



Report on Questionnaire Based Field Survey of Kharif Groundnut 2023

**Submitted to
Indian Oilseeds and Produce Export Promotion Council (IOPEPC)
Mumbai, Maharashtra**

Dated 11th November 2023

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Executive Summary

Groundnut is an important oilseed crop in India occupying second position in terms of area and second in terms of production after soybean. It plays a major role in bridging the vegetable oil deficit in the country. The seeds of groundnut are also used extensively as animal feed supplement due to its high protein nature. Groundnut is available throughout the year due to a two-crop cycle harvested in March and October. However, in India it is grown mostly under rain-fed conditions and nearly 80% of annual acreage and production comes from Kharif crop (June-October). With an objective of assessment of groundnut production from Kharif-2023 crop, an extensive survey was undertaken in seven major groundnut growing states during the peak harvesting period. Different teams moved across the major groundnut growing regions and interviewed 3000 groundnut farmers in 37 districts across the seven states. For the information of the stakeholders in the export trade, a brief presentation of the estimates was made at the Annual Trade Meet of the IOPEPC on 29th October, 2023 at Jaipur, Rajasthan, India.

During Kharif-2023 all India groundnut acreage was 43,91,400 hectares. Seven states, Gujarat (16,35,300 ha; 41%), Rajasthan (8,69,200 ha; 22%), Madhya Pradesh (5,40,000 ha; 13%), Karnataka (3,14,100 ha; 8%), Andhra Pradesh (2,93,600 ha; 7%), Uttar Pradesh (2,26,100 ha; 6%) and Maharashtra (1,43,200 ha; 4%) jointly accounted for about 92% of the national acreage. At the national level, there was a decrease in acreage by 4% with respect to Kharif-2022. The maximum decrease was observed for Andhra Pradesh (-42%) while maximum increase was observed for Uttar Pradesh (79%). Decrease was also observed in Karnataka (-15%), Maharashtra (-11%), and Gujarat (-4%).

In the states of Gujarat, Rajasthan and Madhya Pradesh Groundnut has witnessed early sowing as compare to the remaining states where the maximum sowing was achieved by the 2nd fortnight of July, 2023. In Andhra Pradesh, Karnataka, Uttar Pradesh and Maharashtra maximum sowing was completed by the 1st fortnight of August, 2023.

Remote Sensing Based Groundnut Acreage was estimated in Jamnagar and Rajkot, Gujarat and Shivpuri, Madhya Pradesh. In the remaining districts cloud free optical data was not available. Signature of the crop was identified with the help of Ground Control Points (GCPs) collected during the field survey using PInCER GCP Phone App.

Among the surveyed states, the highest yield of 2,033 kg/ha was estimated for Gujarat, followed by 1,787 kg/ha for Rajasthan, 1,550 kg/ha for Madhya Pradesh, 837 kg/ha for Uttar Pradesh, 833 kg/ha for Maharashtra, 454 kg/ha for Karnataka and 386 kg/ha for Andhra Pradesh. The national average yield was estimated at 1,562 kg/ha. The combined production of these seven states was estimated at 62,80,193 tonnes which accounted for about 92% of the estimated national production. With 33,25,084 tonnes, Gujarat contributed 48% of the national production followed by Rajasthan (15,53,260 tonnes; 23%), Madhya Pradesh (8,37,150 tonnes; 12%), Uttar Pradesh (1,89,226 tonnes; 3%), Karnataka (1,42,723 tonnes; 2%), Maharashtra (1,19,346 tonnes; 2%) and Andhra Pradesh (1,13,404 tonnes; 2%) while the joint contribution of the remaining states was estimated as 5,77,656 tonnes i.e., 8%.

In Kharif 2023, the rainfall during peak sowing season was occurred in large excess in the groundnut growing districts of Gujarat, Rajasthan, Madhya Pradesh and Maharashtra whereas in Karnataka and Andhra Pradesh it was erratic and deficient and reported normal to large deficient in Uttar Pradesh. Due to which sowing acreage has decreased by 4% and even yield has decreased in most of the states.

In Kharif 2023, the overall production in the country was estimated as 68,57,849 tonnes which is slightly less than that of Kharif-2022 season (68,30,666 tonnes).

Remote Sensing based crop health and canopy moisture analysis was carried out in the groundnut growing districts using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) when the crop was at its peak vegetative stage in the month of August and September to determine the crop vigor and moisture content. NDVI Values ranges from -1 to +1 and it represents on the presence of potential Chlorophyll in the plant leaf for photosynthesis. The higher value of NDVI represents good crop health which ranges from 0.55 and above. The moderate crop health is consisting of the range between 0.55 to 0.45. The poor crop health has NDVI range of below 0.45 which represents highly stress condition faced by the crop and have reduced amount of chlorophyll as well in the crops. Similar to NDVI, NDMI values also ranges between -1 to +1 and it reveals the moisture content in the crop canopy which indirectly represents the water stress condition in the crop (if any). The high moisture category has NDMI values ranges 0.4 and above which shows the adequate amount of moisture in the crops. The medium category ranges from 0.4 to 0.3 and it shows the presence of mediocre amount of moisture with possibility of water stress for the plant. The low category with the range 0.3 and below represents the water stress condition in the plants.

In the states of Gujarat, Andhra Pradesh crop health was found to be moderate in all the districts. In the state of Rajasthan and Uttar Pradesh crop health was mostly good. In the state of Madhya Pradesh crop health was good except in few patches of Shivpuri district where health was found to be in poor category. In the state of Maharashtra crop health was mostly good except in few patches of Nasik and Satara districts where health was found to be in poor category. In the state of Karnataka groundnut crop health was found to be in good to moderate category in the districts of Belgavi, Chitradurga and Tumkur. In Vijayapura, Dharwad and Gadag the health of few cropland patches was found to be in poor category.

1. Introduction

Groundnut (*Arachis hypogaea* L.) is commonly called the poor man's nut. It is a leguminous crop plant which is widely cultivated in the tropics and subtropics between 40°N and 40°S latitudes. Groundnut is not only an important oilseed crop of India but also an important agricultural export commodity.

With annual all-season coverage of about 50 lakh hectares, globally India ranks first in groundnut acreage and with an output of approx. 80-85 lakh MT (in shell groundnuts), second in production. Although in various states of India groundnut is cultivated in one or more (Kharif, Rabi and Summer) seasons, nearly 80% of acreage and production comes from kharif crop (June-October). For estimating groundnut production from Kharif-2023 crop season, a well-planned and extensive crop survey was undertaken in major groundnut growing states of India with a view to providing estimates as early as third week of October 2023.

2. Importance and Objectives of Crop Survey

The bulk arrival of Kharif groundnut crop in the marketing yards begins usually in the third week of October and continues up to the second week of November. Being by and large a rain dependent crop, the production of Kharif groundnut in various regions of India varies considerably from year to year.

The second advance estimate, the earliest realistic crop estimates are announced by Government of India in January/February, i.e., three-four months after the bulk harvest of the Kharif crops. If the estimates for Kharif-2023 groundnut crop are made available close on the heels of the harvesting season (first fortnight of November), it would be very helpful in making right decisions about procurement, processing and export.

Therefore, with a view to fulfilling the crucial need of the stakeholders, a survey was undertaken in seven major groundnut growing states of India viz. Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Karnataka, Rajasthan and Uttar Pradesh. A brief presentation of the estimates was made at the Annual Trade Meet of the IOPEPC on 29th October 2023 at Jaipur, Rajasthan, India. The details of the methodology adopted for survey and the estimates are described in this report.

3. Methodology

3.1 District wise and state wise groundnut acreage

The data on weekly progress of state-wise coverage of Kharif 2023 groundnut crop was obtained from the website of the Directorate of Economics and Statistics, Government of India. Information on district wise final acreage was obtained from the state departments of agriculture concerned either through correspondence or by downloading the information from the website of the respective state department.

3.2 Selection of states and districts

The states were first arranged in descending order of their groundnut acreages and then only those states were identified as would jointly account for more than 75% of the national acreage. Similarly, within a state, the districts were first arranged in descending order of their acreages and then as many districts as would jointly account at least 75% of the acreage of the respective states were selected.

3.3 Determination of number of farmers to be interviewed

In each state, efforts were made to interview as many farmers as would be equal to 0.1 percent of the figures for the Kharif 2023 groundnut acreage of that state (e.g., for a state having an acreage of 10,000

hectares, at least 10 farmers were to be interviewed).

3.4 Composition of the survey teams

Orientation programme had been conducted for entire field team, whom were involved to carry out the field survey, prior to kick-off the survey. A pre-designed structured questionnaire form in a mobile app (RMSI PInCER GCP App) was developed to record the data. Selection of the representative villages/farmers was done after consultation with the local authorities.

3.5 GPS tagging of movement of survey teams

Geolocation of fields were done through RMSI PInCER app. The latitude and longitude of points were then superimposed on the respective state/district maps to get a clear picture of the route followed by the interview teams.

3.6 Crop cutting experiments

Crop cutting experiments (CCEs) of around 8-10% of total surveys are carried out in all the seven states. Overall, 293 CCEs conducted with plot size of 5x5m following standard protocol following standard protocol and the steps are as mentioned below.

1. Establishing connect with farmer based on crop stage and expected date of harvest.
2. Laying plot using measuring tape or rope, etc.
3. Cutting crop within the determined plot.
4. Plucking pods using manual methods.
5. Taking groundnut weight using digital/manual weighing machines.
6. Acquired groundnut weight date get calculated to the hectare.

3.7 Rainfall data

Month-wise, weekly (June, July, August, September and October first fortnight) data for rainfall along with its departure from the normal was downloaded from the website of IMD (Indian Meteorology Department). This data pertained to major groundnut growing districts of India.

3.8 Scheduling of survey

The survey was undertaken during the peak harvesting period of Kharif groundnut crop i.e., during the 1st to 3rd week of October to have maximum number of farmers interviewed in their respective fields when the crop had been just harvested, being harvested or was about to be harvested.

3.9 Estimation of yield and production of surveyed states

The figures for the average groundnut (in-shell) yield of each district were estimated by taking arithmetic mean of the expected/realized yield as reported by the farmers of the respective districts. Since different districts follows different units of yield, the final yield was converted to 'kg/ha'. For each district, the production of groundnut was estimated by multiplying the estimated average yield of the district with the acreage (in hectares) of that district. The production was expressed as tonnes.

The anticipated production of non-surveyed districts was calculated by multiplying the figures of the collective acreages of non-surveyed districts with the weighted average yield of the surveyed districts in the states concerned. The total anticipated production of a state was calculated by summing up the figures for anticipated production in the surveyed and non-surveyed districts.

3.10 Estimation of average yield and production of non-surveyed states

The average yield of the non-surveyed states was assumed to be equal to that of the weighted average yield of the surveyed states. The production from each of the non-surveyed state was calculated by using the figures of the weighted average yield of the states and the acreage of state concerned. All India production was calculated by summing up the anticipated production of the surveyed states and the non-surveyed states.

4. Results & Discussions

4.1 Kharif 2023 Groundnut Crop Acreage

According to the Directorate of Economics and Statistics, GoI, all India Kharif 2023 the groundnut acreage was 43,91,400 hectares. The states which jointly accounted for about 92% of the national acreage were Gujarat, Rajasthan, Madhya Pradesh, Karnataka, Andhra Pradesh, Uttar Pradesh and Maharashtra. The state wise breakup of acreages in these seven states are as given in Table 1.

Table 1: Kharif 2023 Groundnut Acreage (States arranged in descending order of acreage)

S No.	State	Acreage (ha)	Share (%)
1	Gujarat	16,35,300	37%
2	Rajasthan	8,69,200	20%
3	Madhya Pradesh	5,40,000	12%
4	Karnataka	3,14,100	7%
5	Andhra Pradesh	2,93,600	7%
6	Uttar Pradesh	2,26,100	5%
7	Maharashtra	1,43,200	3%
8	Other States	3,69,900	8%
	All India	43,91,400	100

A total of 37 districts across the seven identified states were covered by survey. Total of 2,776 groundnut farmers were interviewed as per quality standards. State wise number of districts covered, and the farmers interviewed along with the dates of start and completion of survey is shown in Table 2.

Table 2: State wise particulars of Kharif 2023 Groundnut crop survey

State	Acreage (Ha)	Number		Field Survey Period	
		Districts	Farmers	From	To
Gujarat	16,35,300	8	1,331	5 th October	22 nd October
Rajasthan	8,69,200	6	323	5 th October	22 nd October
Madhya Pradesh	5,40,000	5	402	5 th October	22 nd October
Karnataka	3,14,100	5	185	5 th October	22 nd October
Andhra Pradesh	2,93,600	4	239	5 th October	22 nd October
Uttar Pradesh	2,26,100	5	128	5 th October	22 nd October
Maharashtra	1,43,200	4	168	5 th October	22 nd October

The district boundary maps of seven states showing the surveyed districts (color shaded) and also the GPS points visited by the survey teams are shown in Figures 1 to 14.

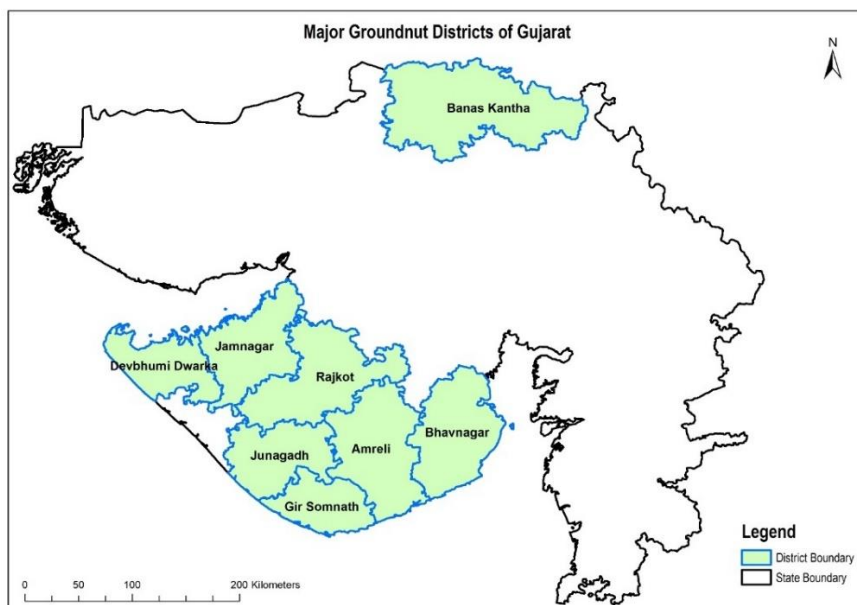


Figure 1 Study Area in Gujarat

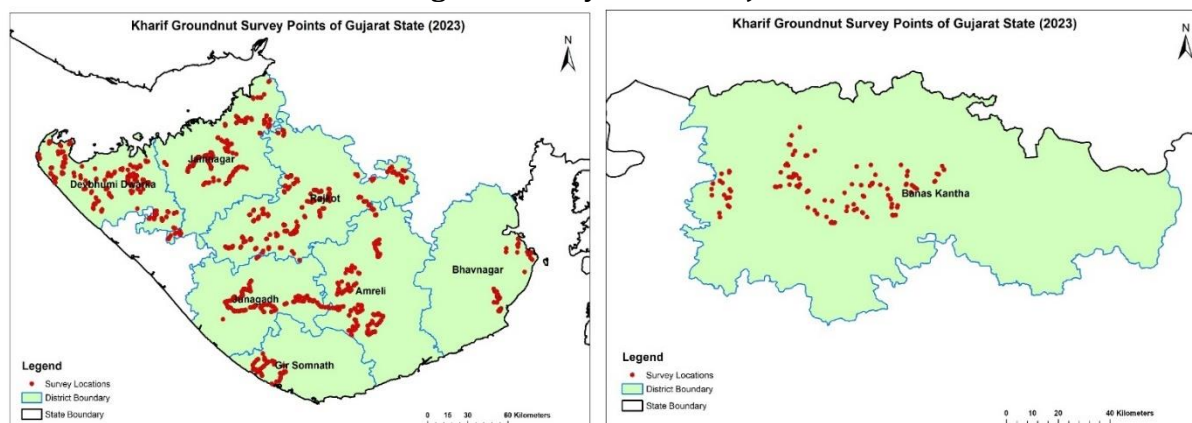


Figure 2 Survey Locations of the collected Primary data related to Groundnut in Gujarat

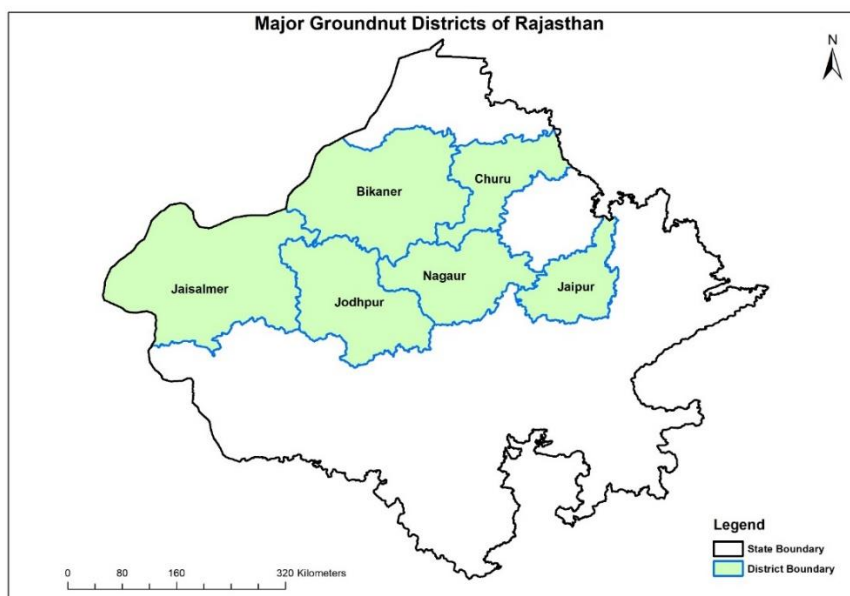


Figure 3 Study Area in Rajasthan

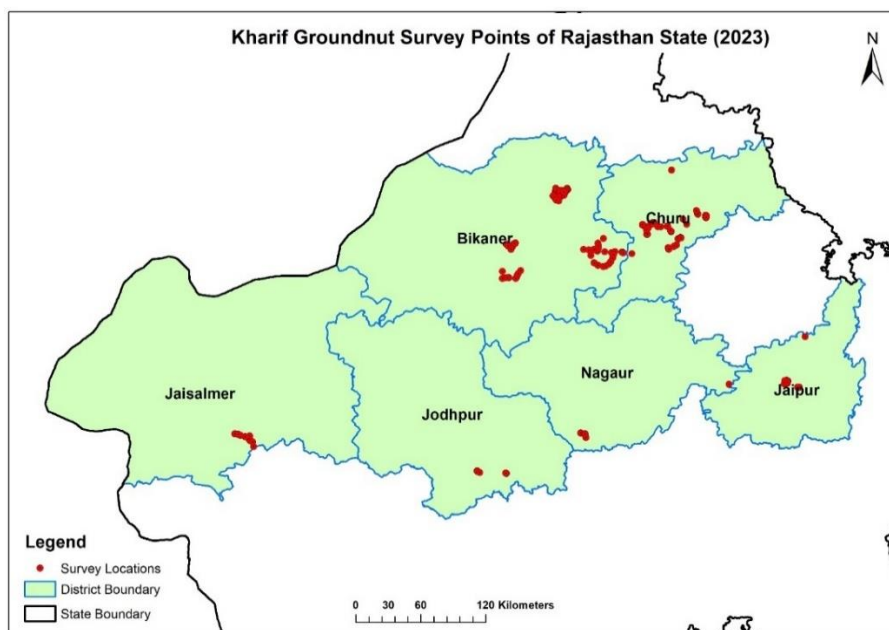


Figure 4 Survey Locations of the collected Primary data related to Groundnut in Rajasthan

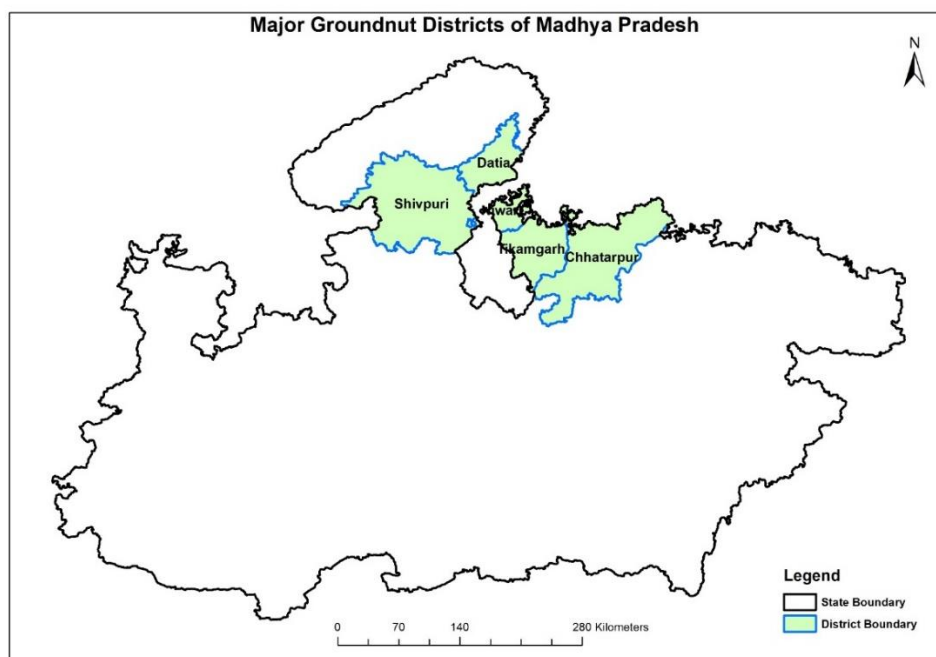


Figure 5 Study Area in Madhya Pradesh

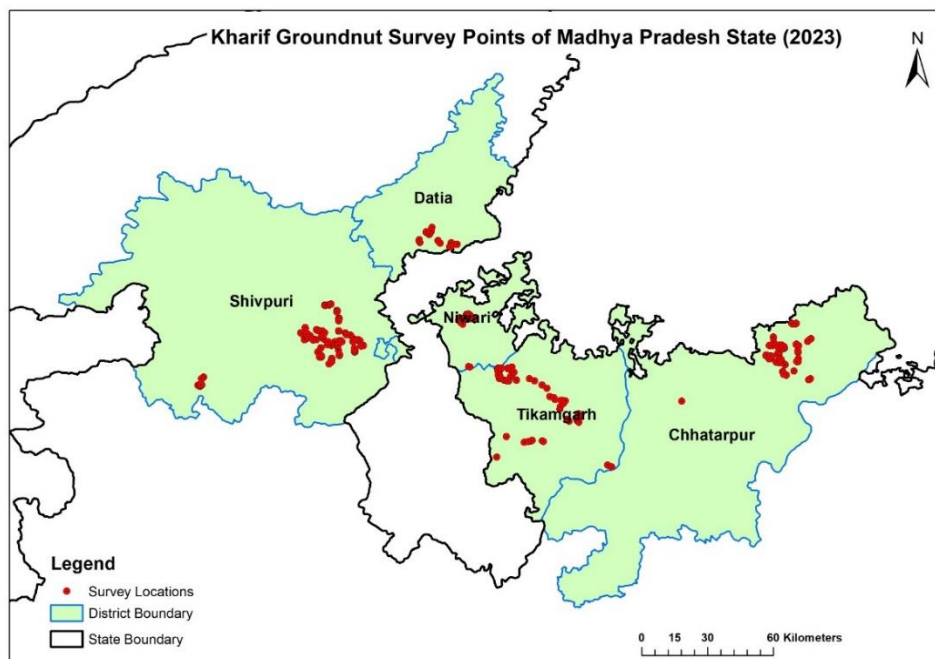


Figure 6 Survey Locations of the collected Primary data related to Groundnut in Madhya Pradesh

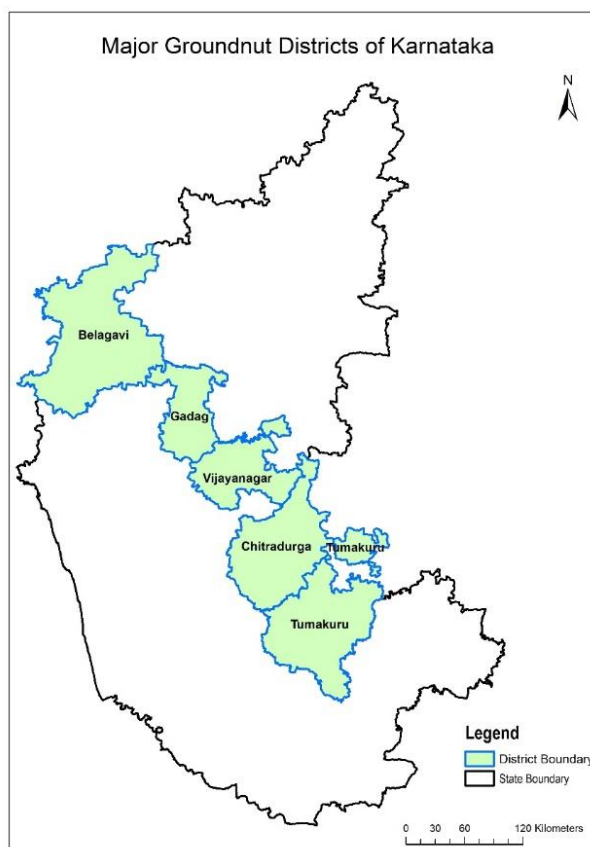


Figure 7 Study Area in Karnataka

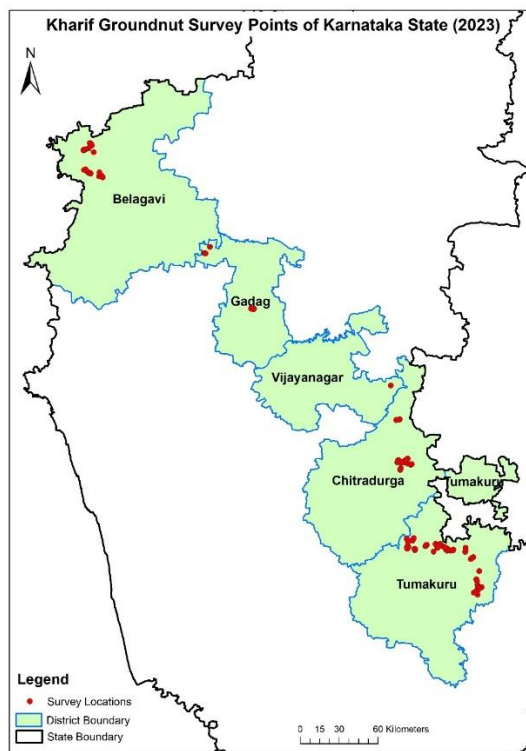


Figure 8 Survey Locations of the collected Primary data related to Groundnut in Karnataka

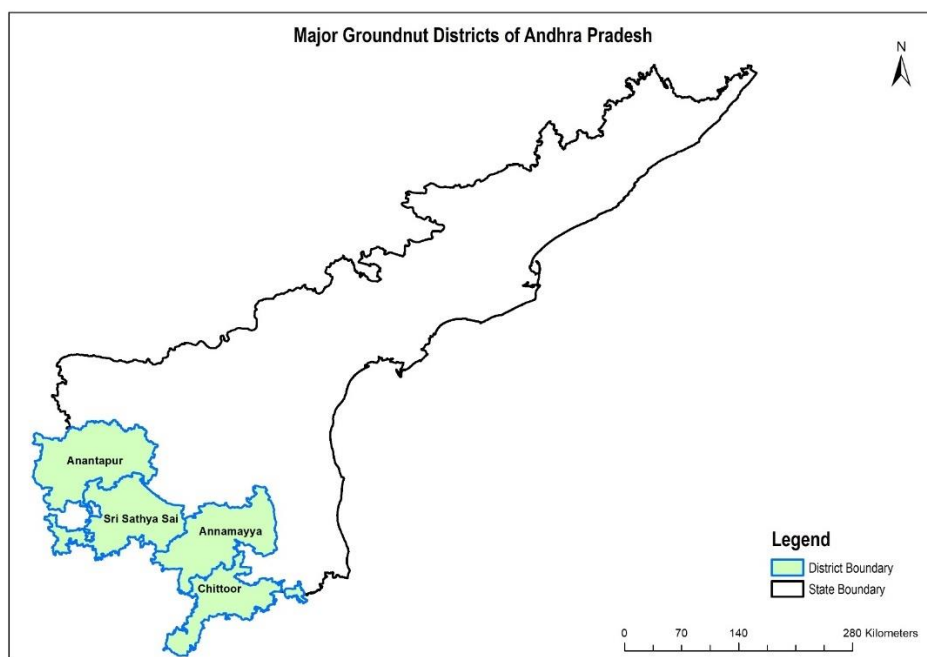


Figure 9 Study Area in Andhra Pradesh

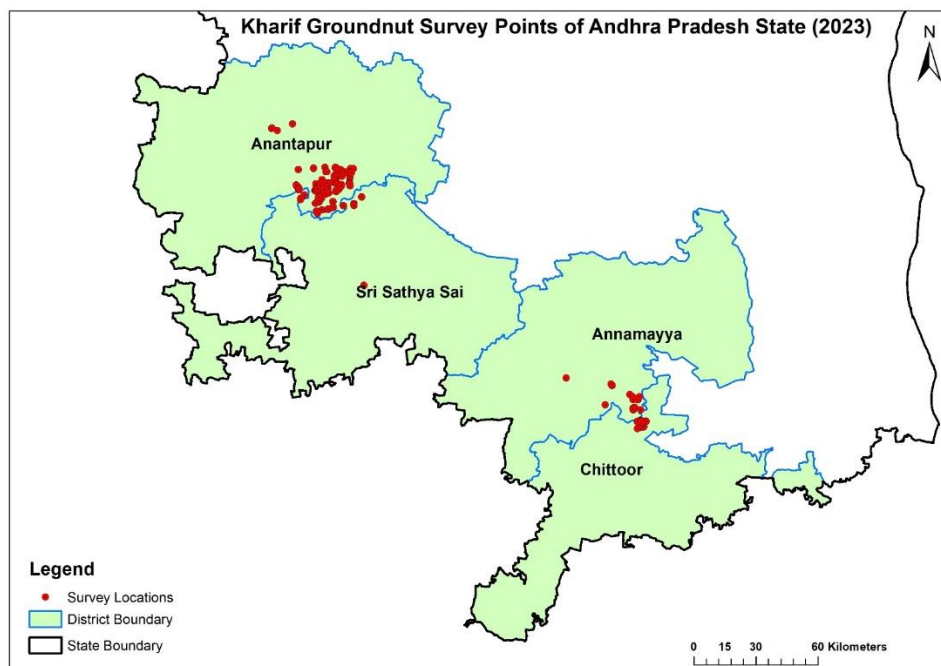


Figure 10 Survey Locations of the collected Primary data related to Groundnut in Andhra Pradesh

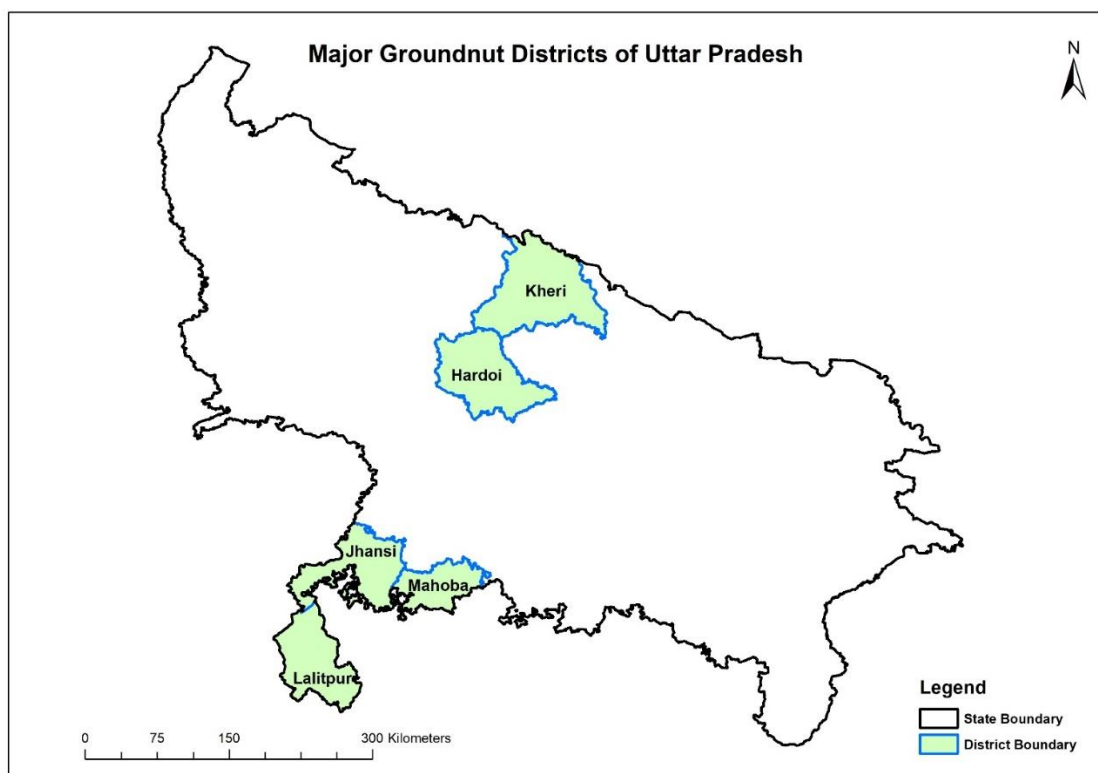


Figure 11 Study Area in Uttar Pradesh

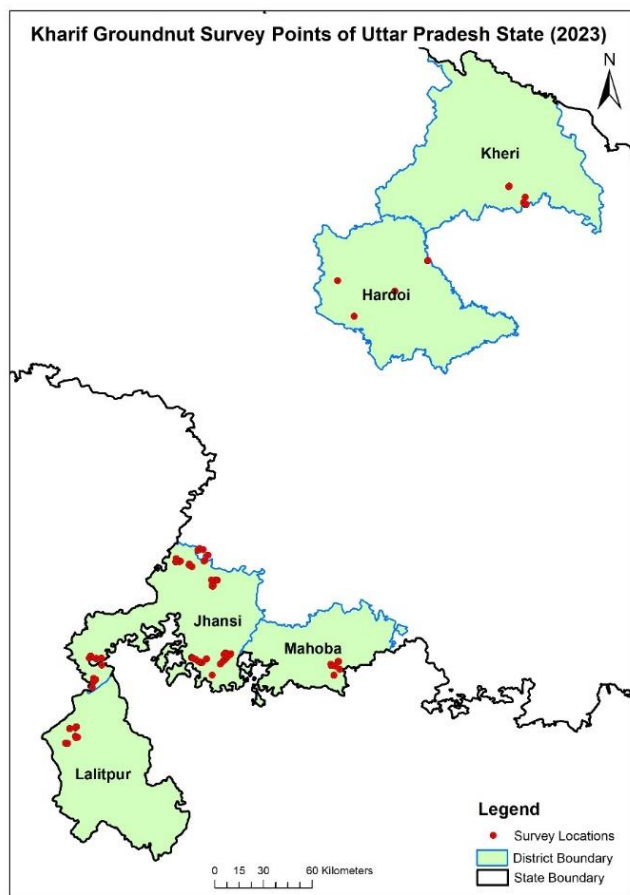


Figure 12 Survey Locations of the collected Primary data related to Groundnut in Uttar Pradesh

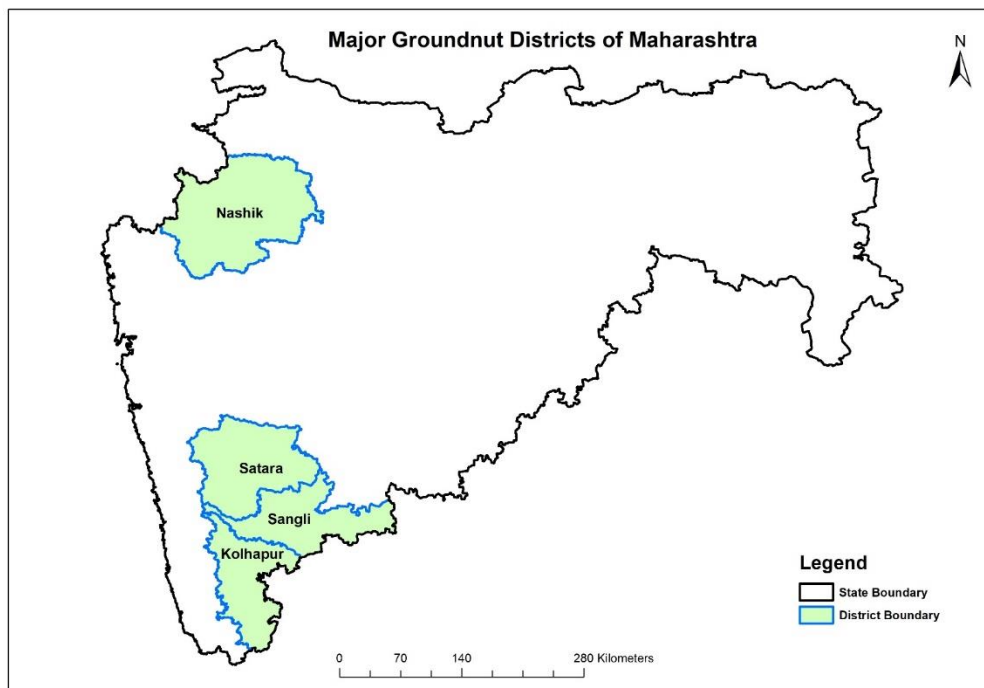


Figure 13 Study Area in Maharashtra

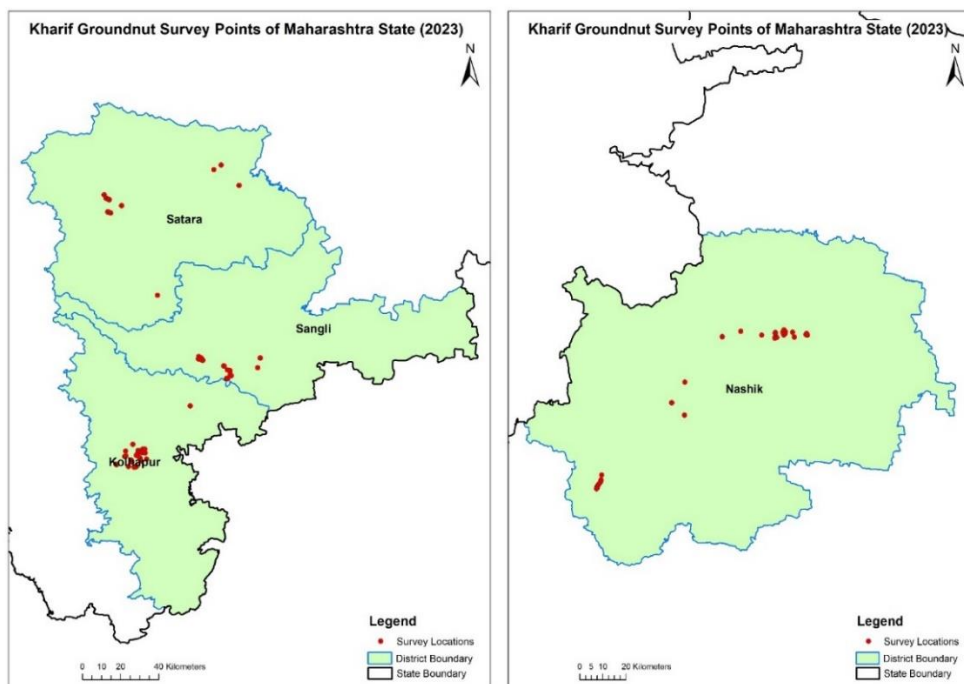


Figure 14 Survey Locations of the collected Primary data related to Groundnut in Maharashtra

4.2 Period of Sowing

In the surveyed states, on a combined basis the sowing operations began in the first week of June and were concluded in the third week of August. Sowing Progression in seven groundnut growing states are as given in Table 3.

Table 3: Sowing Progression in Seven Groundnut States of India.

State	Year	Till 9th July	Till 16th July	Till 23rd July	Till 31st July	Till 7th Aug	Till 14th Aug	Till 21st Aug	Till 28th Aug
Andhra Pradesh	2023	17%	21%	35%	92%	99%	100%	100%	100%
	2022	14%	28%	40%	94%	96%	98%	99%	100%
Gujarat	2023	81%	93%	97%	100%	100%	100%	100%	100%
	2022	59%	83%	91%	95%	98%	99%	99%	100%
Karnataka	2023	21%	24%	43%	55%	71%	75%	91%	100%
	2022	32%	41%	46%	58%	70%	77%	95%	99%
Uttar Pradesh	2023	26%	64%	66%	83%	99%	100%	100%	100%
	2022	50%	68%	82%	91%	92%	98%	100%	100%
Maharashtra	2023	23%	39%	66%	84%	99%	100%	100%	100%
	2022	31%	69%	81%	91%	94%	96%	98%	98%
Rajasthan	2023	84%	86%	90%	95%	95%	96%	96%	100%
	2022	64%	77%	94%	98%	99%	99%	100%	100%
Madhya Pradesh	2023	50%	81%	93%	95%	100%	100%	100%	100%
	2022	33%	45%	72%	80%	89%	92%	98%	100%

In the states of Gujarat, Andhra Pradesh, Rajasthan and Madhya Pradesh Groundnut has reached its maximum sown extent by the second fortnight of July. In Uttar Pradesh and Maharashtra maximum sowing was completed by the first fortnight of August whereas Karnataka sowing reaches maximum by second fortnight of August.

4.3 Comparison of 2023 Acreage w.r.t. 2022 Acreage

At National level compared to Kharif 2022, there was decrease in groundnut acreage by 4%. Kharif-2023 all India groundnut acreage was 43,91,400 hectares. Gujarat, Rajasthan, Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Uttar Pradesh jointly accounted for 40, 21,500 hectares i.e., 92% of the national acreage. In Kharif 2023 crop acreages of the surveyed states, their shares in the national acreage and change in acreage with respect to Kharif 2022 are given in Table 4

Table 4 Change in Kharif 2023 Groundnut Acreage w.r.t. 2022 Acreage

State	Kharif 2022		Kharif 2023		
	Acreage (Ha)	Share (%)	Acreage (Ha)	Share (%)	Change (%)
Gujarat	17,09,000	37%	16,35,300	37%	-4%
Rajasthan	7,89,860	17%	8,69,200	20%	10%
Madhya Pradesh	4,50,000	10%	5,40,000	12%	20%
Karnataka	3,69,810	8%	3,14,100	7%	-15%
Andhra Pradesh	5,06,554	11%	2,93,600	7%	-42%
Uttar Pradesh	1,25,998	3%	2,26,100	5%	79%
Maharashtra	1,61,000	4%	1,43,200	3%	-11%
Sub Total	41,12,222	90%	40,21,500	92%	-2%
Others	4,46,778	10%	3,69,900	8%	-17%
Country Total	45,59,000	100%	43,91,400	100%	-4%

Source: Department of Economics and Statistics (Govt. of India)

Compared to Kharif 2022 there was decrease in acreage in four states, namely Andhra Pradesh (-42%) Karnataka (-15%), Maharashtra (-11%), and Gujarat (-4%). The maximum increase in acreage was in Uttar Pradesh (79%), Madhya Pradesh (20%), and Rajasthan (10%). On all-India basis, there was decrease in area by 4%.

Remote Sensing based Kharif groundnut acreage was estimated in three districts namely, Jamnagar and Rajkot of Gujarat, and Shivpuri of Madhya Pradesh. The same has been shown in Figure 15 to 17 respectively. Remote Sensing Based Kharif Groundnut Acreage in Jamnagar is 1,49,612 ha while in Rajkot it is 2,27,824 ha and in case of Shivpuri it is 1,67,242 ha.

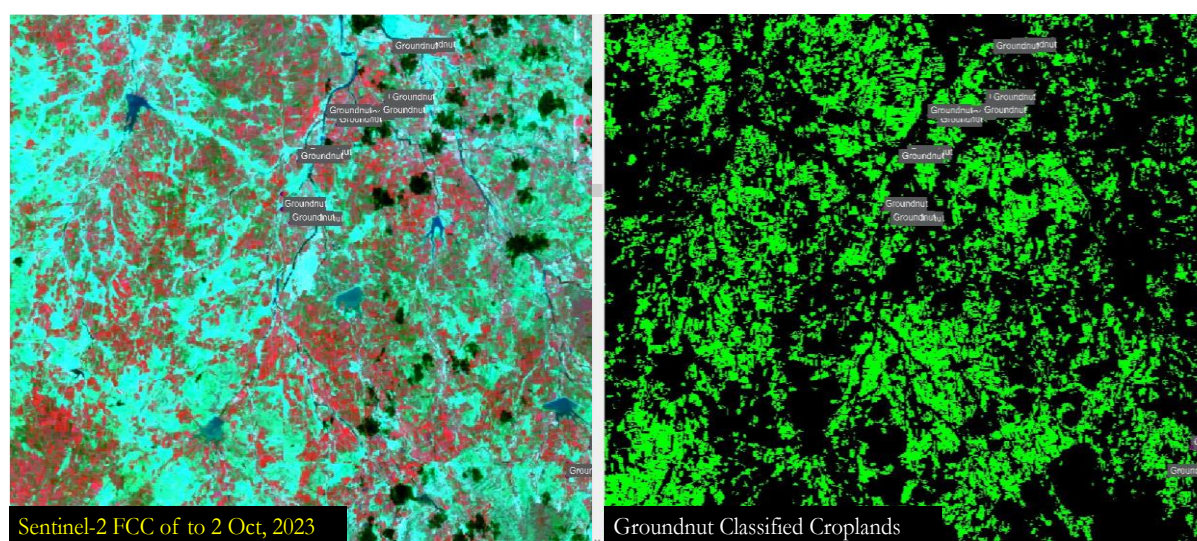


Figure 15 Groundnut Crop Spread in Jamnagar District of Gujarat

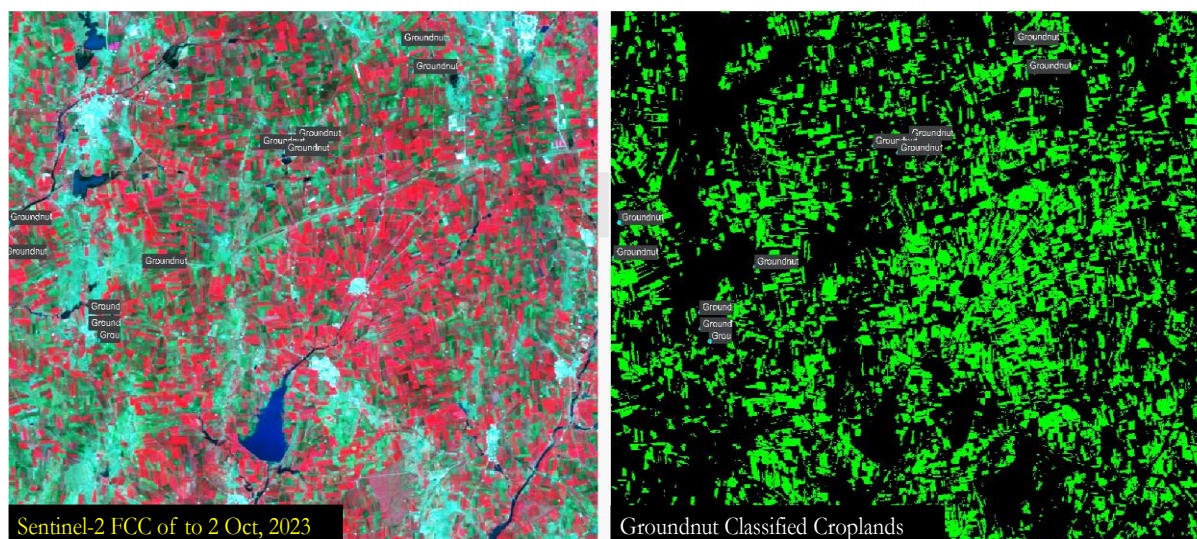


Figure 16 Groundnut Crop Spread in Rajkot District of Gujarat

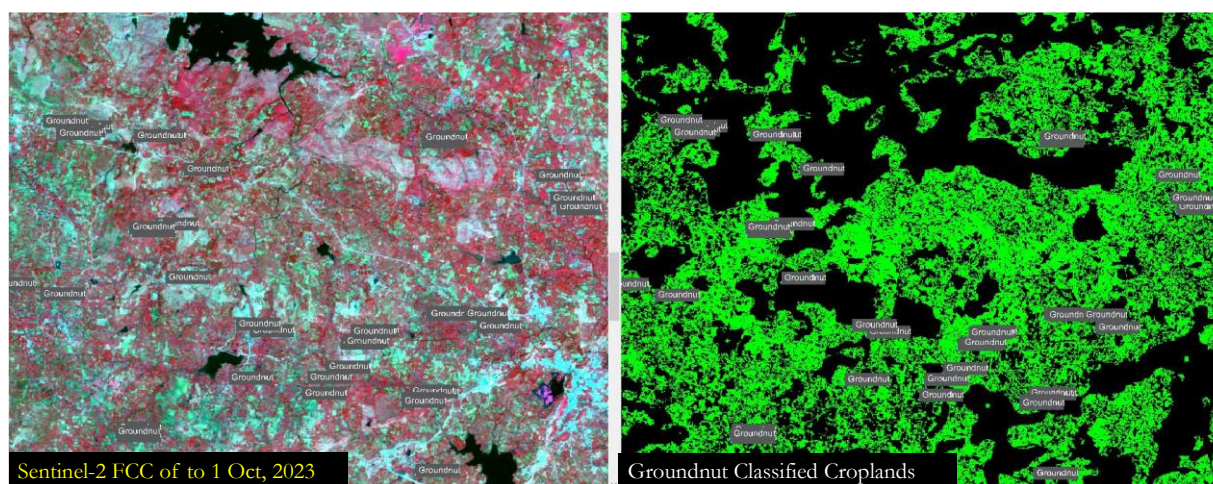


Figure 17 Groundnut Crop Spread in Shivpuri District of Madhya Pradesh

Based on district wise acreages in the seven states, 37 districts were identified for survey in each state. The names of the districts and their respective share (%) in the state acreage are given in tables 5 to 11.

4.4 Remote Sensing Based Crop Health and Moisture Status

Remote Sensing based crop health and moisture status analysis was carried out in the groundnut growing districts using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) when the crop was at its peak vegetative stage in the month of August and September to determine the crop vigor and canopy moisture.

4.4.1. Gujarat

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 8 districts of Gujarat as shown in Figure 18. Overall Groundnut crop health was found to be good whereas canopy moisture is high to medium category in all the districts of Gujarat.

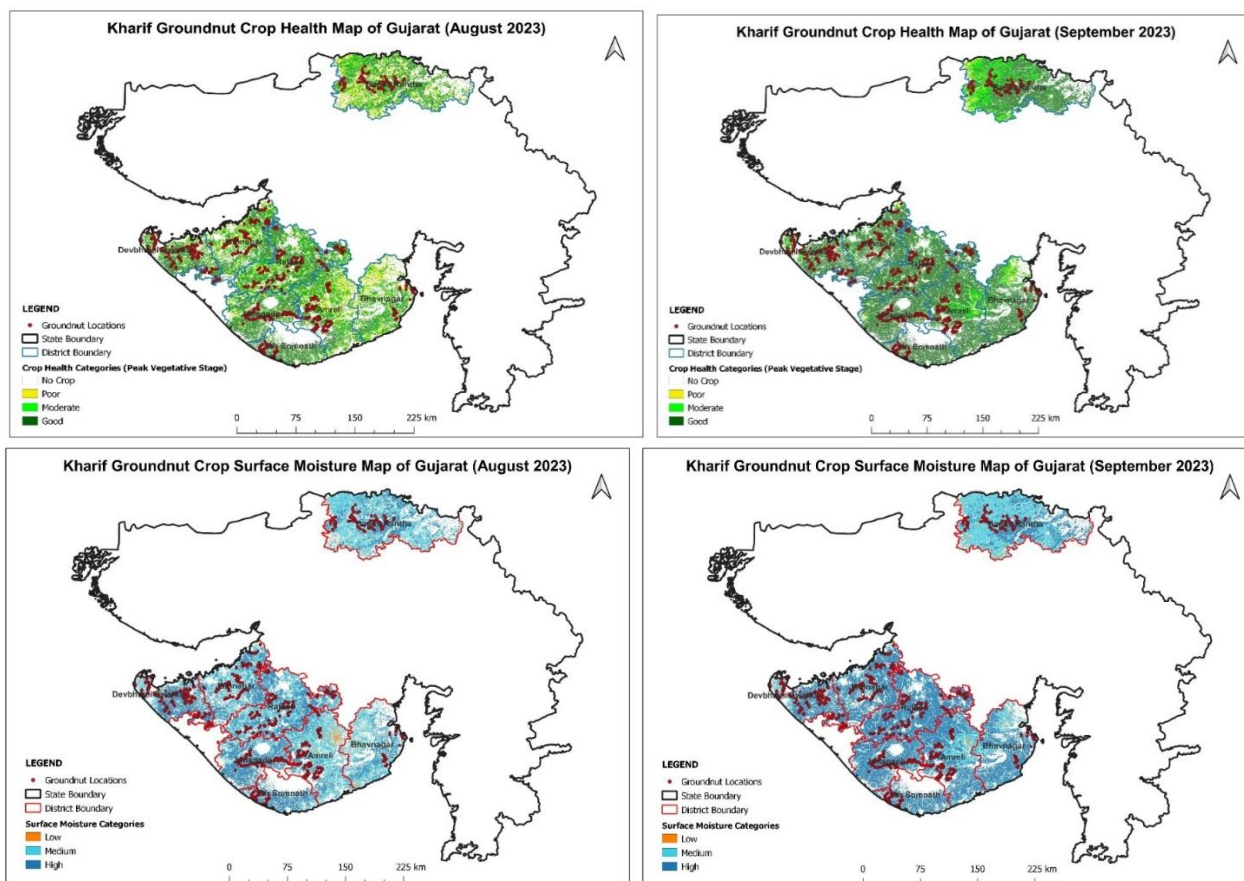
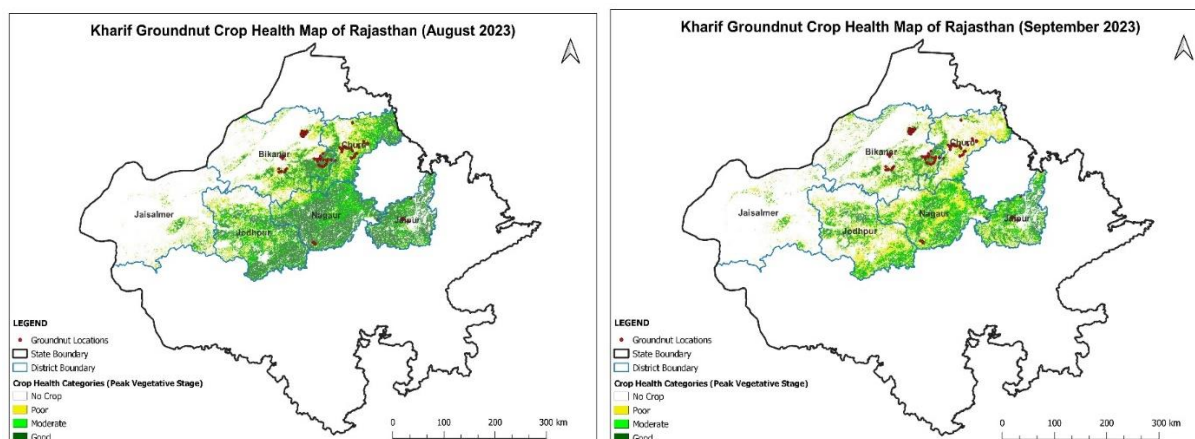


Figure 18 Remote Sensing Based Overall Crop Health and Canopy Moisture Map of Gujarat

4.4.2. Rajasthan

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 6 districts of Rajasthan as shown in Figure 19. Overall Groundnut crop health was found to be moderate to good whereas canopy moisture is high to medium category in all the districts of Rajasthan.



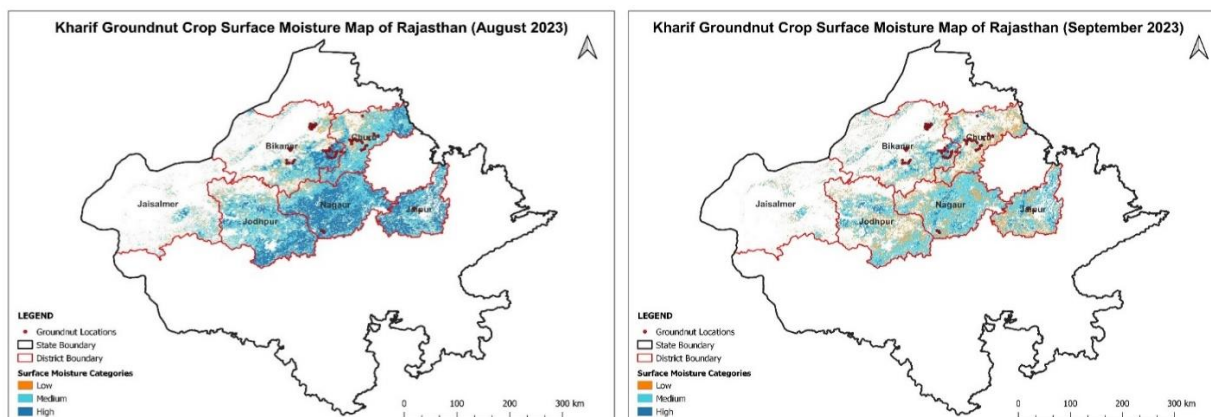


Figure 19 Remote Sensing Based Overall Crop Health and Canopy Moisture Map of Rajasthan

4.4.3. Madhya Pradesh

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 5 districts of Madhya Pradesh as shown in Figure 20. Overall Groundnut crop health was found to be good whereas canopy moisture is high to medium category in all the districts of Madhya Pradesh.

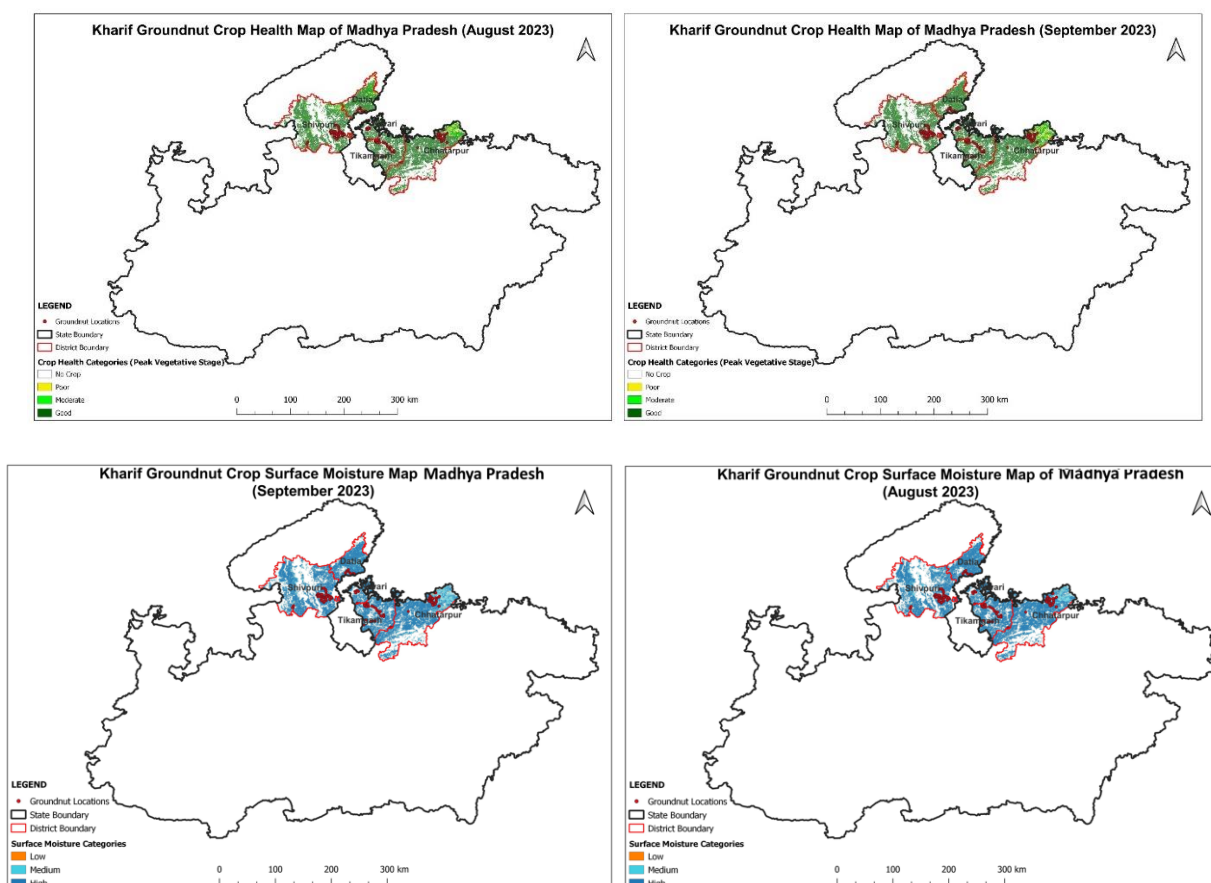


Figure 20 Remote Sensing Based Overall Crop Health and Canopy Moisture Map of Madhya Pradesh

4.4.4. Karnataka

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 5 districts of Karnataka as shown in Figure 21. Overall Groundnut crop health was found to be moderate to poor whereas canopy moisture is medium to low category in all the districts of Karnataka.

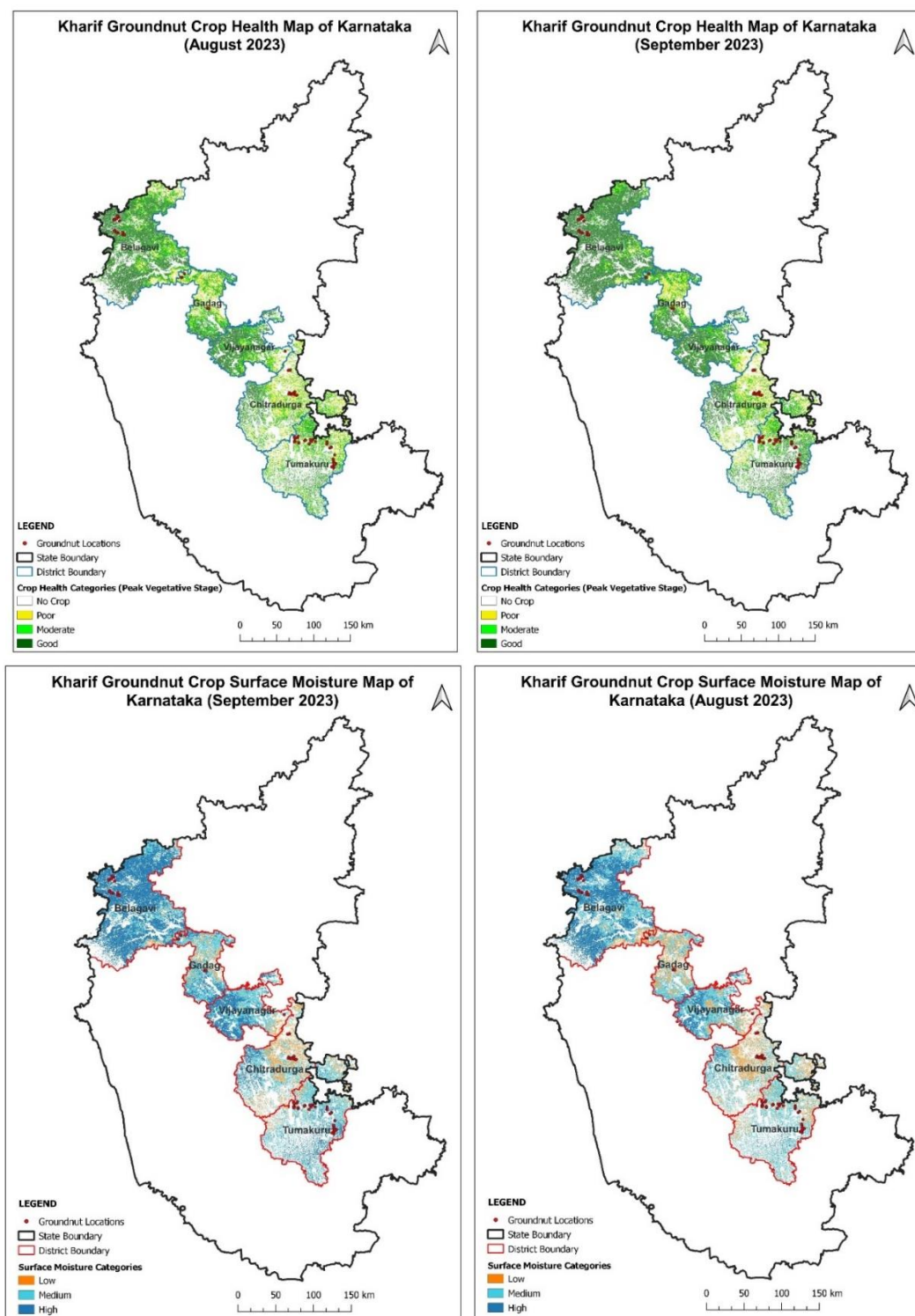


Figure 21 Remote Sensing Based Overall Crop Health and Canopy Moisture Maps of Karnataka

4.4.5. Andhra Pradesh

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 4 districts of Andhra Pradesh as shown in Figure 22. Overall Groundnut crop health was found to be moderate to poor whereas canopy moisture is medium to low category in all the districts of Andhra Pradesh.

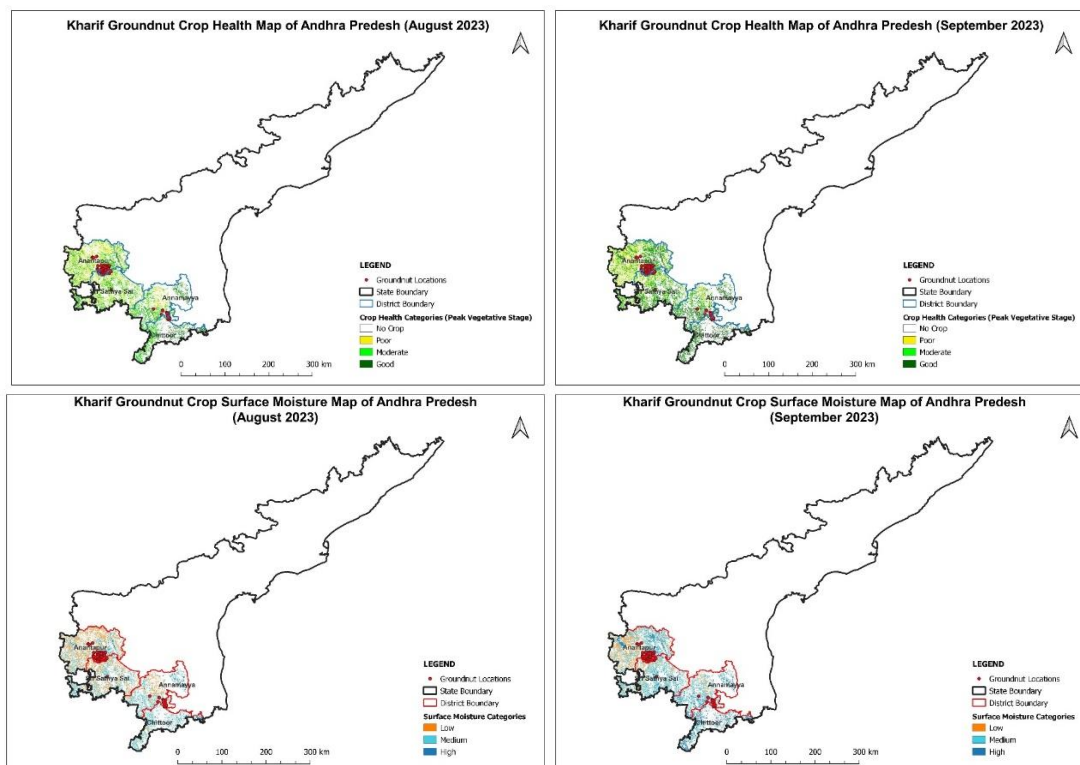


Figure 22 Remote Sensing Based Overall Crop Health and Canopy Moisture Maps of Andhra Pradesh

4.4.6. Uttar Pradesh

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 5 districts of Uttar Pradesh as shown in Figure 23. Overall Groundnut crop health was found to be good whereas canopy moisture is high to medium category in all the districts of Uttar Pradesh.

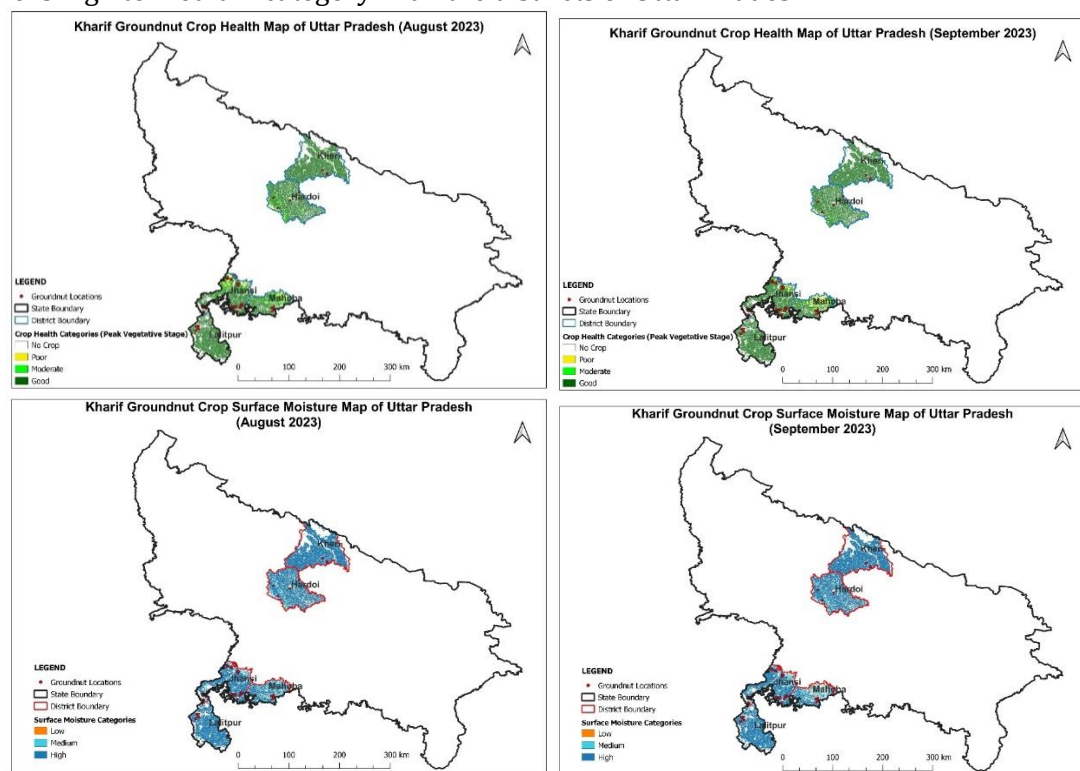


Figure 23 Remote Sensing Based Overall Crop Health and Canopy Moisture Maps of Uttar Pradesh

4.4.7. Maharashtra

Remote Sensing based Groundnut Crop Health and Canopy Moisture is mapped in 4 districts of Maharashtra as shown in Figure 24. Overall Groundnut crop health was found to be good to moderate whereas canopy moisture is high to medium category in all the districts of Maharashtra.

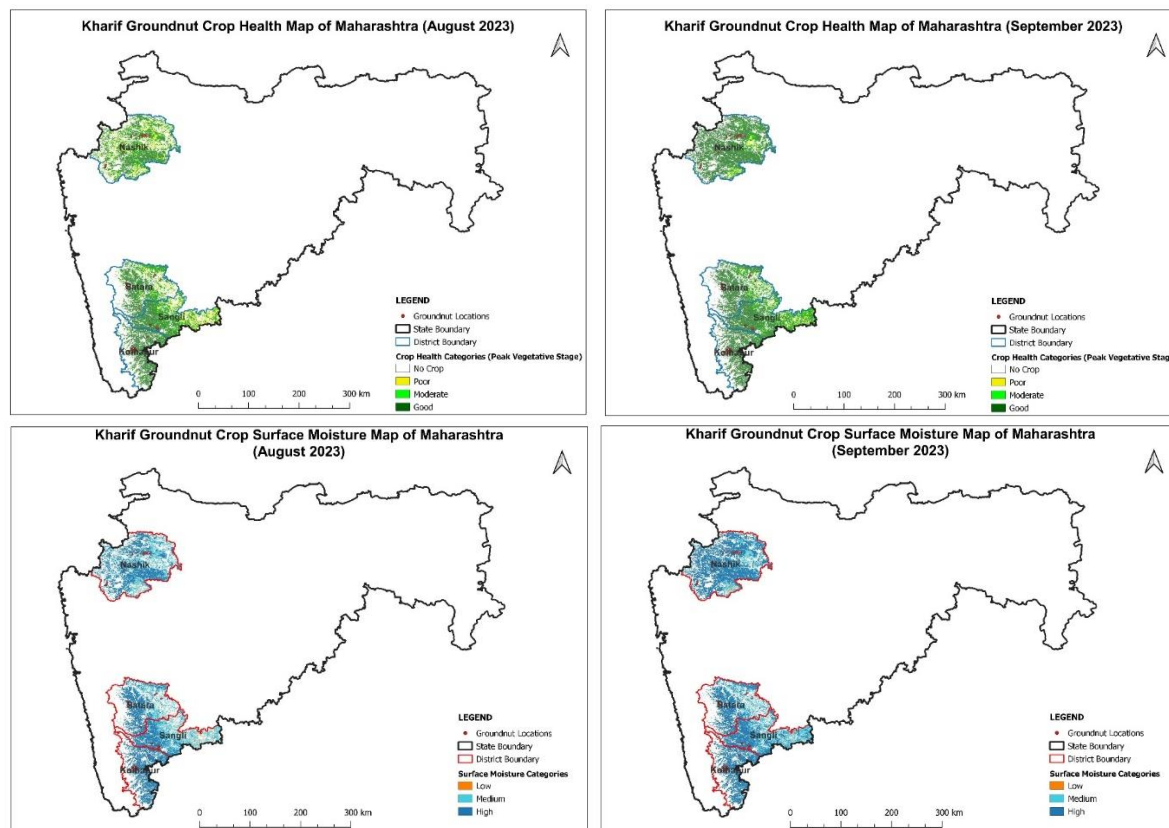


Figure 24 Remote Sensing Based Overall Crop Health and Canopy Moisture Maps of Maharashtra

4.5 Estimated Production

The data generated on yield by the questionnaire survey and the data on acreage collected from the state/central government agencies were used for estimating production of groundnut in each of the districts surveyed and accordingly the production figures for each of the seven states were estimated. The shares of the estimated production of each district in the total estimated production of the respective state are indicated in Tables 5 to 11.

4.5.1 Gujarat

As shown in Table 5, in Gujarat eight districts were surveyed, the highest yield was estimated for Gir Somnath (2,227 kg/ha) and the lowest for Junagadh (1,852 kg/ha). The highest production was estimated for Rajkot 4,85,437 tonnes. The total production for Gujarat was estimated as 33,25,084 tonnes with an average yield of 2,033 kg/ha. Groundnut acreage in Gujarat has reduced by 4% as compared to last year Kharif 2022.

Table 5 Estimate of Production of Kharif Groundnut (in Shell) in Gujarat

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Rajkot	2,26,100	14%	249	2,147	4,85,437	15%
Devbhumi Dwarka	2,08,500	13%	227	2,065	4,30,488	13%
Junagadh	1,91,200	12%	192	1,852	3,54,011	11%
Amreli	1,51,100	9%	183	2,073	3,13,275	9%
Banaskantha	1,48,600	9%	116	1,922	2,85,591	9%
Jamnagar	1,44,700	9%	168	2,106	3,04,747	9%
Bhavnagar	97,000	6%	72	1,904	1,84,684	6%
Gir Somnath	77,800	5%	124	2,227	1,73,246	5%
Sub Total	12,45,000	76%	-	-	25,31,480	76%
Others	3,90,300	24%	-	-	7,93,604	24%
State Total	16,35,300	100%	1,331	2,033	33,25,084	100%

4.5.2 Rajasthan

As shown in Table 6 in Rajasthan six districts were surveyed, the highest yield was estimated for Bikaner (2,030 kg/ha) and lowest for Jaisalmer (1,410 kg/ha). The highest production was estimated for Bikaner 5,02,746 tonnes. The total production for Rajasthan was estimated as 15,53,125 tonnes with an average yield of 1,787 kg/ha.

Table 6 Estimate of Production of Kharif Groundnut (in Shell) in Rajasthan

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Bikaner	2,47,658	28%	143	2,030	5,02,746	32%
Jodhpur	1,62,000	19%	29	1,710	2,77,020	18%
Churu	75,800	9%	67	1,720	1,30,376	8%
Jaisalmer	75,412	9%	8	1,410	1,06,331	7%
Nagaur	44,585	5%	44	1,620	72,228	5%
Jaipur	39,842	5%	32	1,615	64,345	4%
Sub Total	6,45,297	74%	-	-	11,53,045	74%
Others	2,23,903	26%	-	-	4,00,080	26%
State Total	8,69,200	100%	323	1,787	15,53,125	100%

4.5.3 Madhya Pradesh

As shown in Table 7 in Madhya Pradesh five districts were surveyed, the highest yield was estimated for Shivpuri (1,761 kg/ha) and the lowest for Chhatarpur (1,345 kg/ha). The total production for Madhya Pradesh was estimated as 8,37,150 tonnes with an average yield of 1,550 kg/ha.

Table 7 Estimate of Production of Kharif Groundnut (in Shell) in Madhya Pradesh

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Shivpuri	1,67,710	31%	166	1,761	2,95,362	35%
Chhatarpur	99,200	18%	98	1,345	1,33,458	16%
Tikamgarh	75,100	14%	68	1,388	1,04,201	12%
Niwari	46,480	9%	39	1,558	72,416	9%
Datia	45,000	8%	31	1,480	66,593	8%
Sub Total	4,33,490	80%	-	-	6,72,030	80%
Others	1,06,510	20%	-	-	1,65,120	20%
State Total	5,40,000	100%	402	1,550	8,37,150	100%

4.5.4 Karnataka

As shown in Table 8 in Karnataka five districts were surveyed, the highest yield was estimated for

Belgavi (564 kg/ha) and lowest was estimated in Vijayanagar (426 kg/ha). The total production of Karnataka was estimated as 1,42,723 tonnes with an average yield of 454 kg/ha.

Table 8 Estimate of Production of Kharif Groundnut (in Shell) in Karnataka

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Chitradurga	1,08,852	35%	43	437	47,591	33%
Tumkur	52,725	17%	82	452	23,839	17%
Vijayanagar	33,845	11%	17	426	14,434	10%
Gadag	17,925	6%	12	518	9,280	7%
Belgavi	16,389	5%	31	564	9,245	6%
Sub Total	2,29,736	73%	-	-	1,04,389	73%
Others	84,364	27%	-	-	38,334	27%
State Total	3,14,100	100%	185	454	1,42,723	100%

4.5.5 Andhra Pradesh

As shown in Table 9 in Andhra Pradesh four districts were surveyed, the highest yield was estimated for Annamaya (521 kg/ha) and lowest for Sri Satya Sai (349 kg/ha). The total production of Andhra Pradesh was estimated as 1,13,404 tonnes with an average yield of 386 kg/ha.

Table 9 Estimate of Production of Kharif Groundnut (in Shell) in Andhra Pradesh

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Anantapuram	1,22,130	42%	118	383	46,761	41%
Sri Satya Sai	74,946	26%	69	349	26,189	23%
Chittoor	16,167	6%	32	463	7,490	7%
Annamaya	14,332	5%	20	521	7,462	7%
Sub Total	2,27,575	78%	-	-	87,902	78%
Others	66,025	22%	-	-	25,502	22%
State Total	2,93,600	100%	239	386	1,13,404	100%

4.5.6 Uttar Pradesh

As shown in Table 10 in Uttar Pradesh four districts were surveyed, the highest yield was estimated for Hardoi (1,087 kg/ha) and lowest in Mahoba (792 kg/ha). The total production of Uttar Pradesh was estimated as 1,89,226 tonnes with an average yield of 837 kg/ha.

Table 10 Estimates of production of Kharif Groundnut (in Shell) in Uttar Pradesh

District	Acreage (ha)	Share (%)	Farmers	Yield (kg/ha)	Production (Tonnes)	Share (%)
Jhansi	1,34,450	59%	82	822	1,10,572	58%
Lalitpur	14,642	6%	12	823	12,055	6%
Hardoi	10,865	5%	12	1,087	11,814	6%
Kheri	8,916	4%	12	817	7,281	4%
Mahoba	8,695	4%	10	792	6,886	4%
Sub Total	1,77,568	79%	-	-	1,48,609	79%
Others	48,532	21%	-	-	40,617	21%
State Total	2,26,100	100%	128	837	1,89,226	100%

4.5.7 Maharashtra

As shown in Table 11 in Maharashtra four districts were surveyed, the highest yield was estimated for Nashik (887 kg/ha) and lowest in Satara (762 kg/ha). The total production of Maharashtra was

estimated as 1,19,346 tonnes with an average yield of 833 kg/ha.

Table 11 Estimated of production of Kharif Groundnut (in Shell) in Maharashtra

District	Acreage (ha)	Share (%)	Farmer s	Yield (kg/ha)	Production (Tonnes)	Share (%)
Kolhapur	35,130	25%	35	836	29,384	25%
Satara	27,331	19%	29	762	20,816	17%
Sangli	25,660	18%	38	868	22,284	19%
Nashik	17,840	12%	66	887	15,826	13%
Sub Total	1,05,961	74%	-	-	88,310	76%
Others	37,239	26%	-	-	31,036	24%
State Total	1,43,200	100%	168	833	1,19,346	100%

4.6 All India Production

The figures for estimated state wise production and estimated all India production is given in Table 12 with an estimated production of 68,57,849 tonnes, Gujarat had production of 33,25,084 tonnes with a share of 48% in the national production and it was followed by Rajasthan (15,53,260 tonnes) with a share of 23%. All the seven states contribute 92 % of the national production. Among the seven states the highest yield of 2,033 kg/ha was estimated for Gujarat and lowest was estimated for Andhra Pradesh i.e., 386 kg/ha. The national average was estimated as 1,562 kg/ha

Table 12 All India Production of in Shell Groundnut

State	Acreage (Ha)	Share (%)	Yield (kg/ha)	Production (Tonnes)	Share (%)
Gujarat	16,35,300	37%	2,033	33,25,084	48%
Rajasthan	8,69,200	20%	1,787	15,53,260	23%
Madhya Pradesh	5,40,000	12%	1,550	8,37,150	12%
Karnataka	3,14,100	7%	454	1,42,723	2%
Andhra Pradesh	2,93,600	7%	386	1,13,404	2%
Uttar Pradesh	2,26,100	5%	837	1,89,226	3%
Maharashtra	1,43,200	3%	833	1,19,346	2%
Subtotal	40,21,500	92%	-	62,80,193	92%
Others	3,69,900	8%	-	5,77,656	8%
Total	43,91,400	100%	1,562	68,57,849	100%

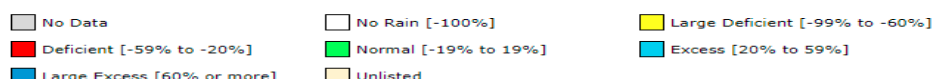
4.7 Rainfall Scenario

As Kharif Groundnut is a rain fed crop, distribution and amount of rainfall plays a major role in the crop development at different growth stages. The graphical representation of rainfall pattern in major groundnut districts of 7 states is given below from Figure 25 to Figure 31.

Gujarat has got well distributed optimal rainfall in the initial phase of sowing during July. In Aug, and Sep, state has witnessed deficit rainfall. However due to better irrigation facilities available in the state which will leads to minimal impact on crop health.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Amreli	-96	68	-12	-22	300	96	40	181	-37	-92	-98	-86	-99	-100	-97	43	-58	-100	-73
Banaskantha	308	-99	1213	-98	-23	168	-94	-24	-16	-98	-98	-95	-96	-100	-63	740	-67	-100	-100
Bhavnagar	-69	-66	-24	27	136	141	17	401	-15	-93	-95	-94	-97	-99	-63	24	-47	-100	-100
Devbhoomi Dwarka	-99	-43	-50	32	199	436	34	238	-77	-99	-100	-90	-92	-100	-59	-54	-100	-100	-100
Gir Somnath	-100	417	-76	-37	271	165	239	188	-55	-82	-89	-89	-97	-100	-100	106	26	-100	-100
Jamnagar	-100	159	459	-64	321	146	-90	482	-64	-99	-98	-74	-99	-100	-100	262	-100	-100	32
Junagarh	-100	382	-22	-47	467	175	48	527	-68	-94	-98	-86	-99	-100	-99	290	-42	-100	187
Rajkot	-61	104	122	6	267	294	21	283	-68	-97	-98	-92	-99	-99	-99	30	-47	-100	62

Figure 25 Graphical representation or rainfall pattern in groundnut districts of Gujarat



With respect to long time average, the descriptors used by the IMD to categorizes the extent of rainfall in the groundnut growing district are: Normal- minus 19 per cent to plus 19 per cent; Deficient- minus 20 per cent to minus 59 per cent; Large deficient minus 60 per cent or more; Excess- plus 20 per cent to plus 59 percent; Large excess- plus 60% or more; and No rains- 0 per cent.

Rajasthan has also received good amount of rainfall during the initial months of Kharif season 2023, which will have a positive impact on the crop sowing and health during its growth phase. However, deficit rainfall was recorded in Aug and Sep. This will have some impact on the crop health which can mitigate due to available good irrigation facilities in many districts in the state.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Bikaner	338	-74	64	-82	80	161	-19	48	293	-100	-100	-97	-100	-100	-100	705	-100	-100	160
Churu	335	-100	-9	-9	-31	201	42	-22	105	-100	-100	-94	-100	-100	-46	488	-100	-100	306
Jaipur	31	-79	228	46	119	174	-14	-55	172	-88	-92	-68	-99	-88	-77	212	-100	-100	-92
Jaisalmer	243	-100	127	68	57	306	-93	293	80	-100	-100	-82	-100	-100	-100	172	365	-100	1889
Jodhpur	549	-100	1010	156	9	312	-51	61	103	-100	-100	11	-100	-100	-95	767	-75	-100	660
Nagaur	520	-71	595	181	7	194	-6	45	159	-100	-100	-52	-100	-100	-76	458	-63	-100	-72

Figure 26 Graphical representation or rainfall pattern in Groundnut districts of Rajasthan

Madhya Pradesh has received a good rainfall in the last week of June and July which will have a positive impact on the sowing. In the month of Aug and Sep, the districts have received deficit rainfall. The impact of weather on crop health is expected to be minimal with better irrigation and management practice for groundnut crop.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Chhatarpur	-86	-55	-100	56	94	-15	-20	-84	-49	63	-100	-15	-89	-67	116	23	-71	-100	-86
Datia	-100	-100	-43	168	7	24	-42	-96	-44	160	-97	-18	-100	-51	156	-76	-100	-100	-47
Niwari	-100	-100	-86	742	-63	-49	9	-92	-56	367	-100	-4	-84	-44	241	234	-100	-100	16
Shivpuri	-98	-100	77	34	54	42	36	-73	-1	16	-99	76	-96	-79	75	-6	-98	-100	-29
Tikamgarh	-100	-99	-98	10	-23	-8	56	-78	-58	99	-100	-5	-68	-33	433	14	-100	-100	-10

Figure 27 Graphical representation or rainfall pattern in Groundnut districts of Madhya Pradesh

Karnataka has received deficit rainfall in June except in few districts. And similarly, after some normal weeks of July, in August and September all districts have again recorded deficit rainfall. This has led to a record of lowest rainfall this year in the state of Karnataka thus causing a drought like situation impacting crop health.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 27 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Belgavi	-59	-88	-91	-59	-31	-23	60	203	10	-70	-93	-49	-41	99	-61	-44	-26	-95	-89	
Chitradurga	-45	-52	92	113	318	93	18	260	-21	-98	-100	-45	-100	227	-81	-69	-95	-98	-66	
Gadag	-81	-29	-32	-53	204	-17	49	234	7	-94	-55	-73	-48	241	-86	-71	-70	-100	-100	
Tumkur	-74	7	13	209	155	-12	-19	42	-64	-80	-97	-74	-72	189	-70	-72	-72	-61	-86	
Vijayanagar	-74	28	-69	22	351	24	27	173	100	-99	-51	-79	-80	16	-97	-76	-93	-100	-100	

Figure 28 Graphical representation or rainfall pattern in Groundnut districts of Karnataka

Andhra Pradesh has witnessed erratic rainfall from July to October. From 2nd fortnight of July till 2nd fortnight of Sep, the districts have witnessed deficit rainfall except few weeks. This situation has resulted in water stress condition and impacting the crop health.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 27 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Anantapuramu	-57	22	-50	-25	157	-89	-55	56	58	-100	-54	-86	-91	95	-100	-93	-36	-96	-70	
Sri Satyasai	-89	-82	40	34	114	-70	-83	-7	-59	-95	-2	-93	-80	155	-99	-30	-13	-93	-100	
Chittoor	-12	-41	215	62	-7	-76	-34	-8	-83	-92	-59	-34	67	108	-42	29	-41	-10	-97	
Annamayya	-56	50	-35	186	188	-88	-65	4	-9	-93	-37	-75	-83	119	-98	-55	-71	-95	-100	

Figure 29 Graphical representation or rainfall pattern in Groundnut districts of Andhra Pradesh

Uttar Pradesh has witnessed mostly normal rainfall in all the districts according to the weekly departure except during few weeks in between when deficit rainfall was recorded. However, the presence of irrigation facilities in the districts, water stress condition during the stress phase was mitigated to achieve better yield.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 27 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Hardoi	-95	-100	7	-34	25	43	-51	-99	-53	-16	-94	109	58	-99	121	-81	4	-100	-49	
Jhansi	-77	-97	-15	118	21	61	-33	-92	-49	84	-100	0	-96	-60	79	-39	-100	-100	-38	
Kheri	-100	-100	-74	22	109	-66	-41	10	-50	27	-5	62	-15	-100	86	-59	2	-100	-2	
Lalitpur	-100	-100	-85	127	78	-22	25	-73	-64	73	-100	79	-91	-78	292	-45	-100	-100	-100	
Mahoba	-10	-97	-93	447	182	3	-32	-90	-56	62	-100	1	-97	-89	180	-29	-77	-100	-100	

Figure 30 Graphical representation or rainfall pattern in Groundnut districts of Uttar Pradesh

Maharashtra has received normal to excess rainfall in the initial phase during June and July. During Aug and Sep, it has witnessed deficient rainfall during the Kharif season. However, with the available better irrigation facilities in the districts water stress condition was mitigated.

District	Week End 7 th June 2023	Week End 14 th June 2023	Week End 21 st June 2023	Week End 28 th June 2023	Week End 5 th July 2023	Week End 12 th July 2023	Week End 19 th July 2023	Week End 26 th July 2023	Week End 2 nd Aug 2023	Week End 9 th Aug 2023	Week End 16 th Aug 2023	Week End 23 rd Aug 2023	Week End 30 th Aug 2023	Week End 6 th Sep 2023	Week End 13 th Sep 2023	Week End 20 th Sep 2023	Week End 4 th Oct 2023	Week End 11 th Oct 2023	Week End 18 th Oct 2023
Kolhapur	338	-74	64	-82	80	161	-19	48	293	-100	-100	-97	-100	-100	-100	705	-1	-90	-96
Nashik	335	-100	-9	-9	-31	201	42	-22	105	-100	-100	-94	-100	-100	-46	488	4	-100	-75
Sangli	31	-79	228	46	119	174	-14	-55	172	-88	-92	-68	-99	-88	-77	212	-27	-100	-95
Satara	243	-100	127	68	57	306	-93	293	80	-100	-100	-82	-100	-100	-100	172	84	-100	-96

Figure 31 Graphical representation or rainfall pattern in Groundnut districts of Maharashtra

These factors can therefore be attributed to decrease in acreage by 4% and increase in production by 5% as compared to last year 2022.

Disclaimer

RMSI Cropalytics is responsible for the process of gathering, processing and analyzing the information supplied by the farmers in India from structured face-to-face interviews. All information contained herein reflects the opinions and forecasts of the interviewed farmers at the time of survey.

ACKNOWLEDGEMENT

The Financial Assistance from Agricultural & Processed Food Products Export Development Authority (APEDA) to carry out this Groundnut crop survey during Kharif 2023 is thankfully acknowledged.