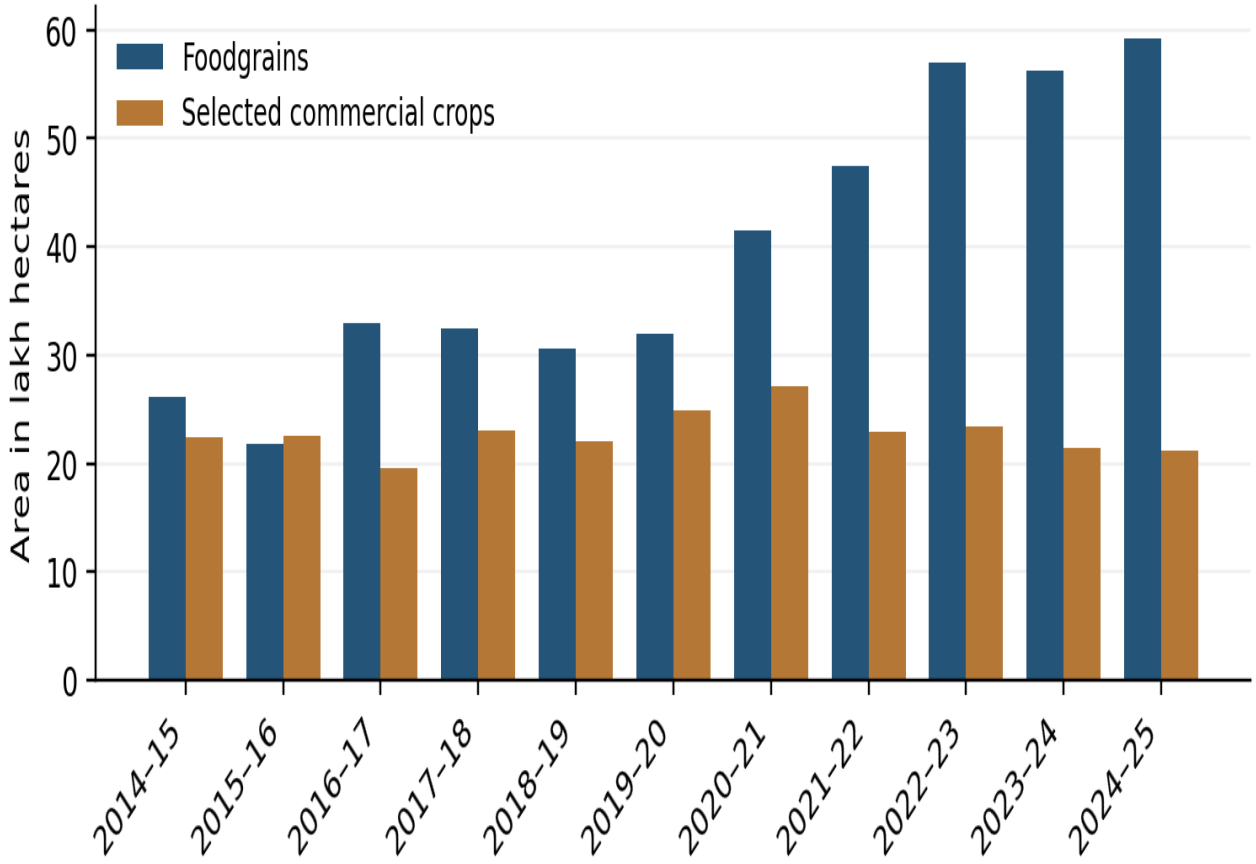
The additional foodgrain area amounted to 3.306 million hectares, an increase of 126.52 percent between 2014–15 and 2024–25. Rice alone gained 3.395 million hectares. Its gain was larger than the foodgrain total's net increase because the other components together lost area. Rice's share within foodgrains rose from 54.15 to 81.25 percent. The denominator is foodgrain area, so these shares do not measure rice's position in all cropped land in Telangana (Table 1).

The annual path was far from uniform. Foodgrain area first fell in 2015–16 and later expanded, with much of the increase occurring after 2019–20. Rice area, for example, rose from 2.011

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million hectares in 2019–20 to 3.186 million in 2020–21. Table 1 establishes the size and timing of the recorded change. It cannot show how much came from greater cropping intensity, particular irrigation investments or other influences.

Figure 1 Annual area under foodgrains and selected commercial crops

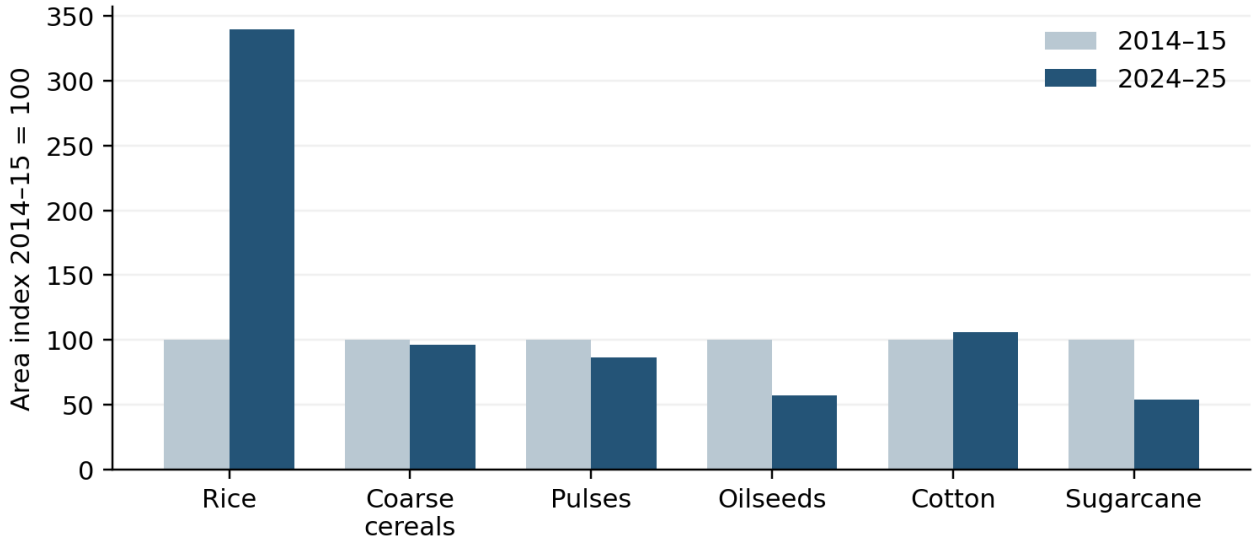


Source: Table 1 and author calculations. Selected commercial crops comprise cotton, nine oilseeds and sugarcane. Bars show annual cultivated area, not unique physical land.

The commercial basket moved within a narrower range. It covered 2.247 million hectares at the beginning and 2.118 million at the end, a net decline of 5.73 percent. Between those years, it reached 2.715 million hectares in 2020–21. Cotton's share of this basket increased from 76.23 to 85.55 percent as oilseeds and sugarcane lost ground. Meanwhile, the ratio of foodgrain area to the basket's area rose from 1.16 to 2.79. These calculations show relative concentration in the covered crops, not a measure of diversity across the entire agricultural sector (Table 1).

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Figure. 2 Crop area changes relative to the base year



Source: (Table 1 calculations). Every crop equals 100 in 2014–15. The index compares proportional change and does not compare absolute crop size.

7. 2 Annual production

Table 2 Annual crop production

Year	Rice	Coarse cereals	Pulses	Food grains	Oilseeds	Cotton	Sugarcane
2014–15	4,440.8	2,404.0	263.0	7,114.8	630.0	3,800.0	3,343.0
2015–16	3,047.0	1,834.0	239.6	5,129.0	496.0	3,661.0	2,405.0
2016–17	5,173.4	2,768.2	536.0	8,484.6	723.0	3,444.0	2,061.0
2017–18	6,262.2	2,639.3	514.0	9,421.1	669.8	5,195.0	2,604.5
2018–19	6,670.0	2,155.7	440.1	9,275.2	589.2	3,847.0	3,183.6
2019–20	7,427.8	3,138.9	549.2	11,125.1	639.2	6,833.0	2,012.9
2020–21	10,217.1	1,922.9	589.8	12,745.6	574.0	5,797.9	1,751.0

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Year	Rice	Coarse cereals	Pulses	Food grains	Oilseeds	Cotton	Sugarcane
2021–22	12,409.6	2,349.2	576.0	15,348.8	681.2	4,878.1	2,864.6
2022–23	15,877.3	2,994.4	497.2	19,375.0	617.6	5,744.6	2,942.7
2023–24	16,874.1	3,034.3	361.2	20,276.4	527.3	5,079.7	2,433.1
2024–25	17,445.7	3,785.2	398.8	21,634.6	539.0	5,788.7	1,916.2

Units: thousand tonnes for every column except cotton, which is thousand bales of 170 kg each. Source: RBI (2025), Tables 58 and 60–65; Telangana rows. Foodgrains are an inclusive aggregate, not an additional crop. Rice production must not be compared directly with state series of unhusked paddy.

Foodgrain production rose by 204.08 percent across the ten annual intervals. Rice made the largest contribution: output increased from 4.441 million to 17.446 million tonnes, or 292.85 percent. Rice's share of foodgrain production rose from 62.42 to 80.64 percent. Read alongside the area figures, this shows how strongly the foodgrain expansion depended on rice (Tables 1 and 2).

The smaller foodgrain groups followed another route. Coarse cereal production rose from 2.404 million to 3.785 million tonnes despite a slight reduction in cultivated area. Pulses increased from 0.263 million to 0.399 million tonnes while also losing area. Their derived average yields consequently improved. Because each category contains several crops, part of that improvement could reflect changes in the mix of crops within the group; it need not represent the same yield gain for every constituent crop (Tables 1–3).

Cotton output was 3.800 million bales in 2014–15 and 5.789 million in 2024–25. The highest observation, however, was 6.833 million bales in 2019–20. Growth between the endpoints thus coexisted with sizeable reversals. Oilseeds and sugarcane ended below their initial output levels: oilseeds declined from 0.630 million to 0.539 million tonnes, and sugarcane from 3.343 million to 1.916 million tonnes. Table 2 therefore gives no basis for treating commercial crop production as one common growth experience.

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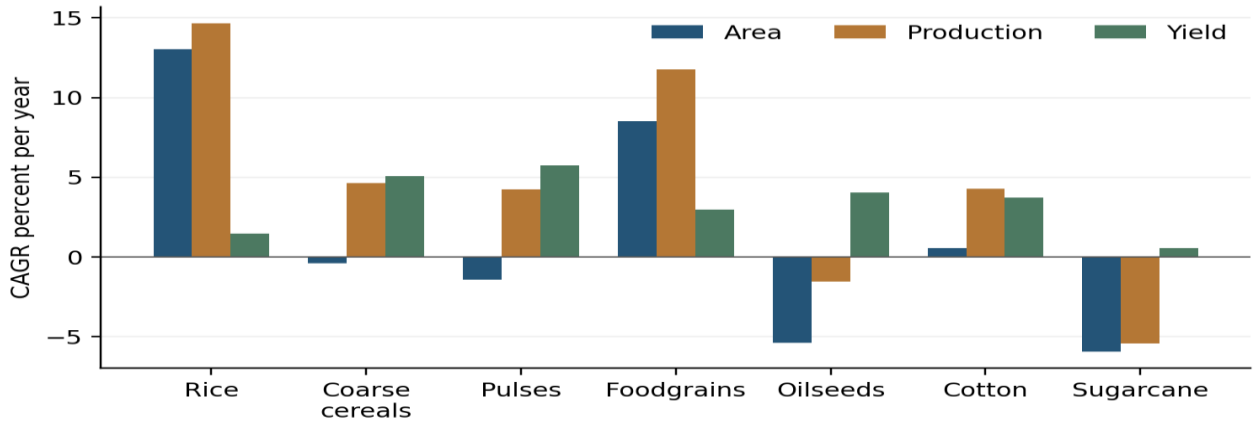
7. 3 Annual compound growth rates and yield changes

Table. 3 Endpoint compound annual growth rates in percent per year

Crop or group	Area CAGR	Production CAGR	Yield CAGR	Yield 2014–15	Yield 2024–25
Rice	13.01	14.66	1.46	3,138.4	3,627.3
Coarse cereals	-0.39	4.64	5.06	3,066.3	5,021.5
Pulses	-1.43	4.25	5.76	644.4	1,128.1
Foodgrains	8.52	11.76	2.99	2,722.7	3,654.9
Oilseeds	-5.38	-1.55	4.05	1,270.2	1,888.6
Cotton	0.57	4.30	3.71	377.1	543.0
Sugarcane	-5.94	-5.41	0.56	87,973.7	93,019.4

Source: from Tables 1 and 2. All yields are kg per hectare; cotton is lint yield. Sugarcane yield represents cane biomass. Group yields reflect both within crop productivity and changes in crop mix. The period has ten growth intervals.

Figure .3 Annual compound growth rates of area production and yield



Source: Table 3. These are endpoint CAGRs, not fitted regression growth rates. Production rates are comparable as percentages even though physical units differ.

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The rice results show why area and yield should be kept separate. Its output CAGR was 14.66 percent, alongside 13.01 percent growth in area and 1.46 percent in yield. Expanded seasonal cultivation accounts for the larger part of the endpoint output increase. The arithmetic is multiplicative: an area growth factor of 1.1301 combined with a yield factor of 1.0146 gives approximately 1.1466. Simply adding the two percentage rates omits their interaction (Table 3).

Cotton's endpoint growth depended more on average lint yield. Area grew at 0.57 percent a year, while yield rose at 3.71 percent and production at 4.30 percent. This does not describe steady acreage expansion: the annual area series peaked in 2020–21 before falling. The endpoint figures suggest a larger role for yield improvement than for additional area, without establishing what produced that improvement (Tables 1 and 3).

Yield improvement did not fully compensate for the area lost by oilseeds. A 4.05 percent annual gain in average yield accompanied an area decline of 5.38 percent, leaving output down by 1.55 percent a year. Sugarcane's area fell at 5.94 percent annually, while its yield increased by only 0.56 percent; production declined at 5.41 percent. These results identify a need to investigate cultivation returns, water requirements and access to processing. They do not identify any one of those factors as the cause of the decline (Table 3).

Pulses illustrate the sensitivity of endpoint comparisons. Their production CAGR is positive, yet output in 2024–25 remained below the 2020–21 observation. Coarse cereals also combined lower endpoint area with higher output. For both groups, the full annual path matters when deciding whether an endpoint gain represents a sustained trend. The regressions below provide a second way of examining that question (Tables 1–3).

7. 4 Regression results and comparison

Table .4 Log linear regressions for cultivated area

Crop or group	β per year	Fitted growth %	95% interval for growth %	R squared
Rice	0.1538	16.63	13.34 to 20.01	0.920
Coarse cereals	-0.0283	-2.79	-7.35 to 1.98	0.143
Pulses	-0.0298	-2.94	-8.85 to 3.36	0.184
Foodgrains	0.0962	10.10	8.27 to 11.96	0.892
Oilseeds	-0.0505	-4.92	-6.45 to -3.37	0.714
Cotton	0.0148	1.49	-0.73 to 3.77	0.146

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Crop or group	β per year	Fitted growth %	95% interval for growth %	R squared
Sugarcane	-0.0477	-4.66	-6.65 to -2.63	0.546
Selected commercial	0.0022	0.22	-1.41 to 1.87	0.007

Source: author calculations. Dependent variable is ln(area in thousand hectares); t = 0,…,10; n = 11. Intervals use one lag HAC covariance with finite sample correction and an approximate t reference. A growth interval containing zero does not establish a nonzero linear log trend at the stated level.

Using all annual observations, the fitted growth rate of foodgrain area is 10.10 percent, against 0.22 percent for the commercial basket. Rice records the largest fitted area increase, at 16.63 percent. Oilseeds and sugarcane have negative intervals that exclude zero. Cotton's estimated area growth is 1.49 percent, but its interval includes zero, as do those for pulses and coarse cereals. The small positive change in cotton area between the endpoints therefore should not be interpreted as firm evidence of a sustained upward trend (Table 4).

The comparison can also be made directly through the annual area ratio. The fitted equation is $\ln(F_t/C_t) = 0.0371 + 0.09405t$, with an HAC standard error of 0.01047 for the slope. Its approximate 95 percent interval is 0.07036 to 0.11774, R squared is 0.794, and the approximate two sided p value is below 0.001. The fitted ratio grows at 9.86 percent a year. This is the percentage growth of the foodgrain to commercial area ratio, rather than a percentage point difference between two CAGRs. Within the defined basket, foodgrains gained relative area over the period. The strength of that descriptive result should be distinguished from the limited precision of inference based on eleven observations (author regression calculations).

Table .5 Log linear regressions for production

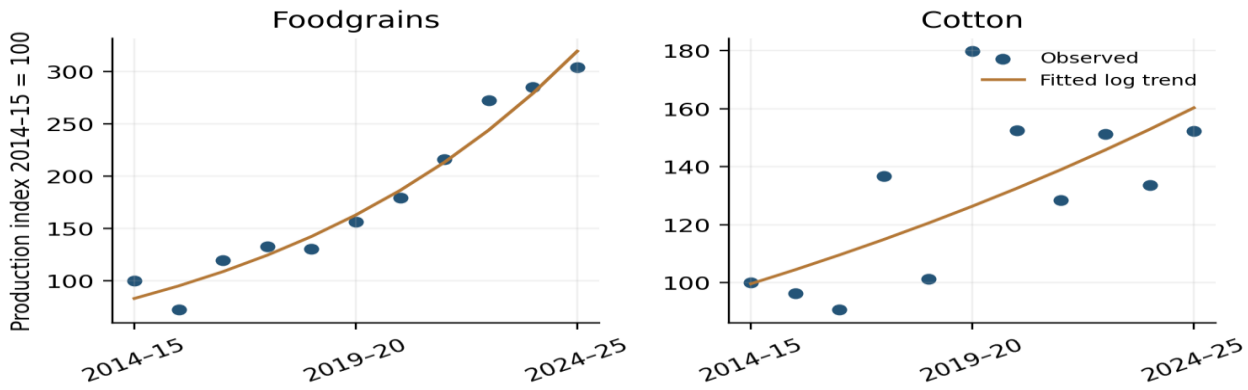
Crop or group	β per year	Fitted growth %	95% interval for growth %	R squared
Rice	0.1713	18.69	15.02 to 22.48	0.939
Coarse cereals	0.0379	3.87	0.75 to 7.08	0.324
Pulses	0.0365	3.72	-4.75 to 12.95	0.152
Foodgrains	0.1348	14.43	11.78 to 17.15	0.931
Oilseeds	-0.0091	-0.91	-3.40 to 1.65	0.067

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Crop or group	β per year	Fitted growth %	95% interval for growth %	R squared
Cotton	0.0476	4.87	2.58 to 7.22	0.475
Sugarcane	-0.0189	-1.87	-5.81 to 2.23	0.083

Source and estimation notes: as in Table 4. Dependent variable is the natural logarithm of production in its original source unit. Changing units changes the intercept but leaves the slope and fitted percentage growth unchanged.

Figure. 4 Observed production and fitted log linear trends



Source: Table 2 and regressions in Table 5. The vertical scale is an index, not tonnes or bales. Lines summarise the in sample trend; they are not forecasts.

The fitted production growth rates are 14.43 percent for foodgrains and 18.69 percent for rice. Both exceed the endpoint estimates because the regression also incorporates the low observations early in the series. Cotton's fitted output growth is 4.87 percent. Its R squared, 0.475, is considerably below the foodgrain value of 0.931, indicating larger deviations from a smooth log linear path. Figure 4 shows those departures; neither fitted line is an out of sample forecast (Table 5).

For pulses, the output growth interval includes zero even though the endpoint CAGR is positive. The oilseed and sugarcane intervals also include zero, despite negative endpoint rates. There is no contradiction. CAGR reports the change connecting two observed years, whereas the regression asks whether the annual observations support a constant log trend. Considerable variation between those years can leave the latter estimate uncertain (Tables 3 and 5).

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7. 5 Interpretation and research limitations

Two changes stand out: rice gained within foodgrains, and cotton gained within the selected commercial basket. A claim about overall crop diversification would require a broader dataset, including horticulture and spices, together with a suitable diversity measure. Seasonal cultivation would also have to be handled consistently. The present evidence supports conclusions about the crops covered here, rather than about every component of Telangana agriculture.

Output figures cannot settle the question of farmer welfare. The dataset does not contain crop prices, cultivation costs, irrigation expenses or the value of household labour. A crop with rapid physical growth need not provide the highest net return, and an increase in state output need not benefit all growers equally. Connecting the trends to incomes would require evidence at the crop, district and household levels.

The short time span is another limitation. Low early observations, unusual seasons or later statistical revisions can influence a regression fitted to only eleven years. A single slope may also conceal changes within the period. The HAC covariance adjustment allows for some error dependence, but does not solve omitted variable or nonstationarity problems. The policy discussion consequently uses the observed crop pattern to identify priorities for investigation rather than to claim measured effects of particular interventions.

8. Suggestions

8 .1 Improve water productivity in rice

The scale of rice cultivation makes water productivity an immediate research and extension priority. Local demonstrations could compare irrigation schedules, land levelling, establishment methods and varieties while recording water use, yield and cultivation costs. Decisions about further seasonal expansion should consider available water and procurement capacity together. The analysis does not estimate an optimal statewide rice area; that would require district level agronomic and economic evidence.

8 .2 Make pulse and oilseed alternatives commercially viable

Pulses and oilseeds need viable market arrangements as well as suitable seed and cultivation advice. A useful programme would compare their net returns and risks with those of the crops farmers would otherwise grow. Oilseeds are particularly instructive: average yield improved while area fell. Promoting yield alone may therefore be insufficient to retain cultivation. Aggregation, processing access and marketing conditions deserve attention in locations where

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soil and water conditions favour these crops. Such measures should be piloted and evaluated before wider adoption.

8 .3 Strengthen cotton risk management and sugarcane viability assessment

For cotton, the practical questions concern lint quality, pest losses, input costs and the price growers actually receive. The fluctuations in output make a smooth growth projection a poor substitute for risk assessment. Extension and producer organisations could help with pest monitoring, grading and access to market information. Their value should be judged by measurable changes in realised returns and losses, rather than membership or activity counts alone.

Sugarcane calls for a local viability assessment. Mill access, payment delays, irrigation requirements and alternative land uses should be examined before recommending a return to earlier acreage. Declining area is not, by itself, a reason to restore cane cultivation in every district. Where water and processing conditions are favourable, reliable purchase arrangements may help; elsewhere, suitable alternatives may be more useful. These proposals follow from the questions raised by the crop series and are not explanations established by the regression.

8 .4 Improve statistical reporting and evaluation

Researchers would benefit from downloadable seasonal crop tables that identify estimate status and preserve earlier revisions. Clear distinctions between paddy and rice, and between kapas and cotton lint, would prevent avoidable comparisons of unlike quantities. District panels linking crop outcomes to rainfall, irrigation, procurement, prices and costs would permit more informative analysis. Such data would also make it easier to examine whether the state pattern is widespread or concentrated in particular regions.

9. Conclusion

Telangana's foodgrain area more than doubled between 2014–15 and 2024–25, while production approximately tripled in the RBI series used here. Rice explains much of the change. Its area grew much faster than its derived yield, making expansion of seasonal cultivation central to the output increase. Pulses and coarse cereals also ended with higher production, although their cultivated areas declined. The increase in their group yields may include a crop composition effect.

The commercial comparison is more varied. Cotton production grew with little net expansion of area; oilseeds and sugarcane lost both area and output. Combined area under these three groups declined slightly between the endpoints, while its fitted log trend remained uncertain. Foodgrain

area nevertheless gained clearly in relation to that basket. The finding applies to the stated crop coverage and reporting edition, not to all commercial farming or to a measured policy effect .

The results leave a practical question for agricultural planning: how can further gains be achieved without relying mainly on additional rice area? Better water productivity, reliable markets for suitable alternatives and closer attention to cultivation returns are reasonable priorities to test. Their relevance will differ across districts. Physical growth is an important part of agricultural progress, but it needs to be read alongside resource use, production risks and the income retained by cultivators.

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