BASMATI CROP SURVEY REPORT

KHARIF 2019 | VOL : 2

Submitted To -

BASMATI EXPORT DEVELOPMENT FOUNDATION,

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Submitted By -

NATIONAL COLLATERAL MANAGEMENT SERVICES LIMITED (NCML)

GURUGRAM

www.ncml.com

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1. Executive Summary

Basmati Export Development Foundation (BEDF), founded by Agricultural and Processed Food Products Export Development Authority (APEDA) and is a society registered under Societies Registration Act, 1860, state Government of UP. BEDF undertakes various activities to promote exports of Basmati rice from India such as quality assurance in export, authorised centres for sample drawn by customs department, production of Basmati breeder/foundation seed, farmers awareness and capacity building, implementation of Basmati registration as Geographical Indication product, works with various agencies for setting up DNA Testing protocols for inclusion of new notified varieties of Basmati rice and sets the flow of things ready for quality analysis for National trails. BEDF has contracted National Collateral Management Services Ltd (NCML) for field based crop survey for assessment of acreage, crop health and production of Basmati rice during Kharif 2019.

In line with the scope of the project, NCML has conducted questionnaire based field survey in the month of Aug'2019 and then in Sep'19 in the selected 83 districts of the study area and this report being the second report of the study covers the results of the survey for total paddy acreage, Basmati acreage and acreages of non-basmati varieties such as Sharbati and Sugandha.

Paddy acreages during kharif 2019 have been lagging behind and as per the latest Kharif sowing report released by Department of Agriculture, Govt of India on 27th Sep 2019, all India paddy acreages are reported at 382 lakh hectares which are 1% lower than 2018 paddy acreages of 387 lakh hectares. As per the filed survey conducted by NCML, total paddy acreages in the study area during Kharif 2019 are estimated at 6,204 thousand hectares which are 6.5% higher than last year's acreage of 5,825 thousand hectares. Further, total Basmati paddy acreages during kharif 2019 are estimated at 2,016 thousand hectares higher by 36.2% as against 1,480 thousand hectares reported during kharif 2018.

Paddy acreages in **Haryana** are estimated at 1,356.5 thousand hectares, 7% higher than the 2018 acreages of 1,270 thousand hectares. Basmati acreages in Haryana are estimated at 849.5 thousand hectares in 2019 which are 43% higher than the 2018 acreage of 596 thousand hectares. Overall, basmati acreages are 63% of the total paddy acreage in Haryana during kharif 2019. Of the total basmati acreages, PB 1121 has been transplanted in 384.8 thousand hectares, accounting for 45% of the basmati acreages in the state. PB-1509 has been transplanted in 160 thousand

hectares, contributing for 19% of the total Basmati acreages. Other varieties grown in the state include PB-1, CSR-30, PB 6, PB-1637 and PB-1718.

Punjab is an important Paddy producing state and total paddy acreages in the state of Punjab are estimated at 2,976 thousand hectares, 0.2% lower than 2018 acreages of 2981 thousand hectares. Basmati acreages in the state are estimated at 593 thousand hectares during 2019, higher by 8.5% compared to 547 thousand hectares reported during kharif 2018. Major share of Basmati acreages during kharif 2019 are contributed by PB 1121 (63.5%) followed by PB 1509 (23%), Pusa 1401 /Pusa -6 (7.5%), PB-1 (5.2%) and PB 1637 (1%).

Paddy acreages in **Uttar Pradesh** are estimated at 1,614 thousand hectares in 2019 which are 21% higher than the last year acreages of 1,336 thousand hectares. Basmati acreages in 2019 are estimated at 486 thousand hectares which are 93% higher than the last year acreages of 252 thousand hectares. Out of total Basmati acreages PB 1509 has the largest share of 45%, followed by PB 1121 (34%) and PB-1 (10%). Of the total non-basmati acreages, non-notified varieties (Sharbati and Sugandha) have been transplanted in 376 thousand hectares in Uttar Pradesh.

Paddy acreages in **Uttarakhand** during kharif 2019 are estimated at 116.1 thousand hectares, higher by 19% compared to 97.6 thousand hectares during kharif 2018. Basmati acreages are estimated at 17.2 thousand hectares which are 18% higher than the last year acreages of 14.6 thousand hectares. Major varieties grown in the state are Type 3, PB-1121, PB-1509 and others.

Paddy acreages in **Jammu & Kashmir** during kharif 2019 are estimated at 91 thousand hectares marginally higher than last year acreages of 88.4 thousand hectares. Basmati acreages in 2019 are estimated at 60.5 thousand hectares lower by 3.4% compared to 62.6 thousand hectares of acreages reported during 2018. Major varieties grown in J&K are Ranbir Basmati which accounts for 74%, PB-1509 occupies 16% while PB 1121 occupies 10% share of basmati acreages in J&K

Paddy acreages in **Himachal Pradesh** for kharif 2019 are estimated at 49 thousand hecatres, lower by 4% compared to 51.1 thousand hectares recorded during kharif 2018. However, basmati acreages are higher by 24% and are estimated at 8.8 thousand hectares during 2019 compared to 7.1 thousand hectares planted in 2018. Major Basmati variety grown in the state is PB 1509 which accounts for 65% of the share of Basmati acreages while share of PB 1121 in total basmati acreages is 20% and Basmati 370 comprises of 16% share in HP.

Further, the report covers state wise, district wise and variety wise acreages and their shares for each of the district in the study area in different sections of the report.

2: Project Background

Basmati Paddy is a unique product of Indo-Gangetic planes of Himalaya, having unmatched quality characters and aroma which makes it an important export commodity among food grains exported from India. India is one of the top exporters of rice, both basmati and non-basmati rice, and the annual Indian rice exports hover around 10-13 million MT. During the year 2018-19 (Apr-Mar), India exported 11.9 million MT of rice, out of which Basmati rice exports accounted for 4.4 million MT while non-basmati rice exports were 7.5 million MT. Share of Basmati rice in the total rice exports has been hovering in the range of 30% to 40% while non-basmati rice contributes to 60 to 70% of rice exports. India exports Basmati rice to almost 132 countries across the world every year and the major export destinations for Indian Basmati rice are Iran, Saudi Arabia, UAE and Iraq.

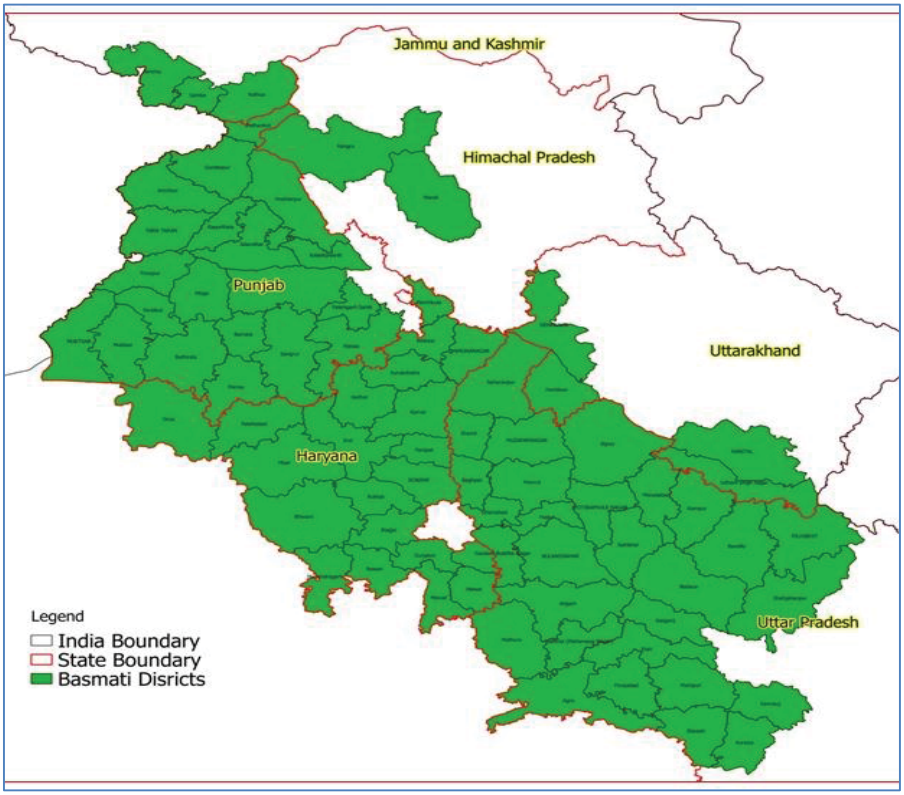
Crop acreage and production estimation has been a constant concern since the beginning of the history of agriculture. Appropriate and timely information on the area and likely production of the crop before the harvest helps exporters and other market participants involved in the rice trade to take better and informed decisions about the pricing of the export contracts and time the exports in line with the availability of raw material. Envisaging the benefits that can be availed by the trade and the entire value chain, the Basmati Export Development Foundation (BEDF), contracted M/s National Collateral Management Services Limited (NCML), Gurugram for carrying out estimates of total paddy acreages, Basmati acreages and acreages of other non-notified varieties in 83 districts in the selected seven states (Study area – Figure -1) i.e., Haryana, Punjab, Uttar Pradesh, Uttarakhand, Jammu & Kashmir, Himachal Pradesh and Delhi. The detailed list of state wise districts covered in the survey are as per the table 1. Further, the study also includes monitoring crop health of Basmati and other non-notified varieties in the study area, estimate yields and in turn production of Basmati as well as other non-notified varieties in the study area.

The basmati varieties for which information is required includes PB-1121, PB-1509, PB-1, PB-6/PB-1401, Basmati-370, Basmati -386, Type-3 (Dehraduni), Taraori basmati, Ranbir basmati, CSR-30, PB-1718 and PB-1637 and non-notified, non-basmati varieties such as Sharbati and Suganda.

Table: 1 List of state wise districts to be covered in the field survey

Table 1: List of State wise Districts to be covered in the survey							
S.No	Haryana	Punjab	Western UP	HP	J&K	UK	Delhi
1	Ambala	Amritsar	Agra	Kangra	Jammu	Dehradun	Delhi
2	Bhiwani	Barnala	Aligarh	Mandi	Kathua	Haridwar	
3	Faridabad + Palwal	Bhatinda	Auraiya		Samba	Nainital	
4	Fatehabad	Faridkot	Baghpat			Uddham Singh Nagar	
5	Gurgaon	Fatehgarh Sahib	Bareilly				
6	Hisar	Fazilka	Bijnore				
7	Jajjhar	Firozpur	Budaun				
8	Jind	Gurdaspur	Bulandshahr				
9	Kaithal	Hoshiarpur	Etah				
10	Karnal	Jalandhar	Kasganj				
11	Kurukshetra	Kapurthala	Farukhabad				
12	Mewat	Ludhiana	Firozabad				
13	MahendraGarh	Mansa	Etawah				
14	Panchkula	Moga	Gautam Buddha Nagar				
15	Panipat	Mohali	Ghaziabad				
16	Rewari	Muktsar	Hapur				
17	Rohtak	Pathankot	Hathras				
18	Sirsa	Patiala	Mathura				
19	Sonepat	Ropnagar	Mainpuri				
20	Yamunanagar	Sangrur	Meerut				
21		Nawanshahar	Moradabad				
22		T.Taran	Amroha				
23			Kannauj				
24			Muzaffarnagar+Shamli				
25			Pilibhit				
26			Rampur				
27			Saharanpur				
28			Shahjehanpur				
29			Sambhal				

Figure 1: Map of study area along with the districts



3. Scope of the Current Report

BEDF has contracted National Collateral Management Services Ltd (NCML) for field based crop survey for assessment of acreage, crop health and production of Basmati rice during Kharif 2019. The scope of field based survey is as follows:

1. Survey for assessment of acreage, crop health and yield of Basmati rice during Kharif 2019 in the states of Punjab, Haryana, Himachal Pradesh, Uttarakhand, Delhi, Western UP (30 districts), and Jammu & Kashmir(3 districts – Jammu, Kathua & Samba).
2. Field based survey to cover
    a. Acreage estimation of rice, basmati crop differentiated in traditional and evolved varieties of Basmati rice and Sharbati and Sugandha of Non- Basmati and reports will be submitted on district level basis for each state.
    b. Variety wise crop health monitoring and analysis
    c. Variety wise crop maturity survey, describing the percentage of acreage under particular crop growth
    d. Climate based yield modelling using historical yield and climate data (10 years) in order to predict yield well in advance
    e. Questionnaire based sample survey of farmers for area/districts mentioned above with as suitable samples size covering all blocks of the respective districts. The sample size may be arrived at, taking into view the crop density in the concerned block. The contact details of the framers included in the survey may be provided. Reports to mention as to how many farmers and how much crop area has been covered from each bloc/district
    f. The block wise visit schedule of the teams for farmer survey may be given in advance to APEDA/AIREA. Representatives of APEDA/AIREA may visit some blocks for monitoring of survey
    g. To ascertain accuracy levels GPS points may be provided to APEDA/AIREA. Each farmer should be photographed at the time of interview with proof of date by new paper of the day. Photographs of all farmers will be provided in the electronic format to APEDA/AIREA with the reports. Complete details of contact in respect of every farmer interviewed along with mobile number and address.

h. Percentage wise sale/distribution of Basmati seeds by different agencies including Govt sources, private sector and farmers and the price paid for each variety. This information should be contained in report for the month of July
i. Data collection work force and sample size of the crop cutting experiment will be decided in consideration with AIREA.

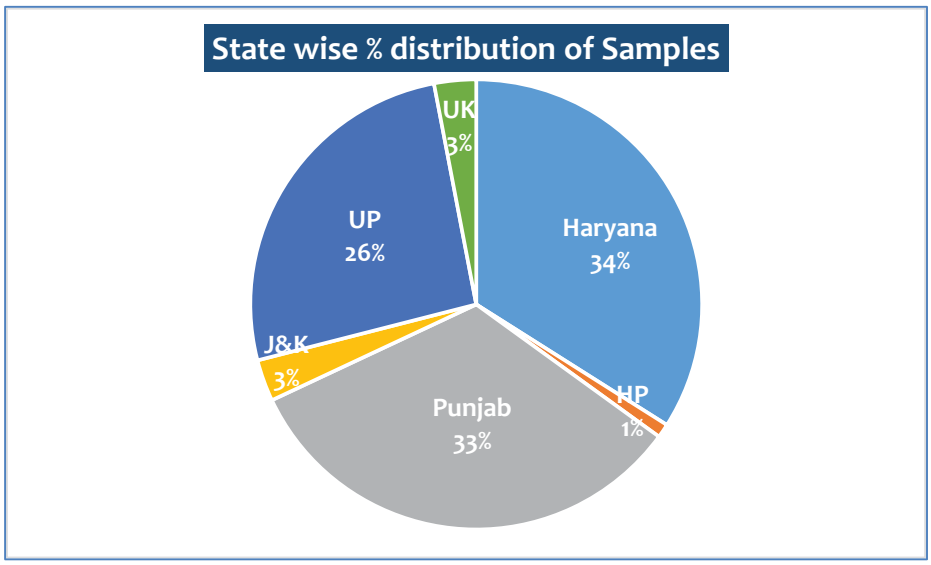
The current report being the second survey report for Kharif 2019 season, covers results of questionnaire-based field survey which was carried out during the month of Sep'19 for monitoring crop health, validating acreages of total paddy, Basmati and non-notified varieties in the study area. The report also covers weather conditions, soil moisture, Normalized difference Vegetation Index (NDVI) and finally variety wise district wise acreages of Basmati as well as non-notified varieties in the study area.

4. Approach & Methodology

A blanket approach has been adopted to catch hold of all the major aspects that affect acreages of paddy in the study area through a structured questionnaire based field survey covering farmers of all the blocks of the select 83 districts in the study area followed by traders, agri input dealers, rice millers and other stake holders of the value chain. The data collected through these structured questionnaires is further processed for arriving at desired objectives of the study. Further, GPS points have been collected through the survey which will be used in cross verifying the results obtained from the questionnaire based survey with satellite based remote sensing technology to arrive at final acreages of Basmati and non-notified varieties in the study area. The usage of remote sensing technology will further depend upon the availability of cloud free images in the study area.

Sample size has been arrived at by adopting stratified multi stage random sampling homogeneously distributed among states and districts depending on the acreage distribution for primary survey to fulfil the desired objectives of the study. The sample size is arrived at taking into account the concentration of paddy in each block in the district. On the whole, more than 1200 farmers and 400 traders/agri input dealers/rice millers/Govt officials and other value chain participants have been surveyed. Farmers are photographed at the time of interview with proof of date by newspaper of the day as well as time stamps in the photographs that have been collected.

The samples have distributed across the study area on the basis of paddy acreages prevailing in the respective states. The following chart depicts state wise % distribution of samples (Farmers and traders) in the study area



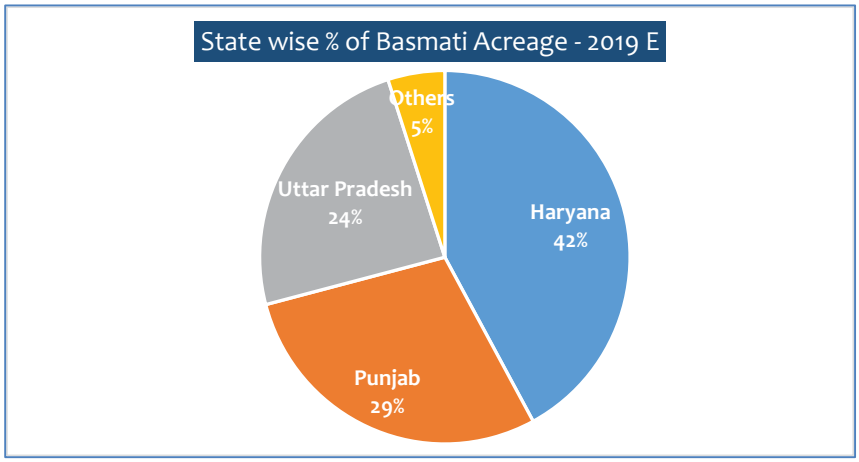
Apart from the farmers and traders, other value chain participants such as commission agents, rice millers and Govt officials in the study area have also been contacted during the survey and the inputs of all the participants have been considered in the report.

5. Survey Findings

Data collected through the questionnaires has been analysed thoroughly using different data analytical tools & techniques and following are the major findings from second round of survey.

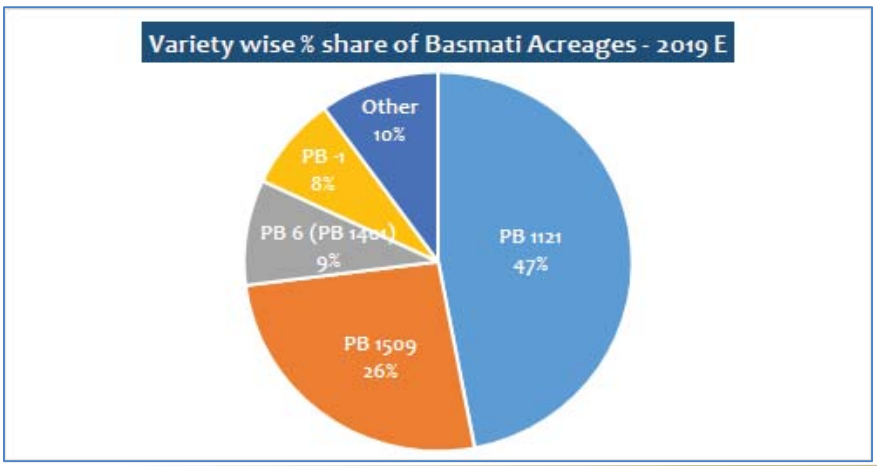
1. Total paddy acreages in the study area during Kharif 2019 are higher by 6.5% where in paddy has been transplanted in 6204 thousand hectares as against 5825 thousand hectares reported during Kharif 2018.
2. Total Basmati paddy acreages in the study area during Kharif 2019 are estimated at 2016 thousand hectares, higher by 36% as against 1480 thousand hectares during Kharif 2018.
3. Haryana state has the largest acreages under Basmati paddy contributing for 42% of basmati acreages in the study area followed by Punjab (29%) and Uttar Pradesh (24%).

Figure 3: State wise % share of Basmati paddy acreages in the study area



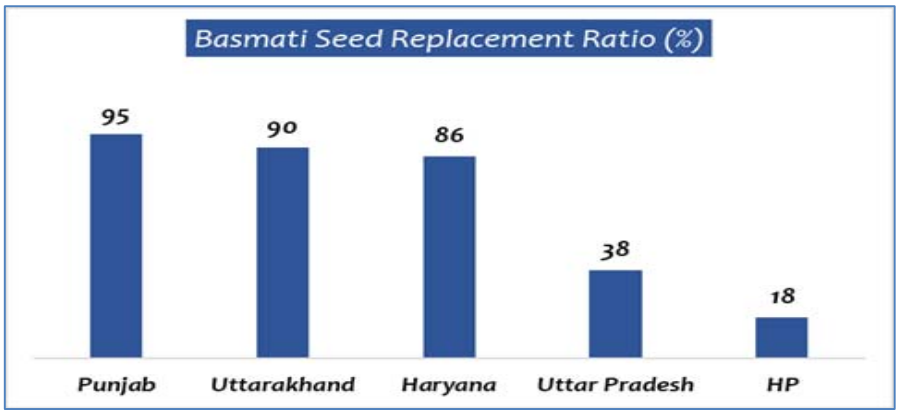
4. Out of several Basmati varieties grown in the study area, PB - 1121 is the largest variety accounting for nearly 47% of the area under Basmati paddy in the study area followed by PB 1509 (26%), PB 6 / PB 1401 (9%) and PB-1 (8%).

Figure 4: Variety wise % share of Basmati paddy acreages in the study area



5. Pusa Basmati- 1718 is a new variety of Basmati paddy released for cultivation during the year Kharif 2019.
6. Farmers in the study area have shown a shift in acreages from PB-1121 to PB-1509 during the current Kharif 2019 season. Total % share of acreages of PB – 1121 in the study area has decreased from 70% during 2018 to 47% during 2019 while % share of PB – 1509 acreages in the study area has increased from 9% during kharif 2018 to 26% during kharif 2019 and the major reasons for shift in variety as indicated by farmers are as follows:
    a. Yields of PB-1509 are higher compared to PB-1121
    b. Farmers in the study area felt that their fields will be ready for timely plantings of Wheat crop during the upcoming Rabi season as PB-1509 is relatively a short duration variety compared to PB-1121.
7. The seed replacement ratio (SRR) of Basmati paddy has been increasing over the years and the following figure illustrates state wise seed replacement ratio in the study area for Kharif 2019. The SRR indicates that farmers in Haryana, Punjab and Uttarakhand are more progressive than the farmers of other regions in the study area.

Figure 5: State wise Basmati Seed Replacement Ratio (SRR) in % in the study area



8. **State wise Crop Condition and Yield Estimation**

Haryana: Crop Condition of Basmati Paddy in the state has been good. There are no major incidences of crop losses or crop damages due to abiotic or biotic factors. Incidence of sheath blight was reported in some of the districts, but the pest infestation has been below Economic Threshold Level (ETL) and has been controlled by spray of pesticides. Brown Plant Hopper attack had been observed in the adjacent districts of GT Road at milking stage whereas false smut was also reported in the same districts, but the impact on crop growth was minimal.

Harvesting of PB-1509 has been initiated in many districts and new crop has started arriving in the mandis. Harvesting of PB 1121 may start from 2nd to 3rd week of October in

the state. As per initial estimates, average yield expectation of PB 1121 is 16-20 qtl per acre while the average yield for PB 1509 is expected to be in the range 18-22 quintals per acre. Yileds of CSR - 30 and PB 6 are expected to be in the range of 11-15 quintals per acre and 21-26 quintals per acre respectively.

Punjab: Crop condition of Basmati paddy in the state has been good. Rainfall has been normal and weather has been congenial for the crop growth. There was no major incidence of any pest or disease reported in the state.

Harvesting of PB 1509 has started in many districts. Overall quality of the grain is good; however, moisture levels of PB 1509 paddy arriving in the mandis is on the higher side. Harvesting of PB 1121 paddy may start from 2nd to 3rd week of October. As per initial estimates, yields of PB 1121 are expected to be in the range of 16-20 quintals per acre, yields of PB1509 are expected to be around 18-22 quintals per acre while yields of PB 6 are expected to be around 21-26 quintals per acre.

Uttar Pradesh: The state has received lower rains during this kharif season and despite lower rains, crop condition of Basmati paddy in the state has been normal. Incidence of leaf folder and stem borer infestation has been reported in some districts but the same in under control. PB 1509 variety is in the harvesting stage and the harvesting of the same will start from the 1st to 2nd week of October while harvesting of PB 1121 and PB 1 is expected to start from 3rd to 4th week of October.

Uttarakhand: Basmati crop condition seems to be normal in Nainital & Dehradun while it is above normal in US Nagar & Haridwar which may have 10-15% better yield this year as compared to last year. There was no major pest or disease infestation reported in the Basmati crop.

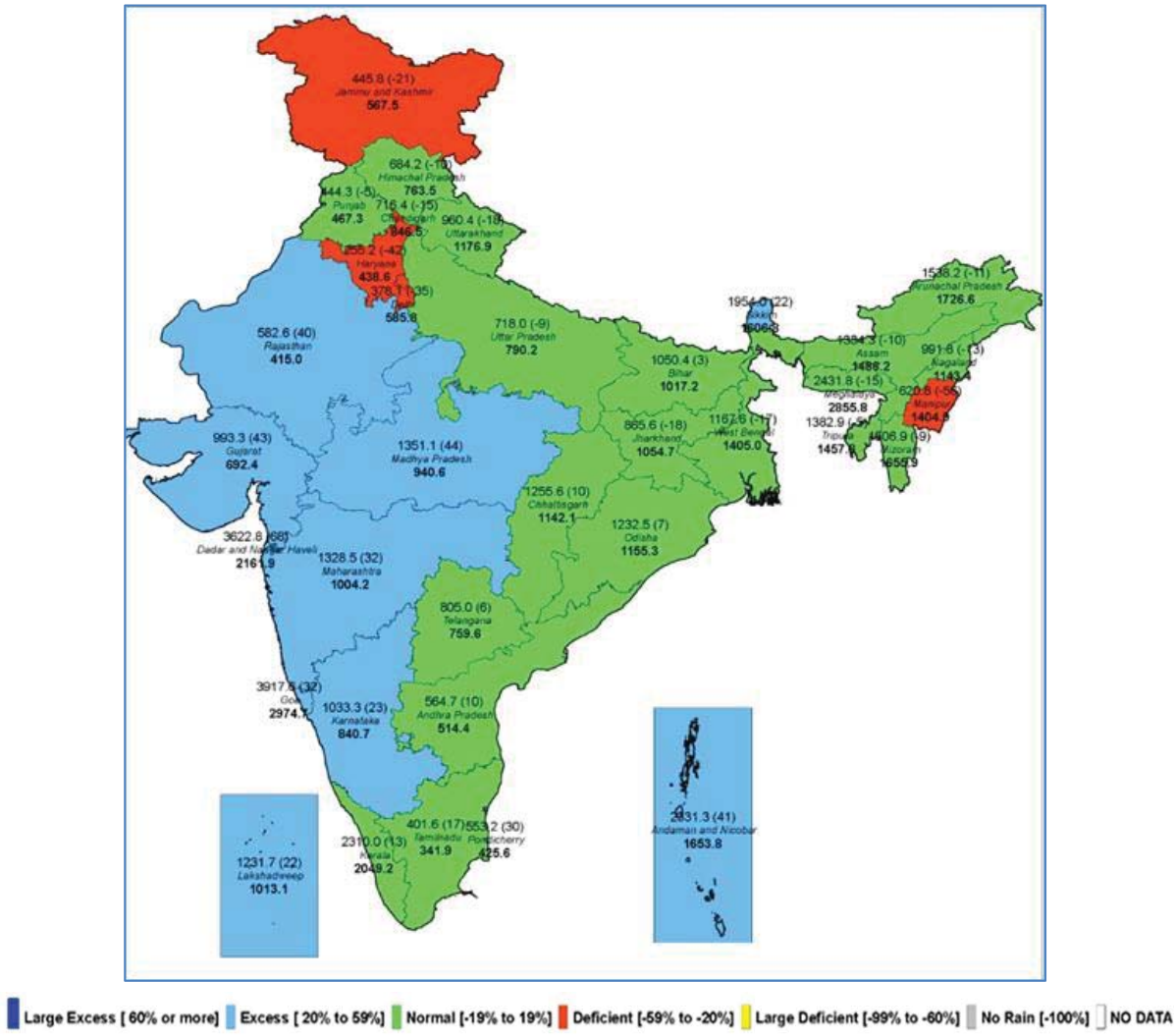
Jammu & Kashmir: Basmati crop is in normal condition. However, in some pockets yields may be lower due to lower rainfall received by the state this year. There was no major pest or disease attack in the Basmati growing districts and use of pesticides was also lower this year.

Himachal Pradesh: Basmati crop condition in the state is normal. However, yield may be slightly lower due to delayed rains. Crop is in milking to maturity stage. There was no major infestation of any pest or disease in the state so far this season.

6. All India Monsoon Performance

The country has witnessed above normal rainfall during the south west monsoon season 2019. Onset of Southwest monsoon has been delayed and though the season started with a deficit rainfall with Jun'19 witnessing 33% lower rains as compared to normal, the monsoon season picked up pace in Jul'19, Aug'19 and Sept'19 months resulting in above normal rainfall for the season. The cumulative rainfall received by the nation till Sept`19 was 968.3 mm, higher by 10% over normal rainfall of 880.6 mm for the same period.

Figure 6: June'19 – Sept'19 Rainfall Map of India



During the current monsoon season till Sept'19, 12 states and UT`s have received excess or large excess of rainfall. 19 states received normal rainfall in which Basmati growing states of the study area viz., Uttarakhand, Himachal Pradesh and Punjab received normal rainfall. 4 states of the study area viz., Jammu & Kashmir, Haryana, Delhi and western Uttar Pradesh received below normal rainfall during the just concluded monsoon season.

All India Paddy Acreage Scenario

As per the latest Kharif sowing report released by Department of Agriculture, Govt of India on 27th September 2019, all India paddy acreages are reported at 382.34 lakh hectares which are around 1 % lower than 2018 paddy acreages of 386.92 lakh hectares for the same time period. State wise paddy acreages in the country are as per the table below:

Table 2: All India Paddy Acreage as on 27th September 2019 (in Lakh Hectares)

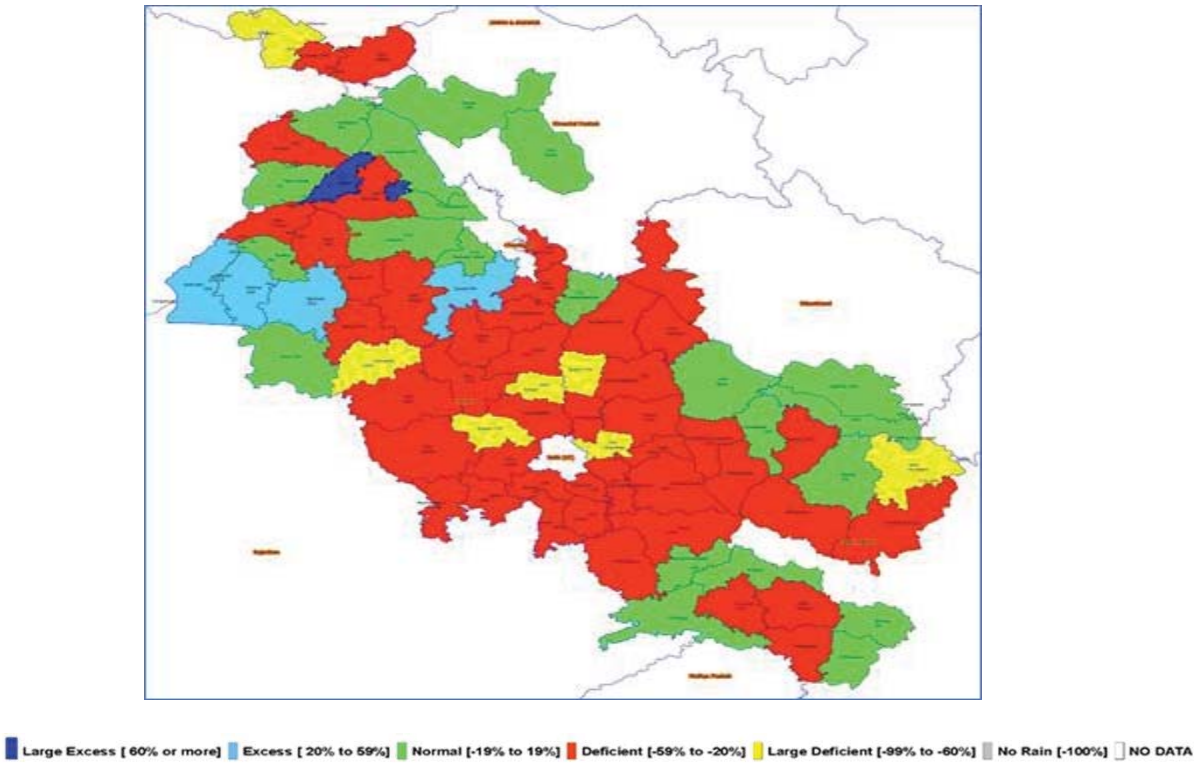
S. No	State	2019-20	2018-19	% Change
1	Haryana	13.57	13.29	2%
2	Himachal Pradesh	0.73	0.74	-1%
3	Jammu & Kashmir	1.15	1.14	1%
4	Punjab	29.2	30.42	-4%
5	Uttar Pradesh	60.05	59.73	1%
6	Uttarakhand	2.49	2.48	0%
7	Andhra Pradesh	13.7	14.35	-5%
8	Assam	19.71	19.77	0%
9	Bihar	27.72	32.56	-15%
10	Chhattisgarh	38.33	37.54	2%
11	Gujarat	8.48	8.06	5%
12	Jharkhand	13.57	15.19	-11%
13	Karnataka	8.12	9.56	-15%
14	Madhya Pradesh	24.6	21.5	14%
15	Maharashtra	14.82	15.53	-5%
16	Odisha	37.42	37.06	1%
17	Telangana	12.59	10.38	21%
18	West Bengal	40.31	42.72	-6%
19	Others	15.78	14.9	6%
All-India		**382**	**387**	-1%

Source: Department of Agriculture

7. Monsoon performance in the Study Area

The scope of this study covers 83 districts across 7 states viz., Haryana, Punjab, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Jammu and Kashmir and Delhi. During the period June'19 to Sept'19, 21 districts in the study area received normal rainfall, 49 districts received deficient rains, 7 districts received large deficient rains, 4 districts excess rains and 2 district large excess rainfall out of the total 83 districts. Delay in arrival of monsoon and the presence of El-Nino conditions in June`19 resulted in deficient rainfall in the country. Likewise, majority of the districts in the study area received deficient rainfall in June`19. With the weakening of El-Nino and revival of monsoon rains, the states of Uttar Pradesh, Haryana and Punjab received normal rainfall in July`19. Strengthening of monsoon rains in July`19 led to normal rainfall activity being witnessed in majority of the districts covered in the study area. However, rainfall activity was mixed in the study area during Aug'19 where in Haryana, Uttar Pradesh and Jammu & Kashmir received deficient rains while Punjab, Uttarakhand received normal rains and Himachal Pradesh witnessed excess rains in the month of Aug'19. In Sept'19, majority of districts in Punjab, Haryana and Uttar Pradesh received deficient rains except few districts in Uttar Pradesh whereas districts of Himachal Pradesh received normal rainfall.

Figure 7: Jun'19 to Sept'19 Rainfall Map of study area



Total Paddy and Basmati Acreages in the study Area

As per the second filed survey conducted by NCML, total paddy acreages in the study area during Kharif 2019 are estimated at 6204 thousand hectares which are 6.5% higher than last year's acreage of 5,825 thousand hectares. Total Paddy acreages during Kharif 2019 are higher in Uttar Pradesh (20.8%), Uttarakhand (18.4%), Haryana (6.8%) and Jammu & Kashmir (3.6%) while total paddy acreages are lower in Himachal Pradesh (-3.53%) and Punjab (-0.2%).

Table 3: State wise Paddy and Basmati acreages in the study area ('000 Ha)

S.No	State	Total Paddy acreages			Total Basmati acreages		
		2018	2019 E	% change	2018	2019 E	% Change
1	Haryana	1270	1356	6.8%	596	850	42.5%
2	Punjab	2981	2976	-0.2%	547	593	8.4%
3	Uttar Pradesh	1336	1614	20.8%	252	486	92.9%
4	J&K	88	91	3.6%	63	61	-4.0%
5	Uttarakhand	98	116	18.4%	15	17	14.6%
6	Himachal Pradesh	51	49	-3.5%	7	9	24.1%
7	Delhi	1	1	0.0%	1	1	0.0%
Total		**5825**	**6204**	**6.5%**	**1481**	**2016**	**36.1%**

Total Basmati paddy acreages during kharif 2019 are estimated at 2,016 thousand hectares higher by 36.2% as against 1,480 thousand hectares reported during kharif 2018. Basmati paddy acreages have increased in Uttar Pradesh by 92.8%, Haryana by 42.5%, Himachal Pradesh by 24.1%, Uttarakhand by 14.6% and Punjab by 8.4% while Basmati acreages are lower by 4% in Jammu & Kashmir. Majority of the farmers during the survey have indicated that higher prices realised by them during the kharif 2018 as the prime reason for higher paddy acreages during the kharif 2019 season.

State wise share of Basmati paddy acreages out of total Paddy acreages are depicted in table 4. Highest % share of Basmati acreages is estimated in Jammu & Kashmir (66.4%) followed by Haryana (63%), Uttar Pradesh (30%), Punjab (20%), Himachal Pradesh (18%) and Uttarakhand (15%)

Table 4 : State wise % share of Basmati acreages in the study area ('000 ha)				
S.No	*State*	Paddy acreages 2019 E	Basmati acreages 2019 E	% Share of Basmati acreages
1	Haryana	1356	850	62.6%
2	Punjab	2976	593	19.9%
3	Uttar Pradesh	1614	486	30.1%
4	J&K	91	61	66.4%
5	Uttarakhand	116	17	14.8%
6	Himachal Pradesh	49	9	17.9%
7	Delhi	1	1	100.0%
Total		**6204**	**2016**	**32.5%**

The following table depicts state wise variety wise Basmati Acreages and their shares for the states in the study area

Table 5 : State wise variety wise Basmati acreages and their share in the study area

S.No	State	Total Paddy acreages 2019 E	Basmati acreage 2019 E	PB 1121		PB 1509		PB -1		PB-6 (Pusa 1401)		CSR 30		PB 1637		PB 1718		Ranbir / Basmati - 370		Basmati - Others	
				2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Haryana	1356	850	385	45.3%	160	18.9%	78	9.1%	106	12.5%	96	11.3%	1	0.1%	5	0.6%	-	-	19	2.2%
2	Punjab	2976	593	377	63.5%	134	22.7%	31	5.2%	45	7.5%	-	-	5	0.9%	1	0.2%	-	-	-	-
3	Uttar Pradesh	1614	486	166	34.1%	217	44.6%	48	9.8%	20	4.1%	-	-	30	6.1%	1	0.2%	6	1.3%	-	-
4	J&K	91	61	6	10.1%	10	16.4%	-	-	-	-	-	-	-	-	-	-	45	73.6%	-	-
5	Uttarakhand	116	17	4	24.6%	4	25.5%	2	12.8%	-	-	-	-	-	-	-	-	-	-	6	37.1%
6	Himachal Pradesh	49	9	2	19.6%	2	19.6%	-	-	-	-	-	-	-	-	-	-	1	15.8%	-	-
7	Delhi	1	1	1	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		6204	2016	940	46.6%	527	26.2%	158	7.8%	170	8.5%	96	4.8%	36	1.8%	7	0.3%	52	2.6%	25	1.3%

Of the total Basmati acreages, PB 1121 contributes for nearly 47% of the acreages across different states in the study area while PB 1509 contributes for 26% of acreages. Other major varieties grown are PB 1 (8%), PB 6(9%), CSR 30 (5%), Basmati 370 (3%), PB 1637 (2%) and PB 1718 (0.3%).

Non-Basmati paddy acreages in the study area are estimated at 4,188 thousand hectares out of which acreages of non-notified varieties such as Sharbati are estimated at 316 thousand hectares while acreages of Sugandha are estimated at 117 thousand hectares. Majority of acreages of Sharbati and Sugandha varieties are seen in the state of Uttar Pradesh.

Table 6: State wise share of Non-notified varieties in the study area ('000 ha)							
S. No	States	Paddy acreages 2019 E	Non-Basmati acreages 2019 E	Sharbati		Sugandha	
				2019 E	% Share	2019 E	% Share
1	Haryana	1356	507	4	1%	-	-
2	Punjab	2976	2383	6	0.3%	-	-
3	Uttar Pradesh	1614	1128	270	24%	106	9%
4	J&K	91	31	8	29%	-	-
5	Uttarakhand	116	99	19	19%	1	1%
6	Himachal Pradesh	49	40	9	22%	10	25%
7	Delhi	1	0	-	-	-	-
Total		6204	4188	316	8%	117	3%

8. State wise Paddy and Basmati acreages

8.1 Haryana

8.1.1 Weather Conditions in Haryana

Haryana state has received lower rains during the current monsoon season till Sept'19 where in the state has received 44.4% lower rains in comparison to normal rainfall. The actual cumulative rains received by the state from June'19 till Sept'19 were 270 mm while the normal rains for the same time period were 486 mm. Revival in the rainfall activity during first fortnight of Jul'19 helped in transplanting of paddy. Actual rainfall received in the month of Sept'19 was lower than the normal rainfall. However, irrigation facilities available in the state are very good and because of which deficient rains did not have any adverse impact on crop health.

Figure 8: Haryana Rainfall Analysis - Monthly maps

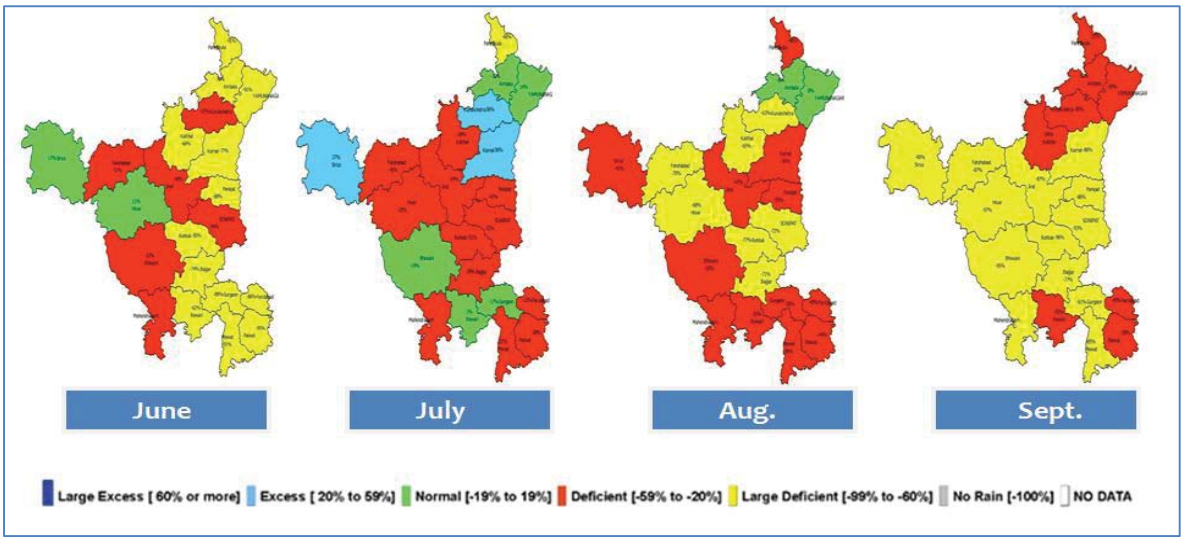
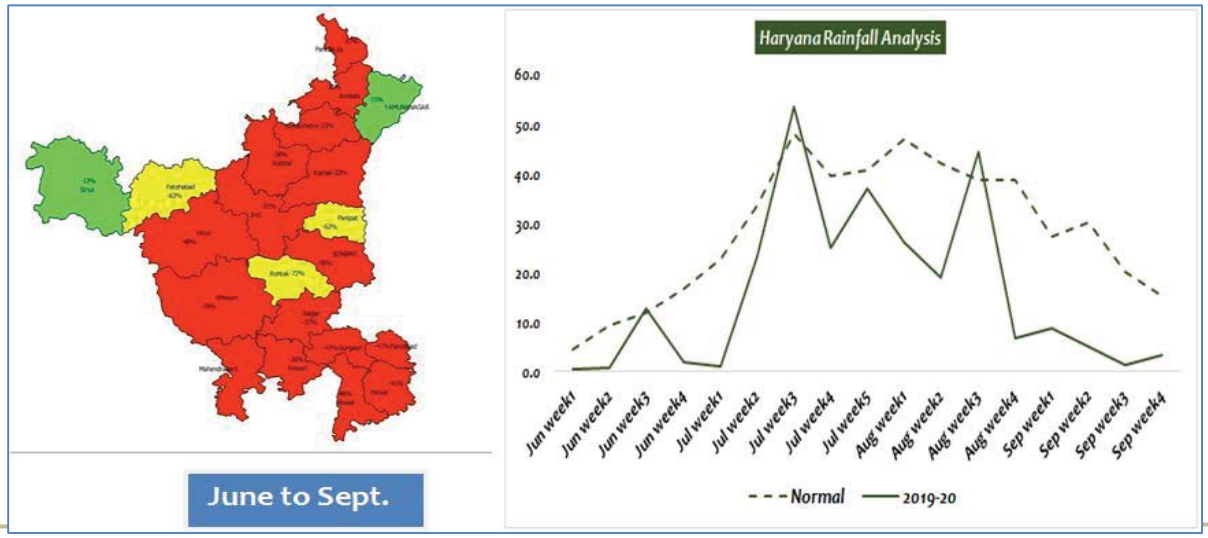


Figure 9: Haryana Rainfall Analysis - Normal vs actual and seasonal map



8.1.2 Soil Moisture

Soil moisture levels in the month of June was almost equal to last year. Rainfall received in the 1st fortnight of July`19 led to increase in the level of soil moisture. In Aug`19 soil moisture decreased from previous month`s level due to below normal rainfall witnessed in the state. Soil moisture levels have again increased in Sept'19 amidst good irrigation facilities available in the state and the same have led to good cop health.

Figure 10: Soil Moisture Analysis Haryana - Monthly maps

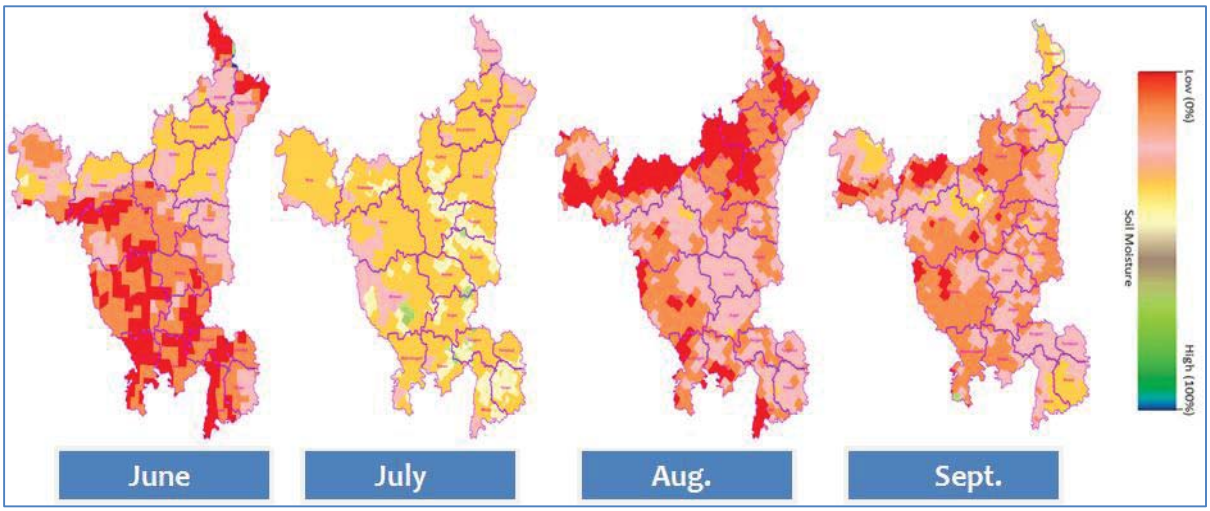
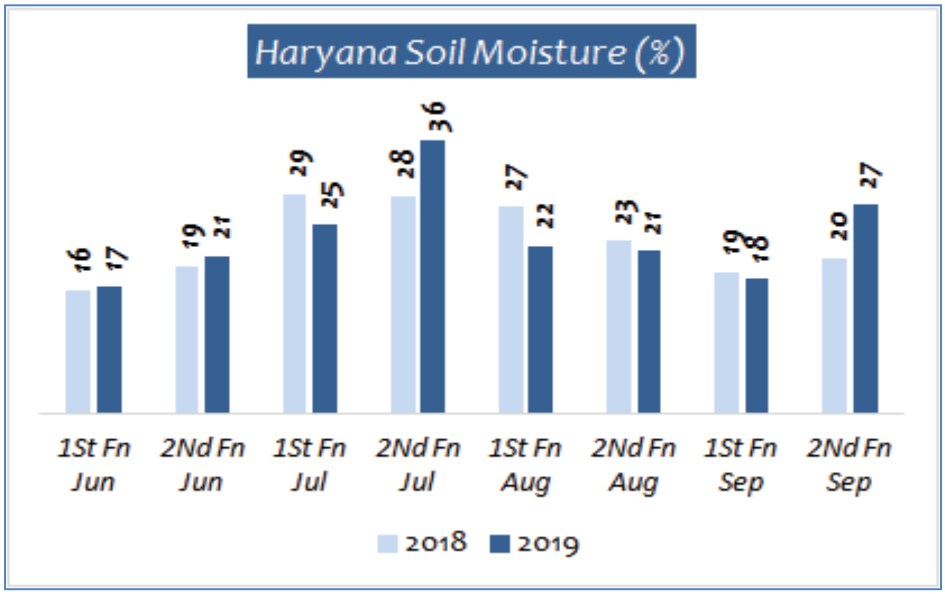


Figure 11: Soil Moisture Analysis Haryana



8.1.3 NDVI Values in Haryana

The NDVI values in the beginning of the season (June`19) were almost equal to that of last year. However, by the end of Sept'19 NDVI values in the state of Haryana are higher compared to last year indicating that the crop health during the current year is better than that of last year. Favourable weather condition and good availability of irrigation water through canals and other sources has led to good crop during the current year.

Figure 12: NDVI status of Haryana

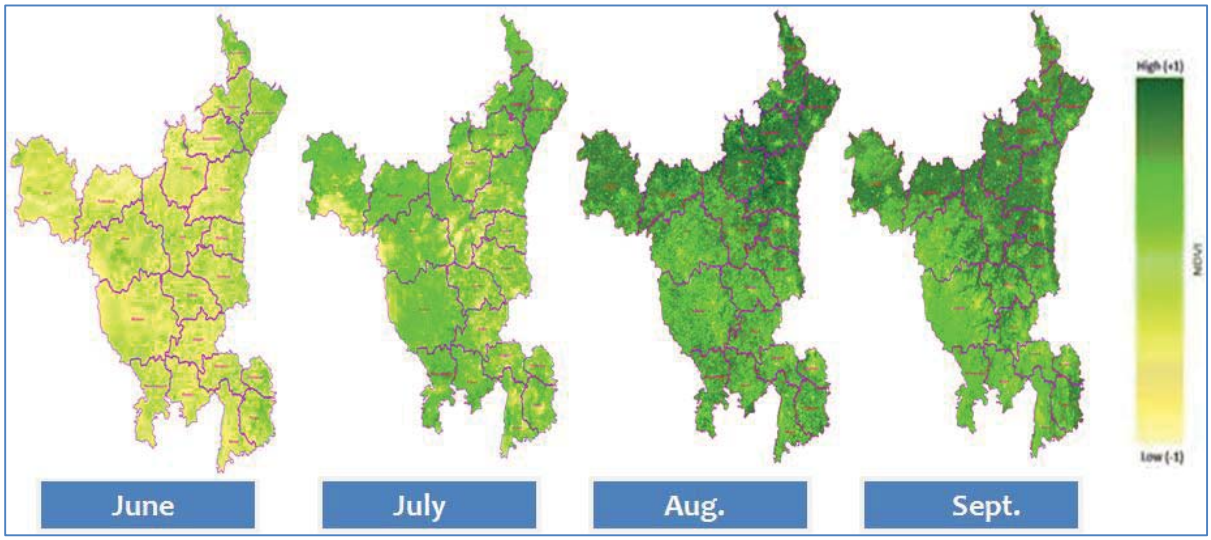
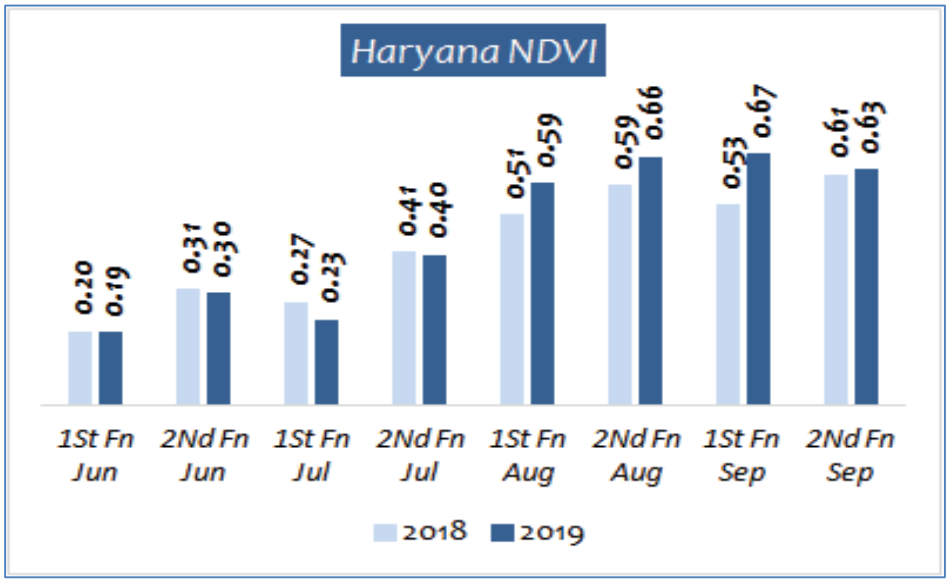


Figure 13: NDVI values of Haryana



8.1.4 Paddy Acreages in Haryana

Paddy acreages in Haryana are estimated at 1356.5 thousand hectares, 7% higher than the 2018 acreages of 1269.8 thousand hectares. Basmati acreages in Haryana are estimated at 849.5 thousand hectares in 2019 which are 42.5% higher than the 2018 acreage of 596 thousand hectares. Basmati acreages are 62.6% of the total paddy acreage in Haryana during kharif 2019.

Table 7: District wise Total Paddy and Basmati Acerages in Haryana ('000 Ha)

S.No	Districts	Total Paddy Acreages			Total Basmati Acreages		
		2018	2019 E	% change	2018	2019 E	% Change
1	Ambala	79.7	86.8	9%	13.9	18.9	36%
2	Bhiwani	20.9	22.0	5%	18.6	19.9	7%
3	Faridabad + Palwal	32.4	27.7	-14%	22.5	19.3	-14%
4	Fatehabad	107.6	127.5	18%	2.1	107.3	5009%
5	Gurgaon	4.7	1.7	-64%	4.18	1.6	-63%
6	Hisar	61.3	61.7	1%	38.3	58.6	53%
7	Jajjhar	42.4	45.4	7%	40.3	41.1	2%
8	Jind	126.4	144.2	14%	75.6	76.8	2%
9	Kaithal	157.2	173.7	11%	58.8	97.2	65%
10	Karnal	159.2	175.2	10%	71.1	100.5	41%
11	Kurukshetra	117.8	110.7	-6%	28.5	43.0	51%
12	Mewat	7.9	5.0	-37%	6.5	4.9	-25%
13	Mahendragarh	0	0.0	0%	0	0	0%
14	Panchkula	9.2	8.9	-4%	0	0	0%
15	Panipat	70.7	78.5	11%	59.2	61.4	4%
16	Rewari	1.7	1.4	-20%	1	0.9	-11%
17	Rohtak	41.9	41.9	0%	30.4	33.8	11%
18	Sirsa	70.8	78.4	11%	53.1	72.8	37%
19	Sonepat	88.4	94.5	7%	63.2	75.2	19%
20	Yamunanagar	69.6	71.2	2%	8.7	16.6	91%
Total		**1269.8**	**1356.5**	**7%**	**596.0**	**849.5**	**43%**

Total paddy acreages are higher by 7% while Basmati acreages are higher by 43% indicating a clear shift in acreages from non-basmati to Basmati varieties. Majority of the farmers indicated that higher prices realised during previous season as the main reason for shift in acreages.

8.1.5 Basmati Acreages in Haryana

Acreages of Basmati paddy in the state of Haryana for kharif 2019 is estimated at 850 thousand hectares constituting of 62.6% of the total paddy acreages in the state. Of the total basmati acreages, PB 1121 has been transplanted in 385 thousand hectares, accounting for 45% of the basmati acreages in the state. PB-1509 has been transplanted in 160 thousand hectares, contributing for 19.0% of the Basmati acreages in Haryana. While PB-1 acreages are estimated at 78 thousand hectares, 9% of the basmati paddy acreages. PB-6/1401 acreages are estimated at 106 thousand hectares constituting of 12% of total basmati acreage. District wise variety wise share of Basmati acreages in Haryana during Kharif 2019 are as per table below: (Detailed variety wise shares of all the varieties in the state are as per annexure 1).

Table 8: District wise variety wise Basmati acreages and their share in Haryana ('000 Ha)

S. No	Districts	Basmati Acreage 2019 E	PB1121		PB1509		PB -1		Basmati - Others	
			2019 E	%Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Ambala	19	7	40%	4	22%	0	1%	7	37%
2	Bhiwani	20	20	100%	-	-	-	-	-	0%
3	Faridabad + Palwal	19	17	88%	-	-	2	12%	-	0%
4	Fatehabad	107	15	14%	46	43%	22	20%	24	23%
5	Gurgaon	2	1	71%	0	19%	0	9%	-	0%
6	Hisar	59	51	88%	3	5%	1	2%	3	5%
7	Jajjhar	41	34	83%	6	16%	-	-	0	1%
8	Jind	77	49	64%	8	10%	7	9%	13	17%
9	Kaithal	97	33	34%	12	12%	0	0.1%	52	54%
10	Karnal	100	22	22%	31	31%	14	14%	34	34%
11	Kurukshetra	43	13	31%	10	24%	3	7%	16	38%
12	Mewat	5	4	73%	1	27%	-	-	-	0%
13	MahendraGarh	-	-	-	-	-	-	-	-	0%
14	Panchkula	-	-	-	-	-	-	-	-	0%
15	Panipat	61	39	63%	12	20%	4	6%	7	12%
16	Rewari	1	1	75%	0	25%	-	-	0	0%
17	Rohtak	34	19	55%	13	37%	-	-	3	8%
18	Sirsa	73	10	14%	7	10%	10	14%	46	63%
19	Sonepat	75	50	66%	5	7%	-	-	21	28%
20	Yamunanagar	17	1	5%	1	7%	14	85%	0	3%
Total		**850**	**385**	**45%**	**160**	**19%**	**78**	**9%**	**227**	**27%**

8.1.6 District wise share of Non-notified varieties in Haryana

Total non-basmati acreages in Haryana state are estimated at 507 thousand hectares during the kharif 2019 season. Of the total non-basmati acreages, non-notified varieties have been transplanted in 3.8 thousand hectares in Haryana state.

Table 9: District wise share of Non-Notified Varieties of Haryana ('000 Ha)

S.No	District	Total Paddy Acreages 2019 E	Non-Basmati Acreages 2019 E	Sharbati acreages	
				2019 E	% share
1	Ambala	86.8	68.0	-	0%
2	Bhiwani	22.0	2.1	0.1	4%
3	Faridabad + Palwal	27.7	8.5	0.3	3%
4	Fatehabad	127.5	20.2	-	0%
5	Gurgaon	1.7	0.1	0.1	100%
6	Hisar	61.7	3.1	-	0%
7	Jajjhar	45.4	4.4	0.3	7%
8	Jind	144.2	67.4	0.3	0%
9	Kaithal	173.7	76.5	0.3	0%
10	Karnal	175.2	74.7	0.3	0%
11	Kurukshetra	110.7	67.7	0.1	0%
12	Mewat	5.0	0.1	0.1	100%
13	Mahendragarh	-	-	-	0%
14	Panchkula	8.9	8.9	-	0%
15	Panipat	78.5	17.0	0.3	2%
16	Rewari	1.4	0.5	0.2	49%
17	Rohtak	41.9	8.1	0.3	3%
18	Sirsa	78.4	5.7	0.5	8%
19	Sonepat	94.5	19.4	0.5	3%
20	Yamunanagar	71.2	54.6	0.3	0.5%
Total		**1356.5**	**506.9**	**3.8**	**1%**

8.1.7 District wise Crop Condition

Basmati crop in Haryana is in milking/grain setting to maturity stage depending on planting dates. Harvesting of PB 1509 crop has started in some districts. PB-1121 harvesting may start by 3rd week of October.

There is no major infestation of any of the pests and diseases this year. Brown Plant Hopper attack has been observed in GT Road surrounding districts at milking stage whereas false smut was also reported in the same districts, but the impact was nominal. The Bacterial Leaf blight and neck blast were reported in limited areas, but it was controlled in time. The most commonly used insecticides and fungicides on Basmati crop in the state are soil application of Fertera, Cartap Hydrochloride, Carbendazim, Copper oxychloride, Valedamycin, Redamycin, chloropyriphos, Amistar, Propiconazol, Diathane M-45, Imidacloprid, Buprofezin while in some districts like Ambala, Bhiwani, Gurgaon, Rohtak, Sirsa & Mewat traditional pesticides like Monocrotophos, Cypermethrin, Quinolphos were used. Trycyclazole has been used in a limited manner due to regular awareness program.

Overall, crop condition is good, and yields are expected to be marginally higher this year as compare to last year. District wise crop condition in Haryana is as the table below:

Table 10: District wise Crop Condition in Haryana

S.No	Districts	Rainfall June to Sept (in mm)		Age of the Crop (By end of Sep'19)	Crop Stage	Overall crop condition
		Actual	Normal			
1	Ambala	619.2	840.2	More than 70 days	Flowering to Harvesting stage	Normal
2	Bhiwani	182.5	330	More than 60 days	Flowering Stage	Normal
3	Faridabad	339.9	575.2	More than 60 days	Flowering Stage	Normal
4	Palwal	251.5	424.8	More than 60 days	Flowering Stage	Normal
5	Fatehabad	102.6	272.7	More than 90 days	Milking to Harvesting stage	Normal
6	Gurgaon	285.8	501.6	More than 70 days	Flowering to Maturity stage	Normal
7	Hisar	160.5	305.9	More than 80 days	Flowering to Maturity stage	Normal
8	Jajjhar	162.2	374.3	More than 70 days	Flowering to Maturity stage	Normal
9	Jind	197.1	397.2	More than 90 days	Milking to Harvesting state	Normal
10	Kaithal	172.1	337.1	More than 80 days	Milking to Harvesting statge	Normal
11	Karnal	396.1	541.3	More than 90 days	Milking to Harvesting statge	Normal
12	Kurukshetra	391.8	495.1	More than 90 days	Milking to Harvesting statge	Normal
13	Mewat	274.3	502	More than 60 days	Flowering Stage	Normal
14	MahendraGarh	207.8	403.8	More than 60 days	Flowering Stage	Normal
15	Panchkula	393.9	912.8	More than 60 days	Flowering Stage	Normal
16	Panipat	185.1	476.1	More than 90 days	Milking to Harvesting stage	Normal
17	Rewari	318.6	429.7	More than 70 days	Flowering to Maturity stage	Normal
18	Rohtak	141.6	497.5	More than 70 days	Milking stage	Normal
19	Sirsa	182.9	209	More than 90 days	Milking to Harvesting stage	Normal
20	Sonepat	229.3	520.3	More than 80 days	Milking to Harvesting stage	Normal
21	Yamunanagar	688	810.5	More than 90 days	Milking to Harvesting stage	Normal

8.2 Punjab

8.2.1 Weather Conditions of Punjab

Punjab state received normal rainfall during the current monsoon season. The actual cumulative rainfall from June'19 up to Sept'19 was 458 mm while the normal for the same time period was 478 mm. Monsoon rains picked up during July'19 and Aug'19 and were beneficial to the standing crop.

Figure 14: Punjab Rainfall Analysis - Monthly maps

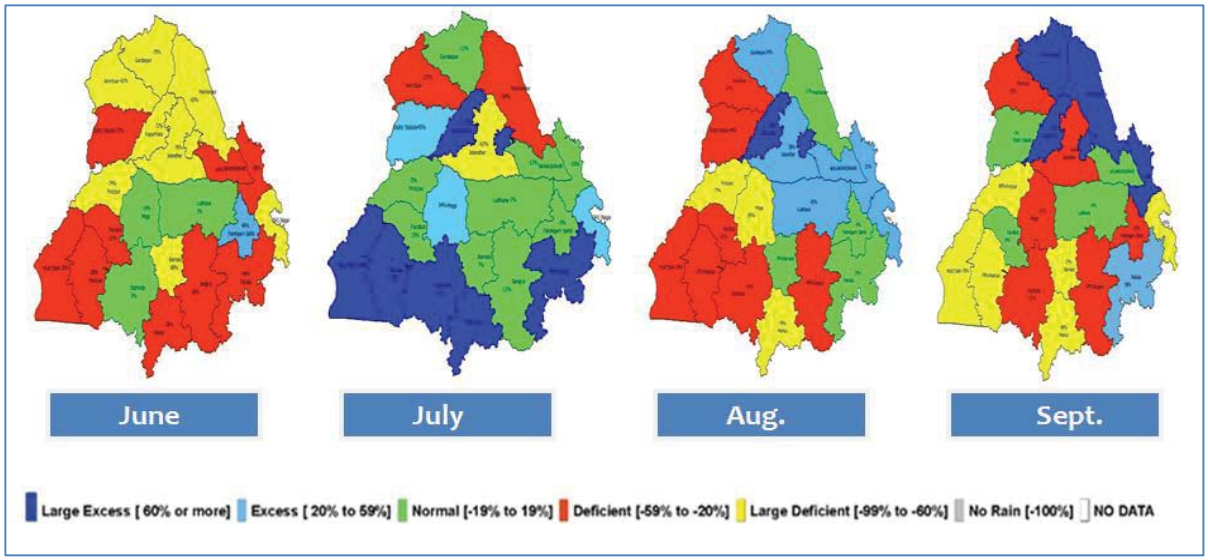
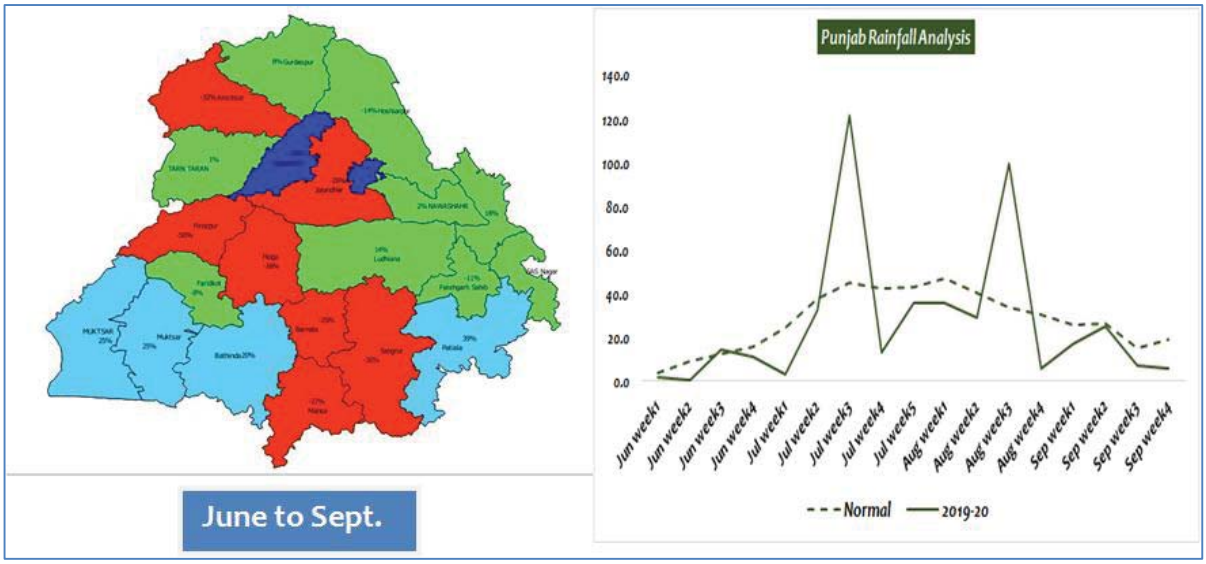


Figure 15: Punjab Rainfall Analysis - Normal vs actual and seasonal map



8.2.2 Soil Moisture

Soil moisture in the state of Punjab has been higher till end of July'19 compared to last year. Soil moisture levels have come down during Aug'19 and early Sep'19 amidst lower rains received by the state. However, by the end of Sep'19 soil moisture levels have increased and are higher than last year levels.

Figure 16: Soil Moisture Analysis Punjab - Monthly maps

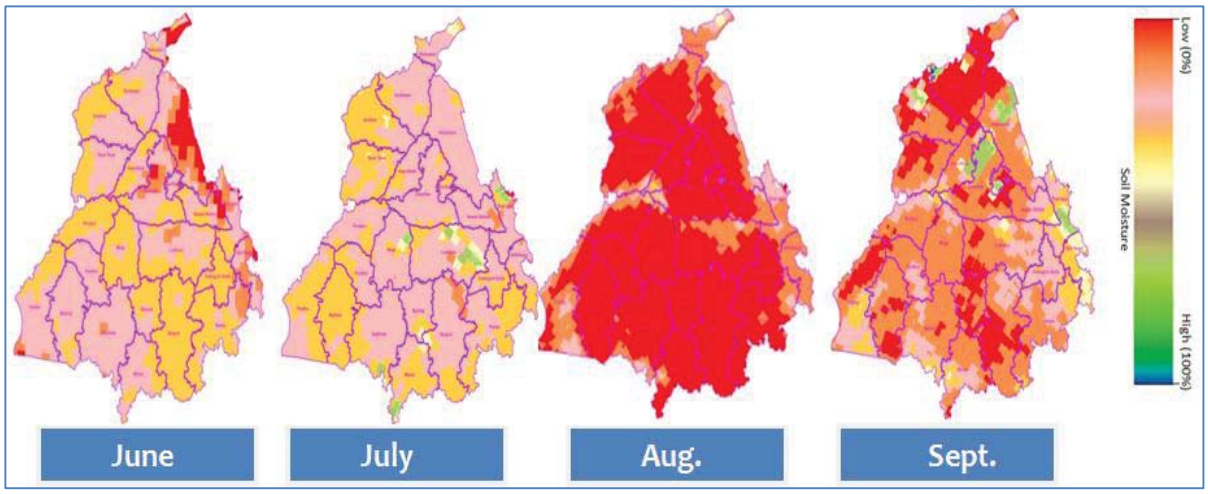
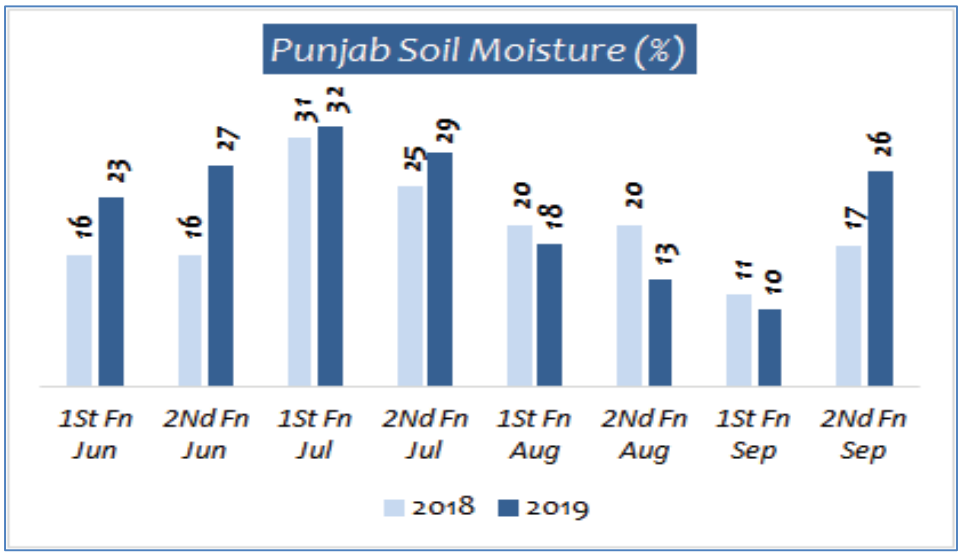


Figure 17: Soil Moisture Analysis Punjab



8.2.3 NDVI Values of Punjab

The NDVI values in the beginning of the season (June`19) were almost equal to that of last year. Thereafter, the values till second fortnight of Sept'19 have been consistently higher than the values prevailing during the same time last year. Higher NDVI values indicate that the crop health during the current year has been better than last year.

Figure 18: NDVI values of Punjab - Monthly maps

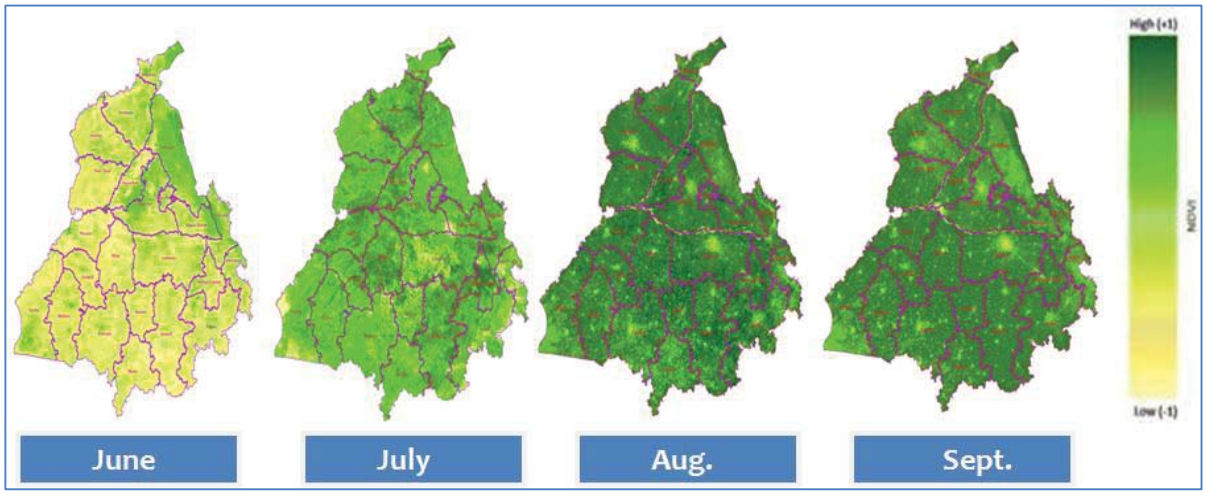
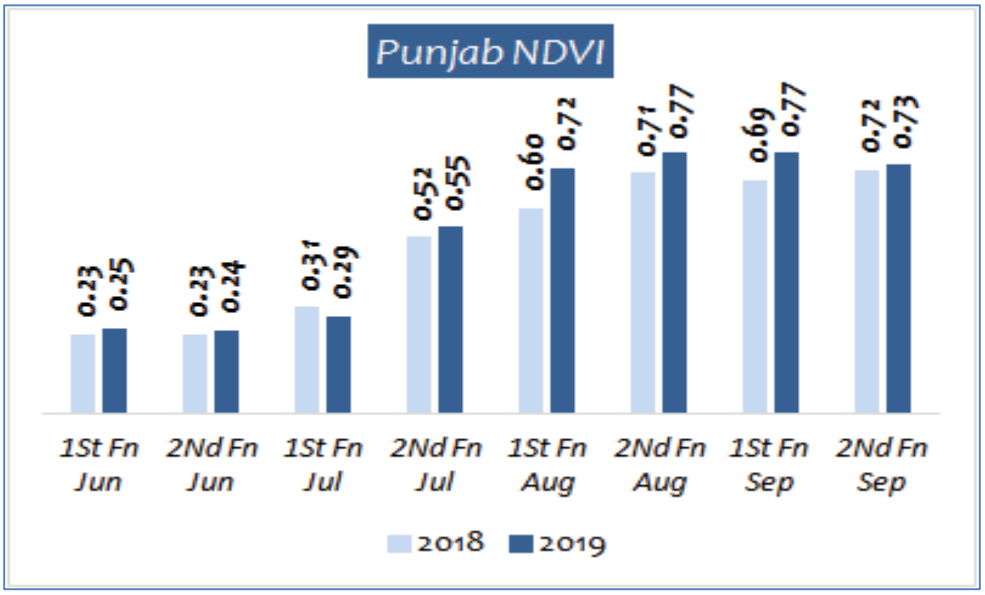


Figure 19: NDVI values of Punjab



8.2.4 Paddy acreages in Punjab

Paddy acreages in the state of Punjab are estimated at 2976 thousand hectares, 0.2% lower than 2018 acreages of 2981 thousand hectares. Basmati acreages in the state are estimated at 593 thousand hectares during 2019, higher by 8.5% compared to 547 thousand hectares reported during kharif 2018.

Table 11 : District wise total Paddy and Basmati acerages in Punjab ('000 Ha)

S.No	District	Total Paddy Acreages			Basmati Acreages		
		2018	2019 E	% Change	2018	2019 E	% Change
1	Amritsar	184	184	0.1%	105	129	22.5%
2	Barnala	110	113	3.1%	2	1	-39.1%
3	Bhatinda	153	130	-15.1%	9	7	-28.6%
4	Faridkot	113	118	4.4%	20	20	2.2%
5	Fatehgarh Sahib	85	86	1.1%	10	10	5.7%
6	Fazilka	179	105	-41.4%	66	66	-0.5%
7	Firozpur	119	187	58.2%	36	35	-2.5%
8	Gurdaspur	174	173	-0.8%	41	42	0.9%
9	Hoshiarpur	64	66	2.4%	6	10	71.2%
10	Jalandhar	164	160	-2.2%	10	12	18.7%
11	Kapurthala	119	115	-3.5%	8	7	-14.0%
12	Ludhiana	257	259	0.9%	23	23	0.4%
13	Mansa	94	103	9.3%	1	9	892.4%
14	Moga	180	182	0.8%	17	17	-1.8%
15	Mohali	31	30	-3.7%	4	3	-14.4%
16	Muktsar	155	145	-6.4%	51	63	24.4%
17	Pathankot	27	27	0.3%	3	3	-1.7%
18	Patiala	228	233	2.3%	20	15	-22.8%
19	Roopnagar	34	36	8.6%	3	3	-13.0%
20	Sangrur	276	280	1.6%	32	34	8.1%
21	Nawanshahar	55	56	2.3%	5	5	-2.2%
22	T.Taran	181	187	3.6%	76	80	5.2%
Total		**2981**	**2976**	**-0.2%**	**547**	**593**	**8.5%**

8.2.5 Basmati Acreages in Punjab

Total Basmati paddy in Punjab has been planted in 593 thousand ha contributing for 20% of the total paddy acreages estimated in kharif 2019. Major share of Basmati acreages during kharif 2019 is contributed by PB 1121 (63.5%) followed by PB 1509 (23%), PB -6/PB-1401 (7.5%) and PB-1 (5%) District wise variety share is illustrated in the table below and detailed list of district wise variety wise acreages are as per annexure 2.

Table 12 : District wise variety wise Basmati Acreages and their shares in Punjab ('000 Ha)

S.No	District	Basmati Acreage 2019 E	PB 1121		PB 1509		PB 01		Others	
			2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% share
1	Amritsar	129	70	54%	59	46%	-	-	0	0%
2	Barnala	1	1	46%	-	-	1	54%	0	0%
3	Bhatinda	7	7	100%	-	-	-	-	0	0%
4	Faridkot	20	16	77%	5	23%	-	-	0	0%
5	Fatehgarh Sahib	10	4	40%	3	31%	3	29%	0	0%
6	Fazilka	66	45	68%	7	11%	-	-	14	21%
7	Firozpur	35	21	60%	2	6%	4	11%	8	23%
8	Gurdaspur	42	32	77%	9	22%	-	-	0	0%
9	Hoshiarpur	10	6	62%	4	37%	-	-	0	0%
10	Jalandhar	12	11	88%	1	12%	-	-	0	0%
11	Kapurthala	7	4	65%	2	35%	-	-	0	1%
12	Ludhiana	23	13	55%	7	31%	3	13%	0	1%
13	Mansa	9	9	100%	-	-	-	-	0	0%
14	Moga	17	13	76%	4	22%	0	1%	0	0%
15	Mohali	3	3	100%	-	-	0	-	0	0%
16	Muktsar	63	35	56%	9	14%	5	9%	13	21%
17	Pathankot	3	2	79%	-	-	1	22%	0	0%
18	Patiala	15	9	56%	3	17%	2	13%	2	15%
19	Roopnagar	3	2	81%	0	19%	0	0%	0	1%
20	Sangrur	34	22	63%	3	10%	6	17%	3	9%
21	Nawanshahar	5	5	100%	-	-	-	-	0	0%
22	T.Taran	80	49	61%	15	19%	6	8%	10	12%
Total		**593**	**377**	**63.5%**	**134**	**22.7%**	**31**	**5.2%**	**51**	**8.6%**

8.2.6 District wise share of Non-notified varieties in Punjab

Total non-basmati acreages in Punjab state are estimated at 2382 thousand hectares during the kharif 2019 season. Of the total non-basmati acreages, non-notified varieties have been transplanted in 6.3 thousand hectares in Punjab and the district wise list of shares of non-notified varieties is as per the table below:

Table 13: District wise non notified variety acreages in Punjab ('000 ha)

S. No	Districts	Total Paddy Acreages 2019 E	Total Non-basmati acreages		Sharbati	
			2019 E	% share	2019 E	% Share
1	Amritsar	184	55	30%	0.0	0.0
2	Barnala	113	112	99%	0.0	0.0
3	Bhatinda	130	124	95%	0.0	0.0
4	Faridkot	118	98	83%	0.0	0.0
5	Fatehgarh Sahib	86	76	88%	0.0	0.0
6	Fazilka	105	39	37%	0.0	0.0
7	Firozpur	187	152	81%	0.0	0.0
8	Gurdaspur	173	131	76%	4.3	3%
9	Hoshiarpur	66	56	85%	2.0	4%
10	Jalandhar	160	148	92%	0.0	0.0
11	Kapurthala	115	108	94%	0.0	0.0
12	Ludhiana	259	236	91%	0.0	0.0
13	Mansa	103	94	91%	0.0	0.0
14	Moga	182	165	91%	0.0	0.0
15	Mohali	30	26	89%	0.0	0.0
16	Muktsar	145	82	57%	0.0	0.0
17	Pathankot	27	24	90%	0.0	0.0
18	Patiala	233	218	93%	0.0	0.0
19	Roopnagar	36	34	93%	0.0	0.0
20	Sangrur	280	246	88%	0.0	0.0
21	Nawanshahar	56	52	92%	0.0	0.0
22	T.Taran	187	108	58%	0.0	0.0
Total		**2976.2**	**2383**	80%	6.3	0.3%

8.2.7 District wise Crop Condition

Basmati crop condition in Punjab has been good so far. Harvesting of early sown crop of PB-1509 had already started in Hoshiarpur, Gurdaspur, Kapurthala, Amritsar and Taran Taran districts. PB-1121 harvesting may start from 2nd to 3rd week of October. The crop condition is mostly normal to above normal in most of the districts.

There was no major insect pest or disease problem in Basmati in this season as regular sprays was done for the control of leaf folder, sheath blight, Stem borer, BPH, False smut etc. Trycyclazole is banned in Punjab and so there was no spray of the same while some traditional pesticides like Monocrotophos, Chloropyriphos, Quinolphos, Cypermethrin etc were applied in southern districts of Punjab like Bhatinda, Abohar, Fazilka, Faridkot, Barnala etc. The other common agrochemicals used in Basmati crop are Fertera, Cartap Hydrochoride, Carbandizem, Copper oxichloride, Valedamycin, Redamycin, Amistar, Propiconazol, Dithane M-45, Imidacloprid and Buprofezin etc.

Table 14 : District wise crop condition in Punjab

S.No	District	Rainfall June to Sept (in mm)		Age of the Crop (As on end of Sep)	Crop Stage	Over all crop condition
		Actual	Normal			
1	Amritsar	337.1	502.3	More than 90 days	Milking to harvesting stage	Normal
2	Barnala	270	364.7	More than 80 days	Milking to Maturity stage	Normal
3	Bhatinda	475.5	313.7	More than 90 days	Milking to Maturity stage	Normal
4	Faridkot	275.2	295.3	More than 90 days	Milking to Maturity stage	Normal
5	Fatehgarh Sahib	461.5	507.9	More than 90 days	Flowering to Maturity stage	Normal
6	Fazilka	171	306.5	More than 90 days	Flowering to Maturity stage	Normal
7	Firozpur	171	306.5	More than 80 days	Flowering to maturity stage	Normal
8	Gurdaspur	909.8	831	More than 90 days	Milking to Maturity stage	Normal
9	Hoshiarpur	585.8	667.7	More than 90 days	Milking to Maturity stage	Normal
10	Jalandhar	456.9	570.8	More than 90 days	Milking to Maturity stage	Normal
11	Kapurthala	820.4	359	More than 90 days	Milking to Maturity stage	Normal
12	Ludhiana	539.6	483.5	More than 80 days	Milking to Maturity stage	Normal
13	Mansa	213.9	296.9	More than 90 days	Milking to Maturity stage	Normal
14	Moga	214.2	322.9	More than 80 days	Milking to Maturity stage	Normal
15	Mohali			More than 80 days	Milking to Maturity stage	Normal
16	Muktsar	384.2	302.2	More than 80 days	Milking to Maturity stage	Normal
17	Pathankot			More than 90 days	Flowering to Maturity	Normal
18	Patiala	830	557.2	More than 90 days	Milking to Maturity stage	Normal
19	Ropnagar	839.7	701.2	More than 90 days	Milking to Maturity stage	Normal
20	Sangrur	269	409.9	More than 90 days	Milking to Maturity stage	Normal
21	Nawanshahar	566	566.7	More than 90 days	Milking to Maturity stage	Normal
22	Taran Taran	293	312.5	More than 90 days	Milking to Maturity stage	Normal

8.3 Uttar Pradesh

8.3.1 Weather Conditions of Uttar Pradesh

Uttar Pradesh state received below normal rainfall during the current monsoon season. The actual cumulative rainfall from June`19 up to Sept`19 was 620 mm while the normal for same time period was 771 mm. However, the state received good rains in the month of Sep'19.

Figure 20: UP Rainfall Analysis - Monthly maps

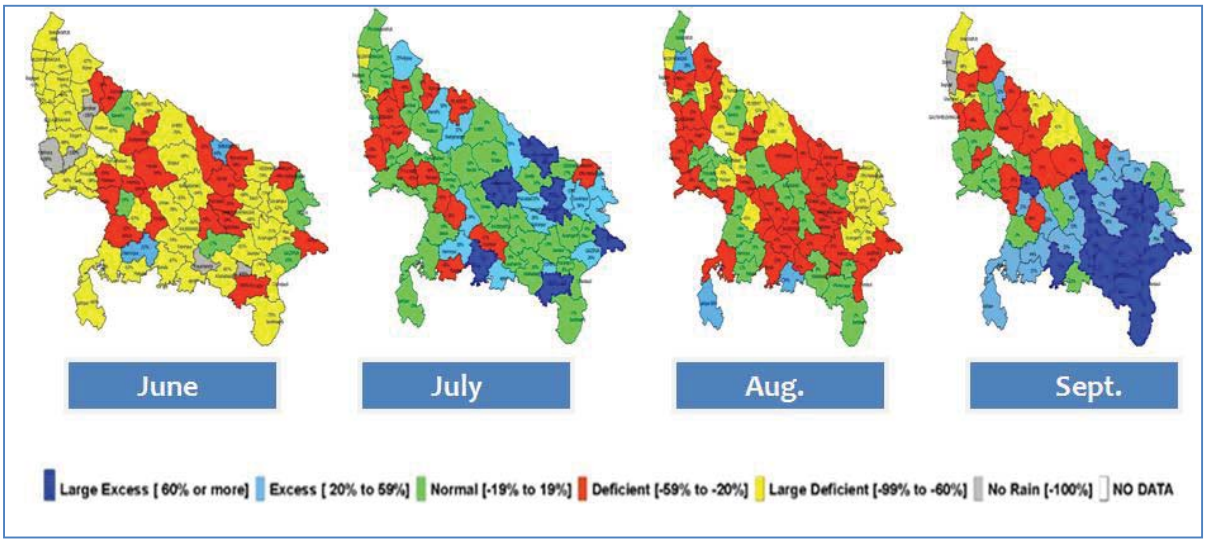
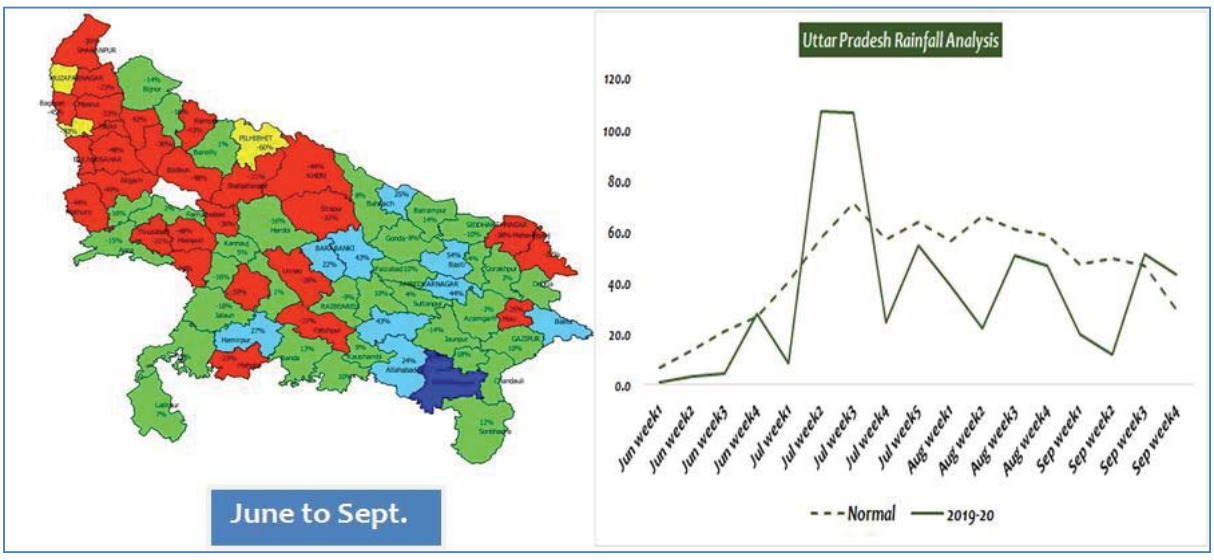


Figure 21: UP Rainfall Analysis - Normal vs actual and seasonal map



8.3.2 Soil Mositure in Uttar Pradesh

Soil moisture levels in Uttar Pradesh have been higher in the month of June'19. From Aug'19 to 1st fortnight of Sept'19 soil moisture levels were lower than last year due to deficient rainfall. However, in the second fortnight of Sept'19 there had been increase in the soil moisture due to amidst good rains received by the state.

Figure 22: Soil Moisture Analysis UP - Monthly maps

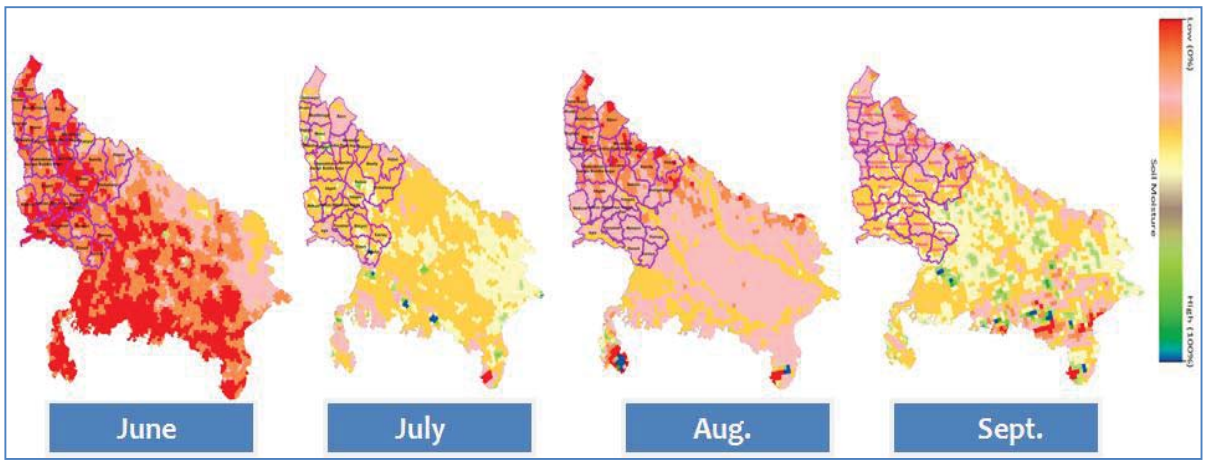
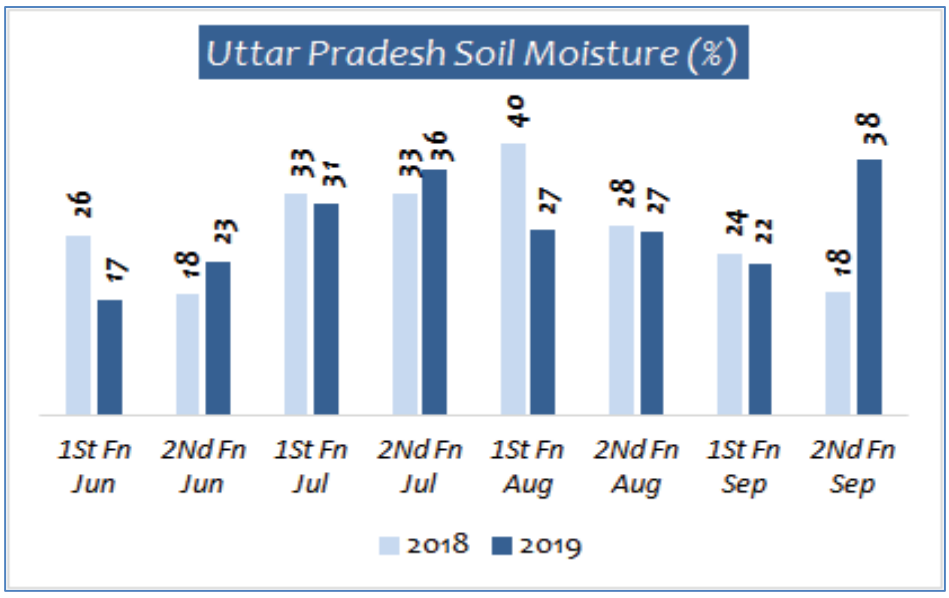


Figure 23: Soil Moisture Analysis UP



8.3.3 NDVI Values in Uttar Pradesh

The NDVI values during the current kharif season have been regularly higher than the values prevailing during the same time last year except in the 2nd fortnight of June`19. Consistently higher NDVI values indicate that the crop health is good during the current year compared to last year.

Figure 24: NDVI values of UP - Monthly maps

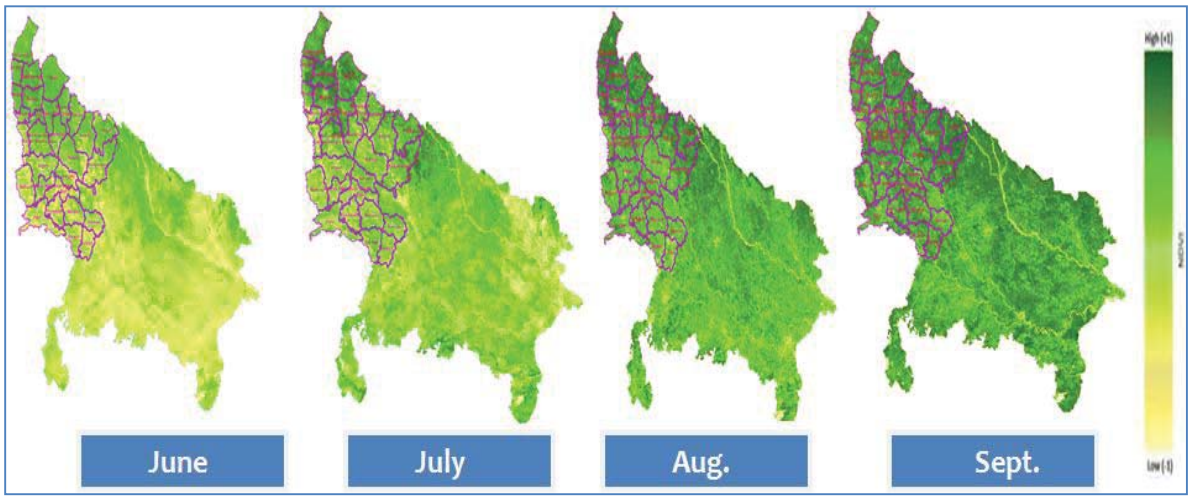
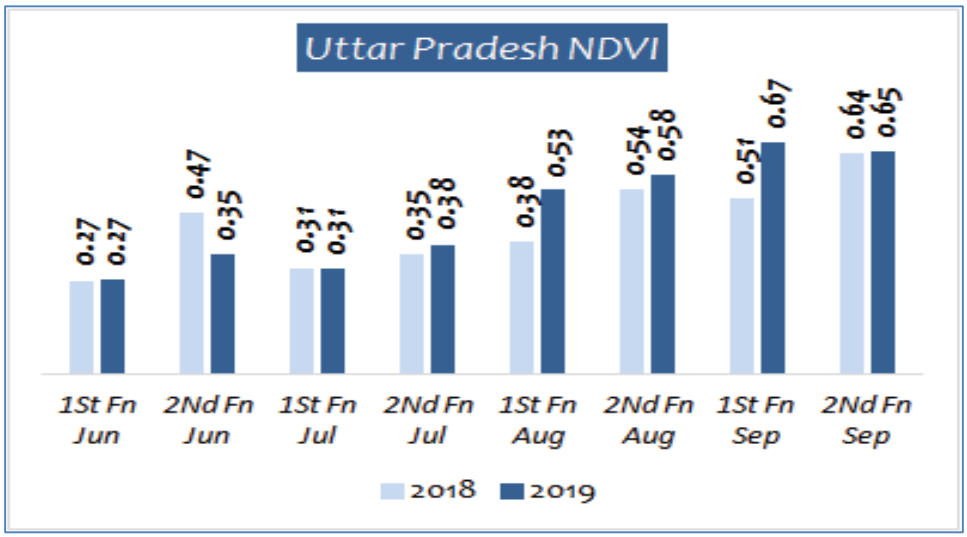


Figure 25: NDVI values of UP



8.3.4 Paddy Acreages in UP

Total paddy acreages in Uttar Pradesh are estimated at 1614 thousand hectares in 2019, 21% higher than the last year acreage of 1336 thousand hectares. Basmati acreages in 2019 are estimated at 486 thousand hectares which are 93% higher than the last year acreage of 252 thousand hectares. The following table depicts the district wise total paddy as well as Basmati acreages in Uttar Pradesh.

Table 15: District wise total paddy and Basmati acreages in UP ('000 Ha)

S.No	Districts	Total Paddy Acreages			Total Basmati Acreages		
		2018	2019 E	% Change	2018	2019 E	% Change
1	Agra	4	6	40%	1	1	-3%
2	Aligarh	58	97	67%	25	71	181%
3	Auraiya	45	50	11%	2	3	54%
4	Baghpat	5	6	30%	4	4	23%
5	Bareilly	150	153	2%	3	17	454%
6	Bijnor	44	56	28%	7	10	41%
7	Budaun	48	102	113%	14	17	22%
8	Bulandshahr	52	95	83%	30	72	141%
9	Etah	17	18	5%	-	13	-
10	Kasganj	16	16	3%	8	11	31%
11	Farukhabad	11	15	29%	3	10	270%
12	Firozabad	13	23	84%	4	2	-41%
13	Etawah	41	56	38%	9	7	-15%
14	Gautam Buddha Ngr	27	23	-16%	20	21	5%
15	Ghaziabad	9	9	0%	3	5	76%
16	Hapur	18	22	20%	6	15	142%
17	Hathras	14	27	95%	7	22	210%
18	Mathura	36	50	39%	27	25	-6%
19	Mainpuri	48	65	36%	17	19	15%
20	Meerut	16	7	-58%	7	4	-46%
21	Moradabad	67	90	35%	4	16	324%
22	J.P.Nagar/Amroha	16	28	72%	4	11	169%
23	Kannauj	12	21	70%	2	3	19%
24	Muzaffarnagar+Shamli	30	32	7%	11	24	127%
25	Pilibhit	153	139	-9%	4	8	70%
26	Rampur	112	121	8%	2	5	135%
27	Saharanpur	51	60	18%	22	34	57%
28	Shahjehanpur	197	191	-3%	4	23	454%
29	Sambhal	29	39	37%	4	14	294%
Total		**1336**	**1614**	**21%**	**252**	**486**	**93%**

8.3.5 Basmati Acreages in Uttar Pradesh

Basmati acreages in Uttar Pradesh has been estimated at 486 thousand hectares out of which PB - 1509 has the largest share of 45%, followed by PB-1121(34%) and PB-1 (10%). Variety wise share of Basmati acreages in Uttar Pradesh during Kharif 2019 are as per table below: (Detailed list of district wise and variety wise basmati acreages and their shares are as per annexure 3)

Table 16 : District wise variety wise Basmati acreages and their share in UP ('000 Ha)

S.No	District	Basmati Acreage 2019 E	PB 1121		PB 1509		PB -1		Others	
			2019 E	%Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Agra	1	0	16%	1	79%	0	5%	0	0%
2	Aligarh	71	6	8%	58	82%	-	-	7	10%
3	Auraiya	3	1	48%	0	16%	-	-	1	36%
4	Baghpat	4	2	50%	1	18%	1	31%	0	0%
5	Bareilly	17	6	38%	6	34%	2	10%	3	18%
6	Bijnore	10	1	8%	2	21%	2	18%	5	54%
7	Budaun	17	2	13%	4	22%	1	5%	10	61%
8	Bulandshahr	72	44	61%	15	21%	13	18%	0	0%
9	Etah	13	2	14%	11	83%	1	4%	0	0%
10	Kasganj	11	1	6%	10	91%	0	3%	0	0%
11	Farukhabad	10	1	8%	9	92%	-	-	0	0%
12	Firozabad	2	1	37%	1	36%	0	2%	1	59%
13	Etawah	7	4	61%	3	37%	0	2%	0	0%
14	Gautam Buddha Ngr	21	18	85%	1	6%	2	9%	0	0%
15	Ghaziabad	5	2	44%	2	43%	1	13%	0	0%
16	Hapur	15	7	50%	5	35%	2	15%	0	0%
17	Hathras	22	9	43%	11	51%	1	6%	0	0%
18	Mathura	25	13	53%	6	24%	1	3%	5	20%
19	Mainpuri	19	15	77%	4	22%	0	1%	0	0%
20	Meerut	4	1	23%	2	40%	1	25%	0	11%
21	Moradabad	16	2	12%	7	46%	0	3%	6	39%
22	J.P.Nagar/Amroha	11	3	24%	7	60%	2	16%	0	0%
23	Kannauj	3	0	15%	2	80%	0	5%	0	0%
24	Muzaffarnagar+Shamli	24	6	26%	5	21%	3	13%	10	40%
25	Pilibhit	8	1	14%	6	83%	0	3%	0	0%
26	Rampur	5	1	22%	4	74%	0	4%	0	0%
27	Saharanpur	34	9	28%	6	18%	12	36%	6	18%
28	Shahjehanpur	23	1	5%	20	88%	0	1%	1	6%
29	Sambhal	14	5	33%	8	57%	1	10%	0	0%
Total		486	166	34%	217	45%	48	10%	57	12%

8.3.6 District wise share of Non-notified varieties in Uttar Pradesh

Total non-basmati acreages in Uttar Pradesh state are estimated at 1128 thousand hectares during the kharif 2019 season. Of the total non-basmati acreages, non-notified varieties have been transplanted in 376 thousand hectares in Uttar Pradesh and the district wise list of shares of non-notified varieties is as per the table below:

Table 17 : District wise non notified varities and their shares in UP ('000 Ha)

S.NO	Districts	Total Paddy 2019 E	Total Non Basmati Acreage 2019 E	Sharbati		Sugandha	
				2019 E	% Share	2019 E	% Share
1	Agra	6	5	-	-	1	18%
2	Aligarh	97	26	10	37%	25	95%
3	Auraiya	50	47	1	2%	0	0%
4	Baghpat	6	2	0	5%	0	24%
5	Bareilly	153	136	57	42%	1	0%
6	Bijnore	56	46	22	49%	1	3%
7	Budaun	102	85	29	35%	2	3%
8	Bulandshahr	95	23	6	27%	17	73%
9	Etah	18	5	1	19%	7	159%
10	Kasganj	16	6	1	26%	5	92%
11	Farukhabad	15	5	0	0%	0	1%
12	Firozabad	23	21	0	0%	4	17%
13	Etawah	56	49	0	0%	3	7%
14	Gautam Buddha Ngr	23	2	1	71%	1	29%
15	Ghaziabad	9	4	2	49%	2	51%
16	Hapur	22	6	2	31%	3	43%
17	Hathras	27	5	1	12%	4	88%
18	Mathura	50	24	1	4%	8	32%
19	Mainpuri	65	46	0	0%	6	14%
20	Meerut	7	3	0	5%	1	29%
21	Moradabad	90	74	13	17%	3	4%
22	J.P.Nagar/Amroha	28	16	10	60%	3	20%
23	Kannauj	21	18	0	0%	0	3%
24	Muzaffarnagar+Shamli	32	8	1	10%	1	8%
25	Pilibhit	139	131	7	5%	1	0%
26	Rampur	121	116	44	38%	0	0%
27	Saharanpur	60	26	4	17%	2	7%
28	Shahjehanpur	191	168	42	25%	2	1%
29	Sambhal	39	25	10	41%	3	13%
Total		**1614**	**1128**	**270**	**24%**	**106**	**9%**

8.3.7 District wise Crop Condition

Basmati crop is western UP districts is in normal condition. PB 1509 crop is at harvest stage and harvesting will be completed by October end whereas Pusa 1 and PB 1121 harvesting will start in 2nd week of October and may end in mid of November.

In Ghaziabad, incidence of sheath blight and sucking pest were recorded. However, attack was under ETL (Economic threshold level). It has been controlled by spray of pesticides. Minor incidence of blight was reported in Moradabad and Modinagar belt where farmers have used Tri-cyclazole. Sheath blight, stem borer, false smut, BPH were reported in Muzzafarnagar, Shamli, Bagpat, Bulandshahr, Meerut, Bijnor, Badaun etc in other western UP districts and the same has been controlled with regular usage of agrochemicals. Etawah, Auraiya, Farrukhabad, Firozabad districts have normal to above normal basmati crop. These districts have low insect/pest infestation and as a result usage of agro chemicals are on the lower side in these districts.

Use of Tri-cyclazole was on lower side due to increase awareness. Other agrochemicals which were used are Propiconazol, Carbandizem, Imidacloprid, Veledamycin, Copper oxichloride, Difenoconazole, Pymetrozin, Fertera etc. The use of Chloropyriphos, Quinalphos, and Monocrotophos were also reported in the western UP district.

Table 18 : District wise crop condition in UP

S.No	Disrict	Rainfall June to Sept (in mm)		Age of the Crop (As on end of Sep)	Crop Stage	Over all crop condition
		Actual	Normal			
1	Agra	498.4	583.7	Above 85 days	Milking to maturity Stage	Normal
2	Aligarh	378.1	611.3	Above 85 days	Milking to maturity Stage	Normal
3	Auraiya	484.9	574.3	Above 80 days	Flowering to Maturity Stage	Normal
4	Baghpat	309.4	556.6	Above 80 days	Flowering to Maturity Stage	Normal
5	Bareilly	807.2	801.9	Above 80 days	Flowering to Maturity Stage	Normal
6	Bijnore	785.5	926.6	Above 80 days	Flowering to Maturity Stage	Normal
7	Budaun	391	745.6	Above 80 days	Flowering to Maturity Stage	Normal
8	Bulandshahr	306.5	596.7	Above 85 days	Milking to maturity Stage	Normal
9	Etah	556	533.9	Above 85 days	Milking to maturity Stage	Normal
10	Kasganj	556	533.9	Above 85 days	Milking to maturity Stage	Normal
11	Farukhabad	488.1	743.1	Above 85 days	Milking to maturity Stage	Normal
12	Firozabad	452.8	624.6	Above 85 days	Milking to maturity Stage	Normal
13	Etawah	464.1	608.4	Above 85 days	Milking to maturity Stage	Normal
14	Gautam Buddha Ngr	414	537.3	Above 85 days	Milking to maturity Stage	Normal
15	Ghaziabad	144.2	537.3	Above 85 days	Milking to maturity Stage	Normal
16	Hapur	144.2	537.3	Above 85 days	Milking to maturity Stage	Normal
17	Hathras	378.1	611.3	Above 85 days	Milking to Harvesting stage	Normal
18	Mathura	320.4	535.8	Above 85 days	Milking to maturity Stage	Normal
19	Mainpuri	362.5	663.6	Above 85 days	Milking to maturity Stage	Normal
20	Meerut	502.9	734.9	Above 85 days	Milking to maturity Stage	Normal
21	Moradabad	689.6	842.3	Above 85 days	Milking to maturity Stage	Normal
22	J.P.Nagar/Amroha	398.3	837.1	Above 85 days	Milking to maturity Stage	Normal
23	Kannauj	732.7	691.2	Above 85 days	Milking to maturity Stage	Normal
24	Muzaffarnagar	556.1	718.3	Above 85 days	Milking to maturity Stage	Normal
25	Shamli	556.1	718.3	Above 85 days	Milking to maturity Stage	Normal
26	Pilibhit	377.3	914.1	Above 85 days	Milking to maturity Stage	Normal
27	Rampur	472.1	819	Above 85 days	Milking to maturity Stage	Normal
28	Saharanpur	547.4	773.6	Above 85 days	Milking to maturity Stage	Normal
29	Shahjehanpur	661.1	828.3	Above 85 days	Milking to maturity Stage	Normal
30	Sambhal	689.6	842.3	Above 85 days	Milking to maturity Stage	Normal

8.4 Uttarakhand

8.4.1 Weather update of Uttarakhand

Uttarakhand has received below normal monsoon rainfall during the current south west monsoon season. The actual cumulative rainfall from June'19 up to Sept'19 was 901 mm while the normal for same time period was 1166 mm.

Figure 26: Uttarakhand Rainfall Analysis - Monthly maps

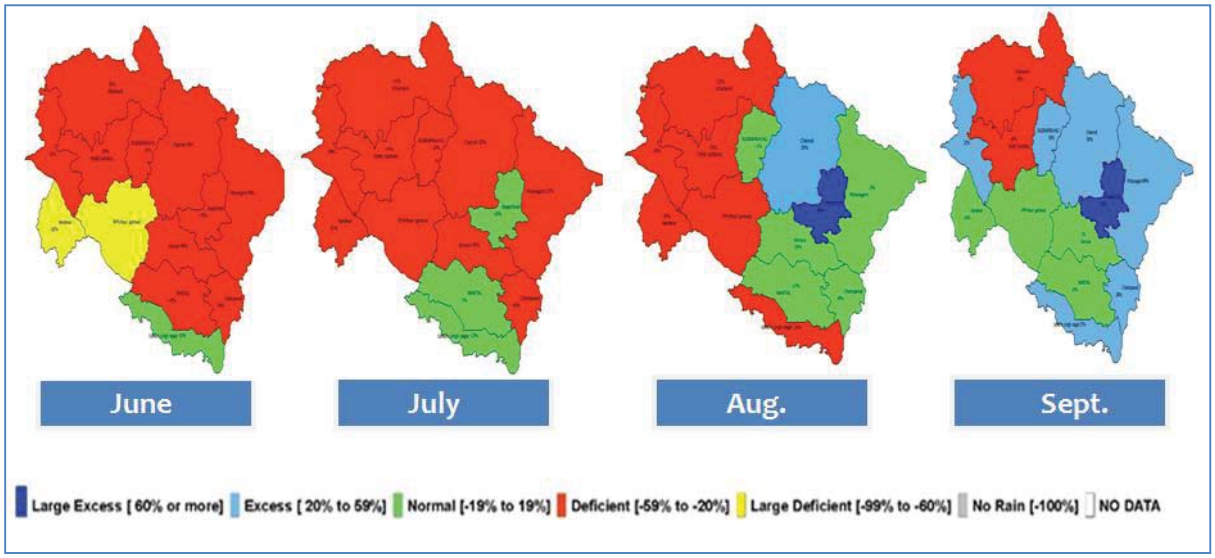
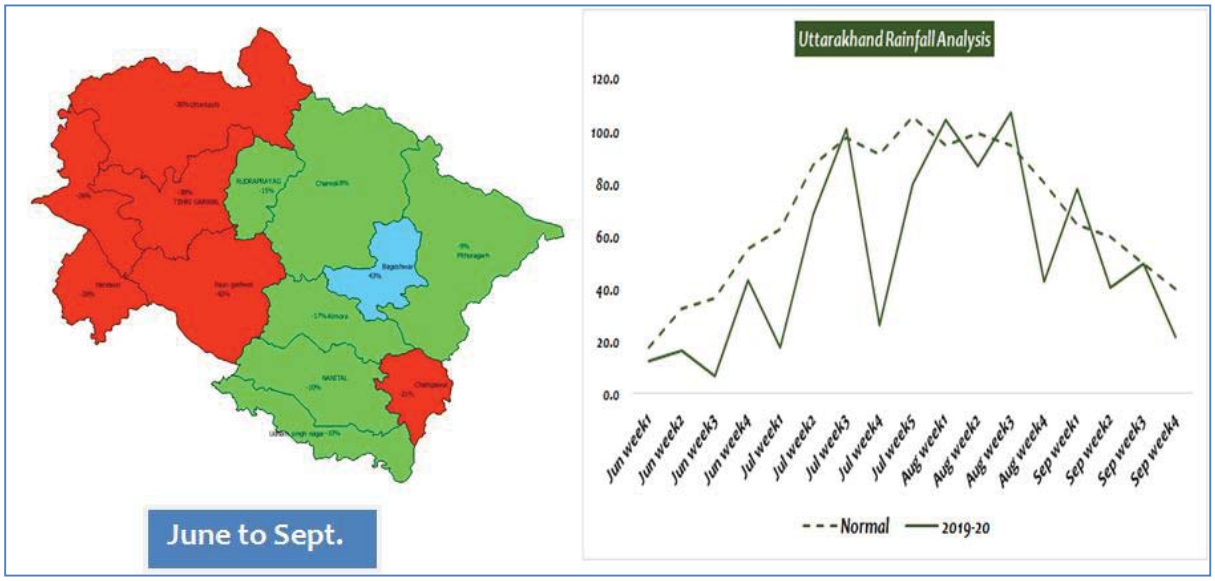


Figure 27: Uttarakhand Rainfall Analysis - Normal vs actual and seasonal map



8.4.2 Soil Moistureof Uttarakhand

Soil moisture levels of Uttarakhand during the current kharif season have been consistently higher compared to same period last year. Despite lower rains in the state, soil moisture levels have been higher amidst good irrigation facilities available in the state.

Figure 28: Soil Moisture Analysis Uttarakhand - Monthly maps

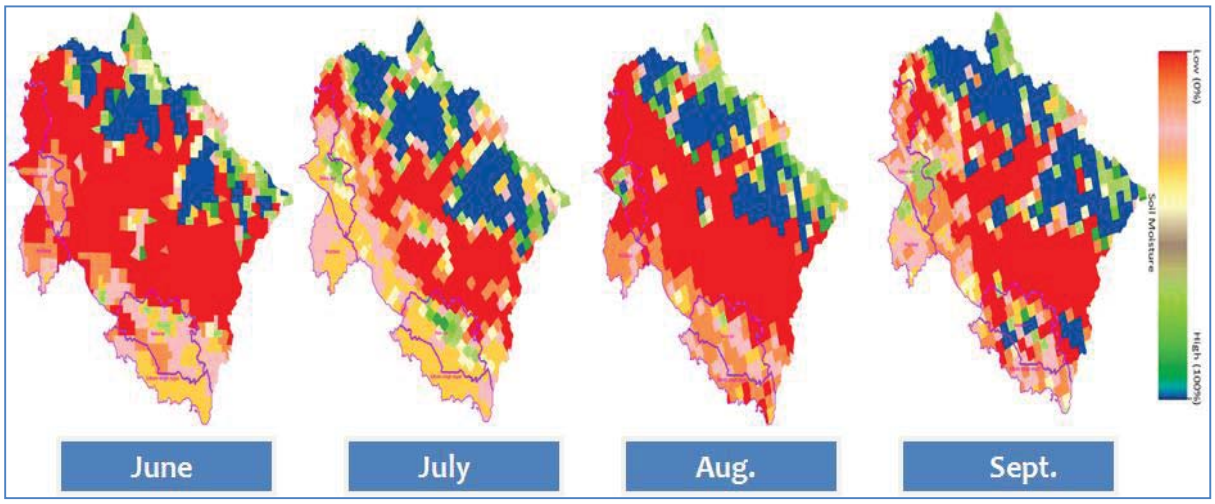
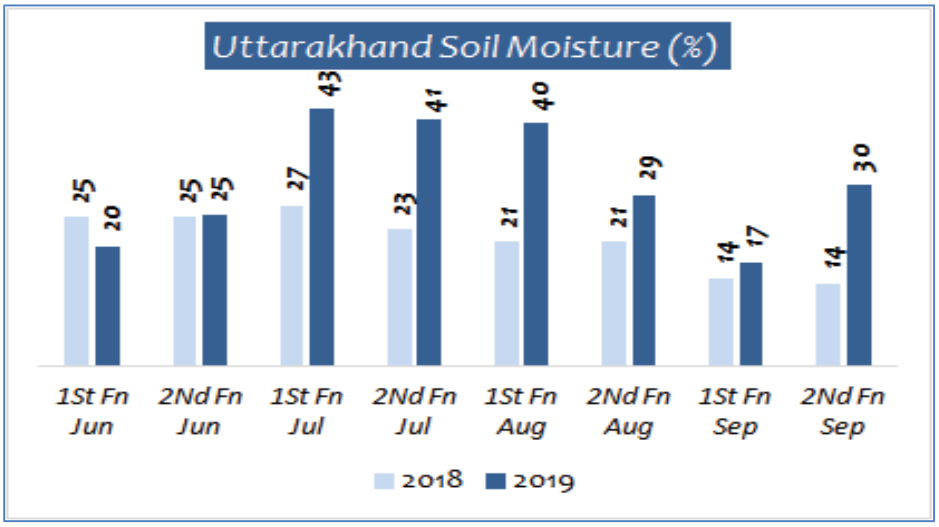


Figure 29: Soil Moisture Analysis Uttarakhand



8.4.3 NDVI Values of Uttarakhand

NDVI values for Uttarakhand state are lower compared to last year since the start of kharif 2019 season. Despite soil moisture levels being higher during the current year, NDVI values are lower indicating crop heath was better during last year in comparison to current year.

Figure 30: NDVI values of Uttarakhand - Monthly maps

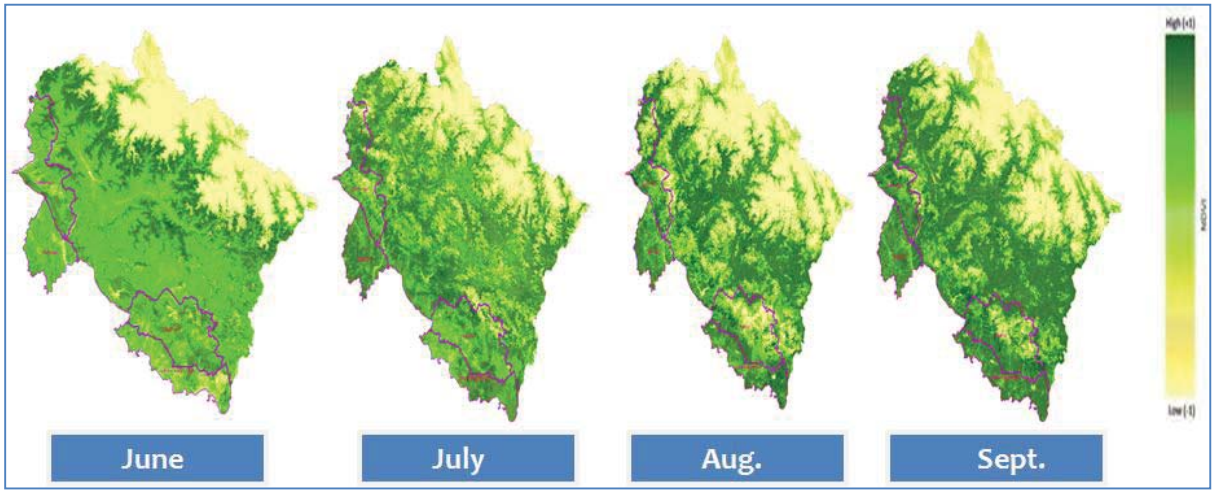
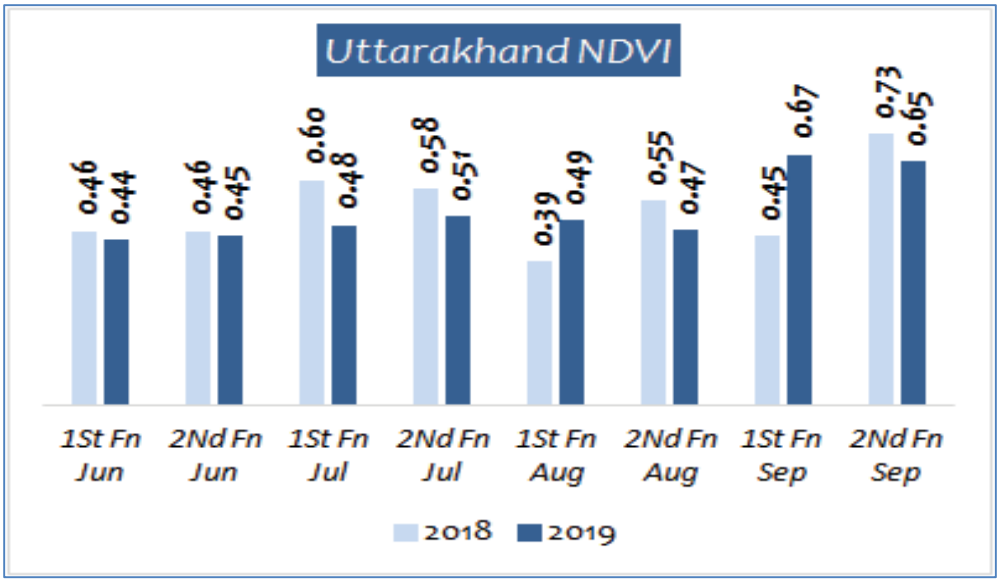


Figure 31: NDVI values of Uttarakhand



8.4.4 Paddy Acreages in Uttarakhand

Total Paddy acreages in Uttarakhand during kharif 2019 are estimated at 116 thousand hectares, higher by 19% compared to 98 thousand hectares during kharif 2018. Basmati acreages are estimated at 17.2 thousand hectares which are 18% higher than the last year acreages of 14.6 thousand hectares.

Table 19: District wise total Paddy and Basmati acerages in Uttarakhand ('000 Ha)

S.No	District	Total Paddy Acreages			Total Basmati Acreages		
		2018	2019 E	% change	2018	2019 E	% Change
1	Dehradun	5.6	7.8	40%	2.8	3.6	29%
2	Haridwar	10.7	12.5	17%	6.4	6.7	5%
3	Nainital	6.4	9.6	50%	1.5	2.1	41%
4	Uddham Singh Nagar	74.9	86.1	15%	3.9	4.7	21%
Total		**97.6**	**116.1**	**19%**	**14.6**	**17.2**	**18%**

8.4.5 Basmati Acreages in Uttarakhand

District wise variety wise share of Basmati acreages in Uttar Pradesh during Kharif 2019 are as per table below:

Table 20: District wise variety wise Basmati acerages and their share in Uttarakhand ('000 Ha)

S.No	Districts	Total Basmati Acreages 2019 E	PB 1121		PB 1509		PB -1		Type 3 & Others	
			2019 E	%Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Dehradun	3.6	0.3	9%	0.3	7%	0.0	0%	3.0	84%
2	Haridwar	6.7	1.5	23%	0.7	11%	2.1	32%	2.3	35%
3	Nainital	2.1	0.9	42%	0.6	26%	0.0	0%	0.7	32%
4	Uddham Singh Nagar	4.7	1.5	32%	2.8	60%	0.0	1%	0.3	7%
Total		**17.2**	**4.2**	**25%**	**4.4**	**25%**	**2.2**	**13%**	**6.4**	**37%**

8.4.6 District wise share of Non-notified varieties in Uttarakhand

Total non-basmati acreages in Uttarakhand state are estimated at 99 thousand hectares during the kharif 2019 season. Of the total non-basmati acreages, non-notified varieties have been transplanted in 19.7 thousand hectares in Uttarakhand and the district wise list of shares of non-notified varieties is as per the table below:

Table 21: District wise Non-notified varieties and their shares in Uttarakhand ('000 ha)

S.NO	District	Total Paddy Acreages 2019 E	Total Non-Basmati Acreages 2019 E	Sharbati		Sugandha	
				2019 E	% Share	2019 E	% Share
1	Dehradun	7.8	4.2	2.6	61%	0.1	2%
2	Haridwar	12.5	5.8	4.2	73%	0.3	5%
3	Nainital	9.6	7.5	2.3	30%	-	-
4	Uddham Singh Nagar	86.1	81.4	10.1	12%	0.2	0.2%
Total		**116.1**	**98.9**	**19.1**	**19%**	**0.6**	**1%**

8.4.7 District wise Crop Condition

Basmati crop condition in Uttarakhand has been normal. PB1509 is at maturity to harvesting stage and harvesting is expected to start from 2nd week of October. There was no major insect/ pest or disease infestation reported on the Basmati crop. Insecticides, pesticides, fungicides etc were used on precautionary basis. Agrochemicals consumption was higher in Uddham Singh Nagar & Haridwar while in Dehradun and Nainital applications of agrochemicals were lower as there was no major insect pest or disease attack during the current season. Agrochemicals used in Uddham Singh Nagar & Haridwar were Carbandizem, Dithane M-45, Cartap hydrocholride, Fertera, propiconazol, Imidacloprid, Buprofezin and Trycyclazole.

Basmati crop condition seems to be normal in Nainital & Dehradun while it is above normal in Uddham Singh Nagar & Haridwar which may have 10-15% better yield than last year.

Table 22 : District wise crop condition in Uttarakhand

District	Rainfall June to Sept (in mm)		Age of the Crop (As on end of Sep)	Crop Stage	Over all crop condition
	Actual	Normal			
Dehradun	1092.9	1512.9	Above 90 days	Flowering to Maturity stage	Normal
Haridwar	721.9	961.3	Above 90 days	Flowering to Maturity stage	Above Normal
Nainital	1286.6	1399.4	Above 90 days	Flowering to Maturity stage	Normal
Uddham Singh Nagar	948	1060.6	Above 90 days	Flowering to Maturity stage	Above Normal

8.5 Jammu & Kashmir

8.5.1 Weather update of Jammu & Kashmir

Jammu and Kashmir has received lower rainfall during the current monsoon season. The actual cumulative rainfall received by the state from June`19 up to Sept`19 was 358 mm while the normal rainfall for the same time period was 497 mm.

Figure 32: Jammu & Kashmir Rainfall Analysis - Monthly

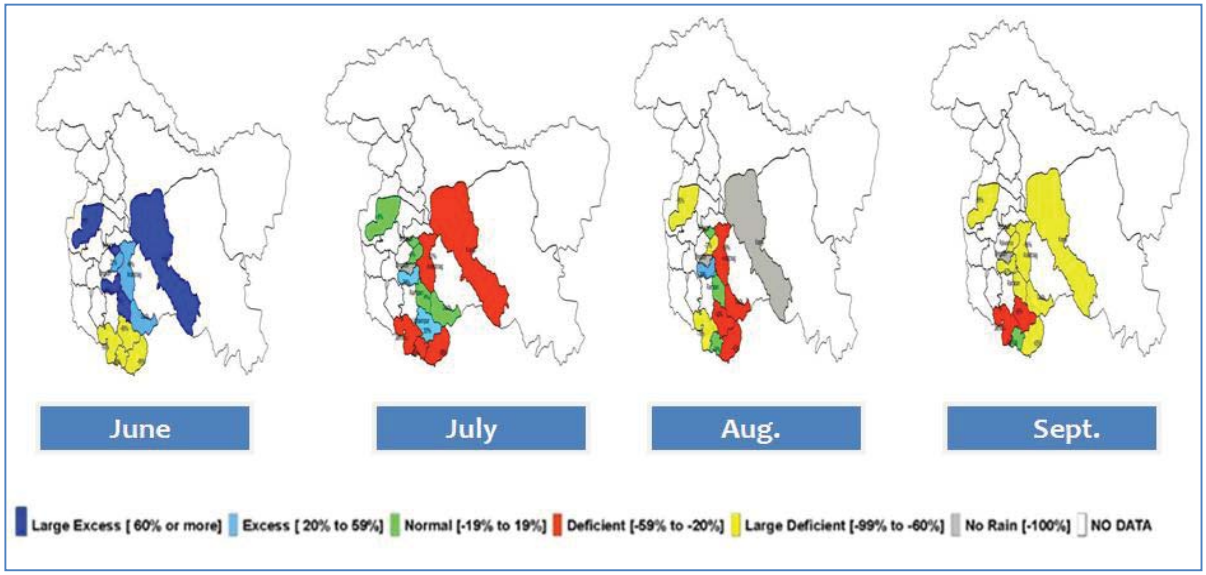
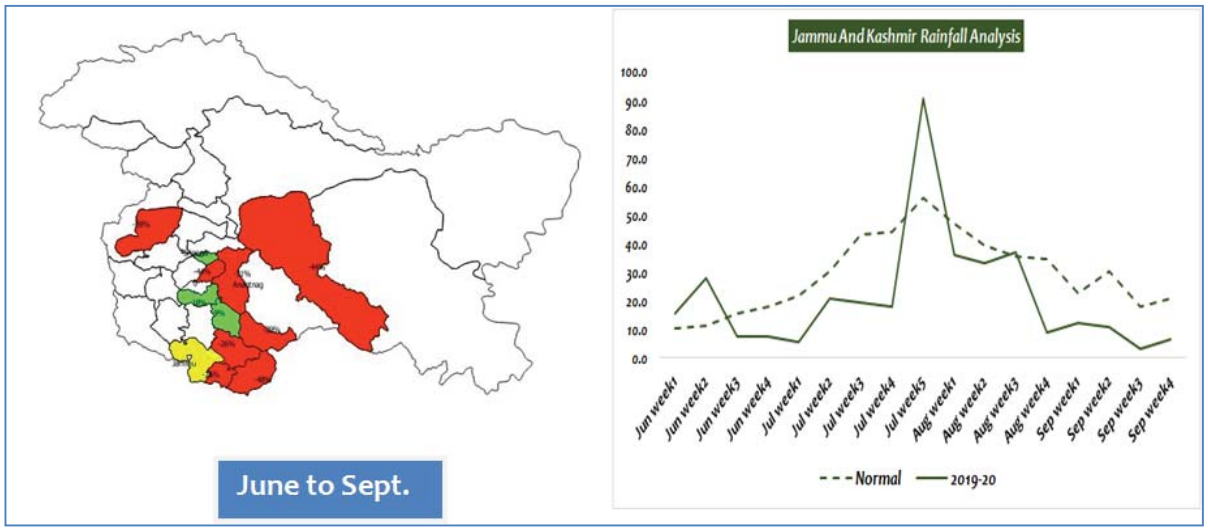


Figure 33: Jammu & Kashmir Rainfall Analysis - Normal vs actual and seasonal map



8.5.2 Soil Moisture of Jammu & Kashmir

Soil moisture levels of Jammu & Kashmir have been higher during kharif 2019 compared to last year right from start of the season.

Figure 34: Soil Moisture Analysis Jammu & Kashmir - Monthly maps

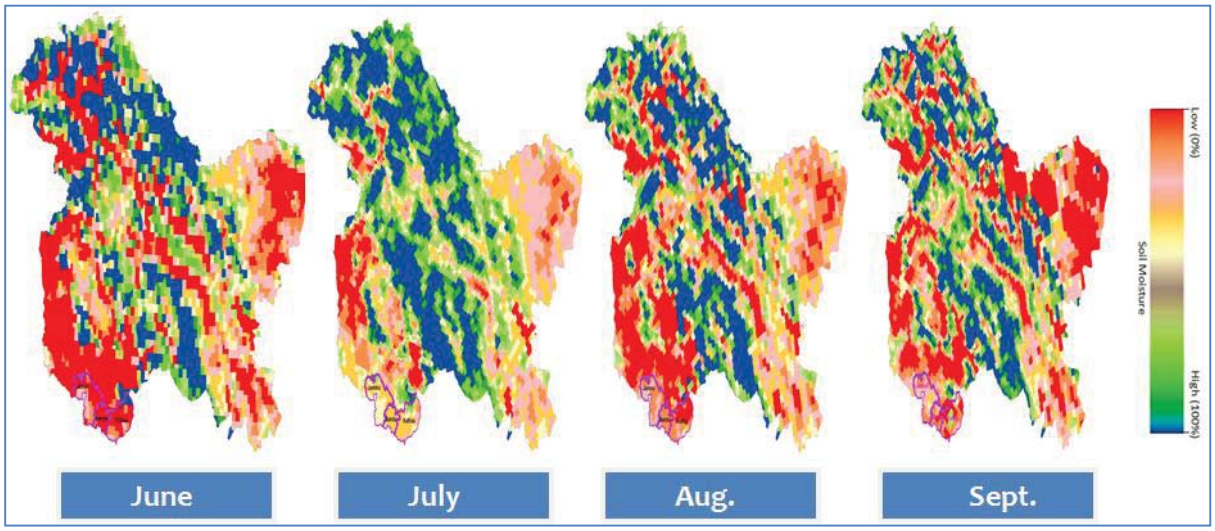
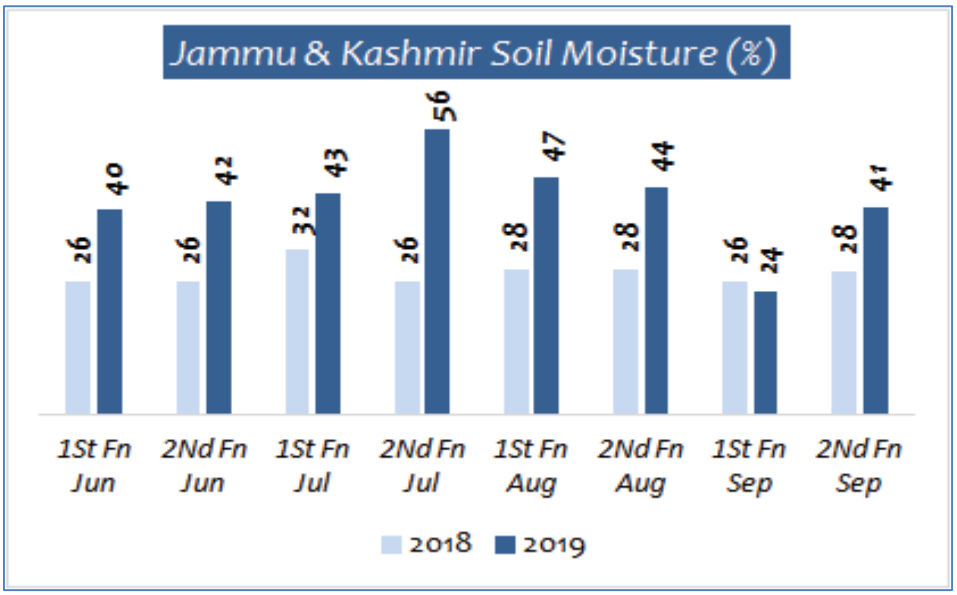


Figure 35: Soil Moisture Analysis Jammu & Kashmir



8.5.3 NDVI Values of Jammu & Kashmir

NDVI values of Jammu & Kashmir were lower from the starting of June'19 to Aug'19 as compared to last year. In the month of Sept'19 the NDVI values have increased slightly in comparison to last year indicating improvement in the crop health.

Figure 36: NDVI values of Jammu & Kashmir - Monthly maps

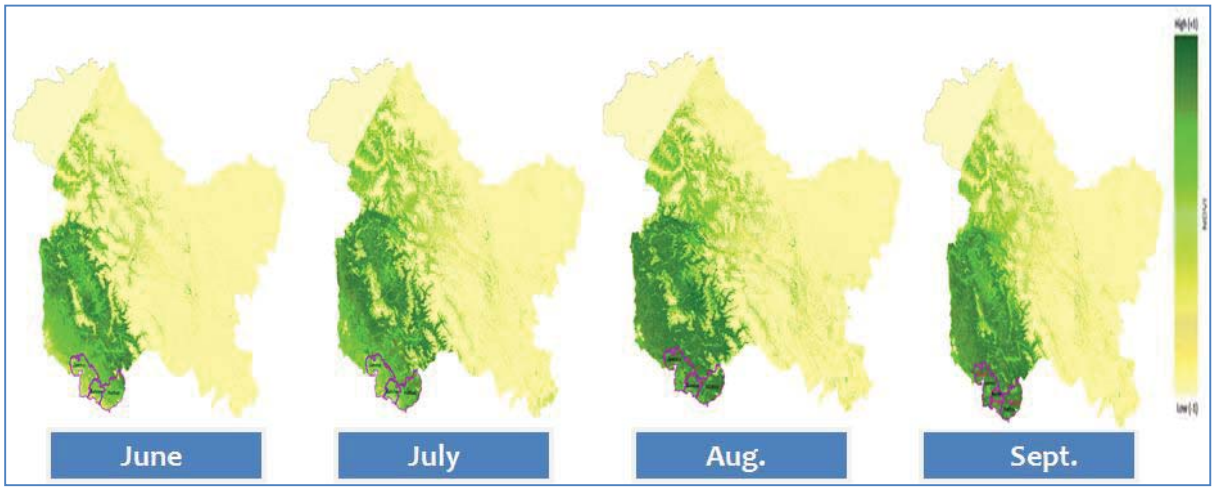
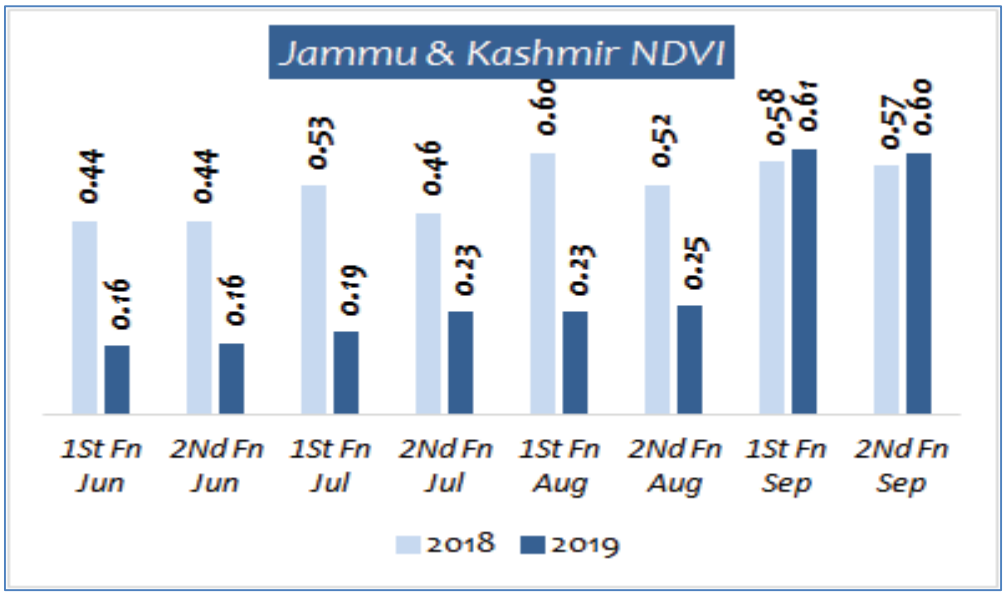


Figure 37: NDVI values of Jammu & Kashmir



8.5.4 Paddy Acreages in Jammu & Kashmir

Total paddy acreages in Jammu Kashmir during kharif 2019 are estimated at 91.1 thousand hectares marginally higher than last year acreages of 88.4 thousand hectares. Basmati acreages in 2019 are estimated at 60.5 thousand hectares lower by 3.4% compared to 62.6 thousand hectares of acreages reported during 2018. Total acreages of Paddy and Basmati paddy are illustrated in the table below:

Table 23: District wise total Paddy and Basmati Acreages in J&K ('000 ha)							
S.No	Districts	Total Paddy Acreages			Total Basmati Acreages		
		2018	2019 E	% change	2018	2019 E	% Change
1	Jammu	54.1	47.6	-12.0%	49.5	40.5	-18.2%
2	Kathua	26.7	29.8	11.7%	10.3	9.2	-10.7%
3	Samba	7.6	13.7	80.4%	2.8	10.8	285.7%
Total		**88.4**	**91.1**	**3.1%**	**62.6**	**60.5**	**-3.4%**

8.5.5 Basmati Acreages in Jammu & Kashmir

Basmati acreages in Jammu & Kashmir constitute of 66% of the total paddy acreages. In J&K, share of PB-1509 has increased as farmers chose PB-1509 for its higher yields. Further, the major variety grown in J&K is Ranbir Basmati which accounts for 74% of the share of basmati acreages in J&K. PB 1509 occupies 16% while PB 1121 occupies 10% share. The details of district wise variety wise Basmati acreages in J&K are given in the table below.

Table 24: District wise variety wise share of Basmati acreages in Jammu & Kashmir ('000 ha)								
S.No	States	Basmati acreages	Ranbir / Basmati - 370		PB 1509		PB 1121	
		2019 E	2019 E	% Share	2019 E	% Share	2019 E	%Share
1	Jammu	40.5	35.3	87.2%	3.7	9.1%	1.5	3.7%
2	Kathua	9.2	4.4	47.8%	1.3	14.1%	3.5	38.0%
3	Samba	10.8	4.8	44.4%	4.9	45.4%	1.1	10.2%
Total		**60.5**	**44.5**	**73.6%**	**9.9**	**16.4%**	**6.1**	**10.1%**

8.5.6 Acreages of Non-notified varieties in Jammu & Kashmir

Non-Basmati paddy acreages in Jammu & Kashmir are spanned in an area of 30.6 thousand hectares. Sharbati is the only non-notified variety grown in J&K and acreages of Sharbati variety stands at 8.1 thousand hectares during kharif 2019, accounting for 26% of total non-basmati acreages of the state.

Table 25: District wise share of non-notified varieties in J&K ('000 ha)					
S.No	District	Total Paddy Acreages 2019 E	Total Non-Basmati Acreages 2019 E	Sharbati Acreages	
				2019 E	% Share
1	Jammu	47.6	7.1	5.7	80.0%
2	Kathua	29.8	20.6	1.5	7.3%
3	Samba	13.7	2.9	0.9	31.0%
Total		**91.1**	**30.6**	**8.1**	**26%**

8.5.7 District wise Crop Condition

Basmati Crop is in normal condition. There was no major insect pest or disease attack in the district and accordingly use of insecticides and pesticides are lower. The crop is above 85 days old and harvesting will start from end of October.

Table 26 : District wise crop condition in Jammu & Kashmir						
S.No	District	Rainfall June to Sept (in mm)		Age of the Crop (As on end of Sep)	Crop Stage	Over all crop condition
		Actual	Normal			
1	Jammu	399.7	925.9	Above 85 days	Flowering to Milking stage	Normal
2	Kathua	664.5	1358.1	Above 85 days	Flowering to Milking stage	Normal
3	Samba	674.6	925.9	Above 85 days	Flowering to Milking stage	Normal

8.6 Himachal Pradesh

8.61 Weather update for Himachal Pradesh

Himachal Pradesh received lower rains during the current monsoon season. The actual cumulative rainfall from June`19 up to Sept`19 was 735 mm while the normal for the same time period was 874 mm. Initially there was a delay in the arrival of monsoon in June`19 but in the month of July'19 and Aug'19 rains received in the state was good. Actual rainfall received in the month of Sept'19 was lower than the normal rainfall.

Figure 38: Himachal Pradesh Rainfall Analysis - Monthly maps

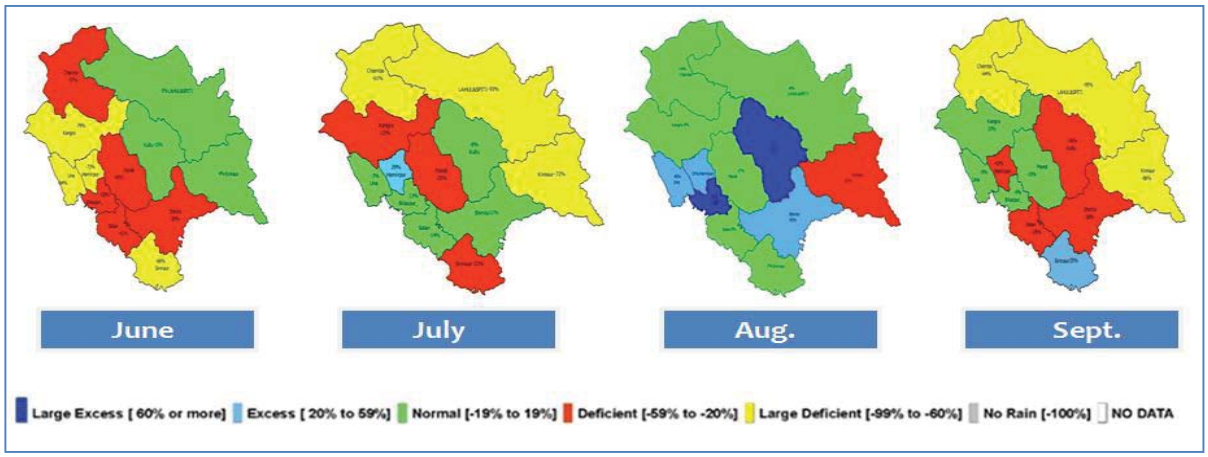
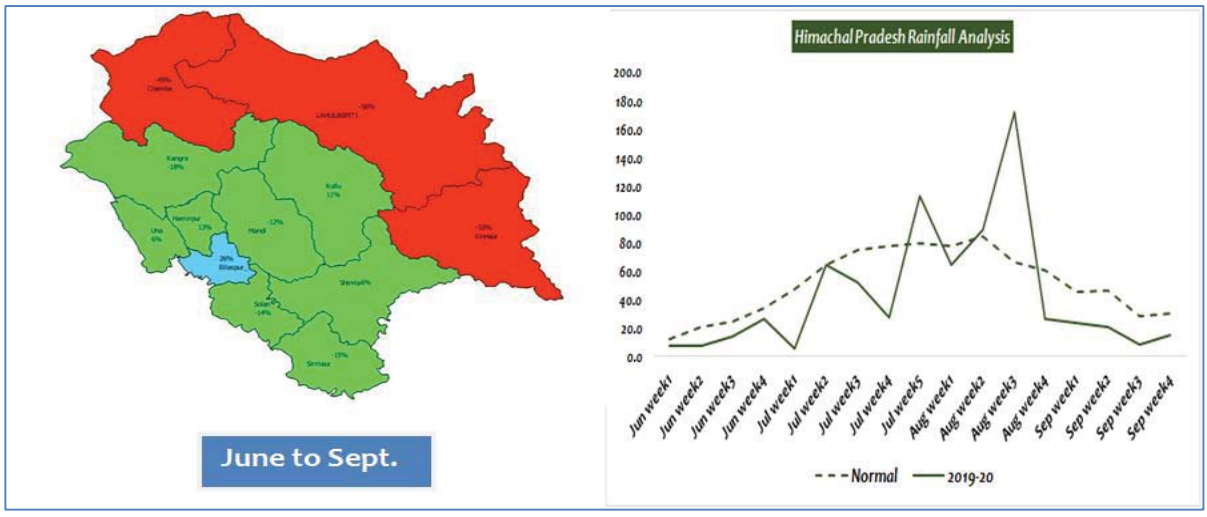


Figure 39: Himachal Pradesh Rainfall Analysis - Normal vs actual and seasonal map



8.6.2 Soil Moisture in Himachal Pradesh

Soil moisture levels in Himachal Pradesh have been continuously higher compared to last year since the start of the kharif season.

Figure 40: Soil Moisture Analysis Himachal Pradesh - Monthly maps

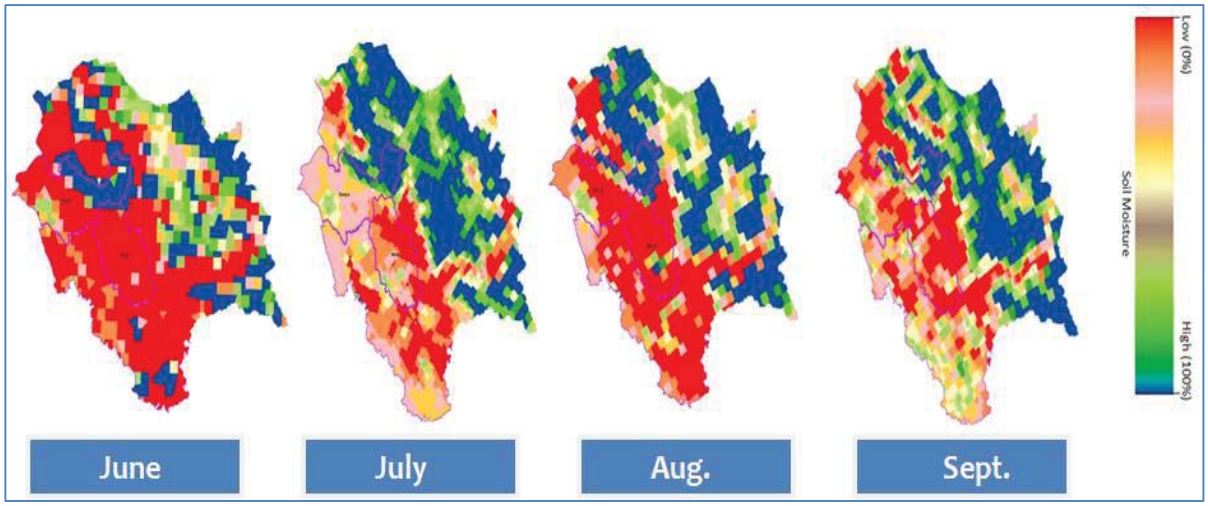
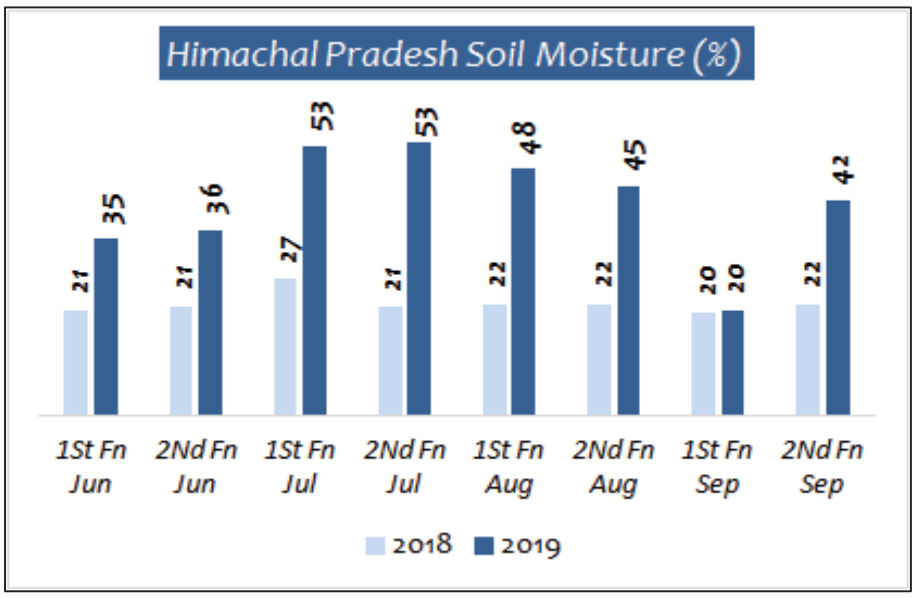


Figure 41: Soil Moisture Analysis Himachal Pradesh



8.6.3 NDVI Values of Himachal Pradesh

NDVI values for the state of Himachal have been lower compared to last year since the start of current season indicated crop health was better during previous year compared to current year.

Figure 42: NDVI values of Himachal Pradesh - Monthly maps

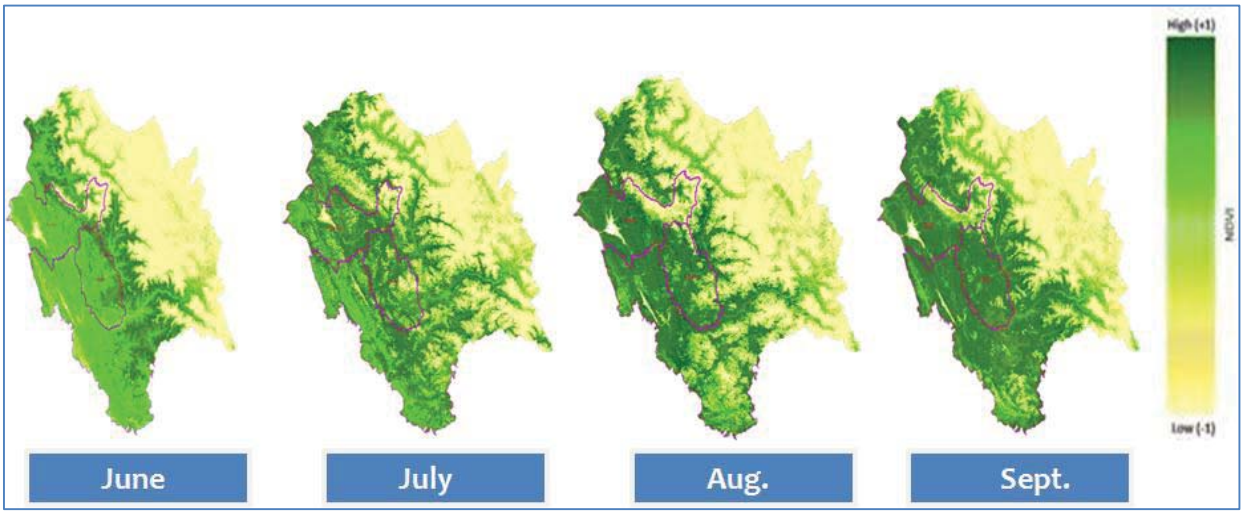
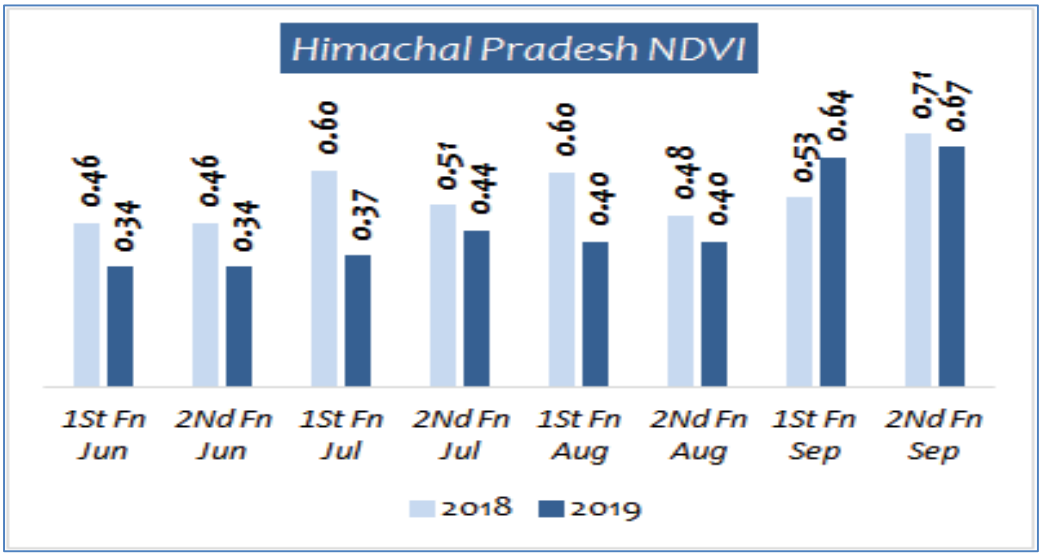


Figure 43: NDVI values of Himachal Pradesh



8.6.4 Paddy Acreages in Himachal Pradesh

Total paddy acreages in Himachal Pradesh for the kharif 2019 are estimated at 49.2 thousand hectares, lower by 4% compared to 51.1 thousand hectares recorded during kharif 2018. However, basmati acreages are higher by 24% and are estimated at 8.8 thousand hectares during 2019 compared to 7.1 thousand hectares planted in 2018. The table below illustrates the details of total paddy acreages and basmati acreages in Himachal Pradesh

Table 27: District wise Paddy and Basmati Acreages in HP ('000 Ha)							
S.No	District	Total Paddy Acreages			Total Basmati Acreages		
		2018	2019 E	% change	2018	2019 E	% Change
1	Kangra	31.9	30.9	-3%	3.0	3.6	22%
2	Mandi	19.2	18.3	-4%	4.1	5.2	26%
Total		**51.1**	**49.2**	**-4%**	**7.1**	**8.8**	**24%**

Basmati acreages account for 18% of the total paddy acreage in H.P. Major Basmati variety grown in the state is PB 1509 which accounts for 65% of the share of Basmati acreages while share of PB 1121 in total basmati acreages is 20% and Basmati 370 contributes to 16% of Basmati acreages in Himachal Pradesh.

Table 28: District wise variety wise basmati acreages and their shares in HP ('000 ha)								
S.No	District	Total Basmati acreages 2019 E	PB 1509		PB 1121		Basmati - 370	
			2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Kangra	3.6	1.9	52%	0.9	24%	0.9	23%
2	Mandi	5.2	3.8	73%	0.8	16%	0.5	10%
Total		**8.8**	**5.7**	**65%**	**1.7**	**20%**	**1.4**	**16%**

Non-notified varieties such as Sharbati and Sugandha have been planted in 8.9 thousand hectares and 10 thousand hectares respectively comprising of 22% and 25% of share of non-basmati paddy acreages in the state. The acreages of non-notified varieties in Himachal Pradesh are as per the table below:

Table 29: District wise Non-notified varieties and their share in HP ('000 ha)						
S.No	District	Total Non-Basmati Acreages 2019 E	Sharbati		Sugandha	
			2019 E	% Share	2019 E	% Share
1	Kangra	27.2	8.9	33%	10.0	37%
2	Mandi	13.2	0.0	0%	0.0	0%
Total		**40.4**	**8.9**	**22%**	**10.0**	**25%**

8.6.5 District wise Crop Condition

Basmati Crop is in normal condition. Harvesting of PB1509 has started and harvesting of other varieties may start from 3rd week of October. There was no report of major diseases and insect/pest attack on Basmati crop. Agrochemicals uses are also lower except of Copper oxychloride, Carbandizem, Dithane M-45.

Table 30 : District wise crop condition in Himachal Pradesh						
S.No	District	Rainfall June to Sept (in mm)		Age of the Crop (As on end of Sep)	Crop Stage	Over all crop condition
		Actual	Normal			
1	Kangra	1298.3	1584	Above 90 days	Milking to harvesting stage	Normal
2	Mandi	936.1	1049.7	Above 90 days	Milking to harvesting stage	Normal

9. Conclusion

The year 2018-19 (Apr-Mar) has been an outstanding year for the entire fraternity of Basmati rice where in Basmati rice exports from India have been encouraging and recorded at 4.4 million MT. As a result, farmers realized better prices for their produce during the season. The total paddy acreages in the study area increased by 6.5 percent during the current kharif season as compared to last year. Basmati acreages have increased by a whopping 36 percent during kharif 2019 in comparison to kharif 2018 in the select 83 districts of the study area. The highest percentage increase in basmati acreages is seen in Uttar Pradesh followed by Haryana.

There has been a massive shift in varieties with in Basmati. Survey results and interactions with various stake holders of the value chain indicate that farmers have moved away from PB 1121 towards PB 1509 during the current kharif season and as a result of which PB 1121 share in total Basmati acreages has come down towards 47% in the current season from 70% share which has been witnessed during kharif 2018. On the other hand, PB 1509 share in total Basmati acreages has increased from 9% during 2018 towards 26% in the kharif 2019. However, the share of traditional varieties such as Basmati 370, vallabh basmati has come down in the study area. Further, a new variety has been introduced by the Govt, PB-1718, which yields similarly like PB 1121 and has a long way to go in the Indian markets and the acreages under this variety during the current kharif season are estimated to be around 7 thousand hectares. With the growing export demand for Indian Basmati Rice, farmers have timely reciprocated to the needs of the industry by increasing acreages under Basmati paddy during the current kharif season. Looking at the higher acreages of Basmati paddy, economic growth concerns at the global as well as domestic level, Indian Basmati rice industry is all set to face another challenging year.

10. Annexure

Annexure 1

District wise variety wise share of Basmati Acreages in Haryana

Table 31 : District wise variety wise Basmati acreages and their share ('000 Ha)

S. No	Districts	Basmati Acreage 2019 E	PB 1121		PB 1509		PB -1		PB-6 (Pusa 1401)		CSR 30		PB 1637		PB 1718		Basmati - Others	
			2019 E	%Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Ambala	18.9	7.5	40%	4.2	22%	0.2	1%	-	-	7.0	37%	-	-	-	-	-	-
2	Bhiwani	19.9	19.9	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Faridabad + Palwal	19.3	16.9	88%	-	-	2.4	12%	-	-	-	-	-	-	-	-	-	-
4	Fatehabad	107.3	14.9	14%	46.0	43%	22.0	20%	24.3	23%	-	-	-	-	-	-	-	-
5	Gurgaon	1.6	1.1	71%	0.3	19%	0.1	9%	-	-	-	-	-	-	-	-	-	-
6	Hisar	58.6	51.5	88%	3.1	5%	1.2	2%	1.2	2%	1.5	3%	-	-	-	-	-	-
7	Jajjhar	41.1	34.3	83%	6.4	16%	-	-	-	-	0.3	1%	-	-	0.1	-	-	-
8	Jind	76.8	49.0	64%	7.6	10%	6.8	9%	6.8	9%	5.4	7%	-	-	1.2	1.6%	-	-
9	Kaithal	97.2	33.0	34%	11.9	12%	0.1	0.1%	28.0	29%	24.3	25%	-	-	-	-	-	-
10	Karnal	100.5	21.8	22%	31.0	31%	13.9	14%	-	-	32.8	33%	0.9	1%	0.1	-	-	-
11	Kurukshetra	43.0	13.3	31%	10.4	24%	3.0	7%	-	-	16.3	38%	-	-	-	-	-	-
12	Mewat	4.9	3.6	73%	1.3	27%	-	-	-	-	-	-	-	-	-	-	-	-
13	Mahendragarh	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Panchkula	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Panipat	61.4	38.5	63%	12.1	20%	3.7	6%	-	-	4.9	8%	-	-	2.2	4%	-	-
16	Rewari	0.9	0.7	75%	0.2	25%	-	-	-	-	-	-	-	-	-	-	-	-
17	Rohtak	33.8	18.6	55%	12.5	37%	-	-	-	-	-	-	-	-	-	-	2.6	8%
18	Sirsa	72.8	9.8	14%	7.0	10%	10.0	14%	45.6	63%	0.4	1%	-	-	-	-	-	-
19	Sonepat	75.2	49.5	66%	4.9	7%	-	-	-	-	3.1	4%	-	-	1.4	2%	16.2	22%
20	Yamunanagar	16.6	0.8	5%	1.2	7%	14.1	85%	-	-	0.4	3%	-	-	-	-	-	-
Total		849.5	384.8	45%	160.2	19%	77.6	9%	105.9	12%	96.4	11%	0.9	0.1%	5.0	0.6%	18.9	2%

Annexure 2

District wise variety wise share of Basmati Acreages in Punjab

Table 32 : District wise variety wise Basmati Acreages and their shares in Punjab ('000 Ha)													
S.No	District	Basmati Acreages 2019 E	PB 1121		PB 1509		PB 01		PB-6 (Pusa 1401)		PB 1637		PB 1718	
			2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Amritsar	128.9	69.6	54%	58.9	46%	-	-	-	-	-	-	0.4	0.31%
2	Barnala	1.4	0.6	46%	-	-	0.8	54%	-	-	-	-	-	-
3	Bhatinda	6.5	6.5	100%	-	-	-	-	-	-	-	-	-	-
4	Faridkot	20.1	15.5	77%	4.6	23%	-	-	-	-	-	-	-	-
5	Fatehgarh Sahib	10.1	4.1	40%	3.1	31%	2.9	29%	-	-	-	-	-	-
6	Fazilka	65.7	44.7	68%	7.1	11%	-	-	13.9	21%	-	-	0.1	0.14%
7	Firozpur	35.3	21.1	60%	2.1	6%	3.9	11%	8.1	23%	-	-	0.1	0.25%
8	Gurdaspur	41.6	32.1	77%	9.3	22%	-	-	-	-	-	-	0.2	0.42%
9	Hoshiarpur	10.1	6.3	62%	3.8	37%	-	-	-	-	-	-	-	-
10	Jalandhar	12.3	10.8	88%	1.5	12%	-	-	-	-	-	-	-	-
11	Kapurthala	6.6	4.3	65%	2.3	35%	-	-	-	-	-	-	0.04	0.64%
12	Ludhiana	22.9	12.5	55%	7.2	31%	3.0	13%	-	-	-	-	0.2	0.70%
13	Mansa	8.9	8.9	100%	-	-	-	-	-	-	-	-	-	-
14	Moga	16.9	12.9	76%	3.8	22%	0.2	1%	-	-	-	-	-	-
15	Mohali	3.3	3.3	100%	-	-	0.0	-	-	-	-	-	-	-
16	Muktsar	63.0	35.3	56%	9.0	14%	5.4	9%	13.2	21%	-	-	0.1	0.08%
17	Pathankot	2.7	2.1	79%	-	-	0.6	22%	-	-	-	-	-	-
18	Patiala	15.2	8.5	56%	2.6	17%	1.9	13%	-	-	2.2	15%	-	-
19	Rupnagar	2.5	2.0	81%	0.5	19%	0.0	0%	-	-	-	-	0.02	0.67%
20	Sangrur	34.5	21.9	63%	3.4	10%	5.9	17%	-	-	3.2	9%	-	-
21	Nawanshahar	4.8	4.8	100%	-	-	-	-	-	-	-	-	-	-
22	T.Taran	79.5	48.5	61%	15.2	19%	6.3	8%	9.5	12%	-	-	-	-
Total		593.0	376.5	63.5%	134.4	22.7%	30.9	5.2%	44.7	7.5%	5.5	0.9%	1.0	0.2%

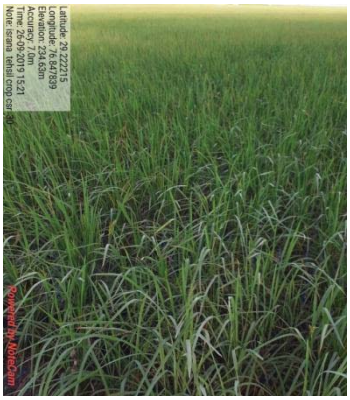
Annexure 3

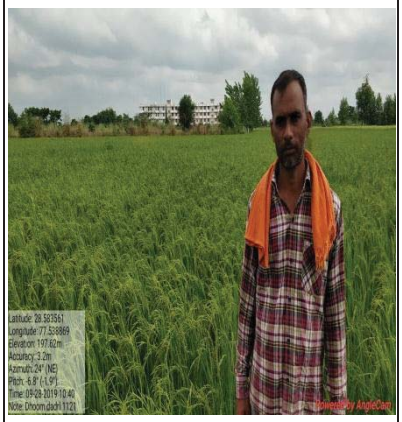
District wise variety wise share of Basmati Acreages in Uttar Pradesh

Table 33 : District wise variety wise Basmati acreages and their share in UP ('000 Ha)

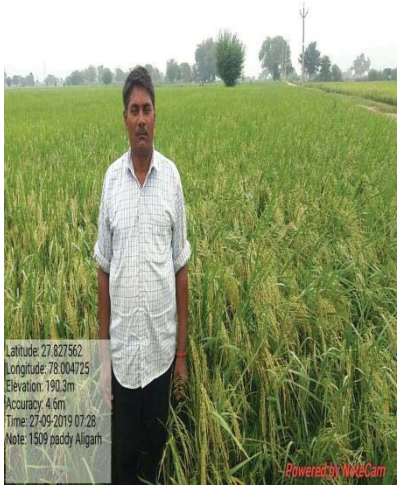
S.No	District	Basmati Acreage Est 2019	PB 1121		PB 1509		PB -1		PB-6 (Pusa 1401)		PB 1637		PB 1718		Basmati - 370	
			2019 E	%Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share	2019 E	% Share
1	Agra	0.9	0.1	16%	0.7	79%	0.0	5%	-	-	-	-	-	-	-	-
2	Aligarh	71.2	5.8	8%	58.5	82%	-	-	3.9	5%	2.9	4%	-	-	-	-
3	Auraiya	2.9	1.4	48%	0.5	16%	-	-	1.1	36%	-	-	-	-	-	-
4	Baghpat	4.4	2.2	50%	0.8	18%	1.4	31%	-	-	-	-	-	-	-	-
5	Bareilly	16.6	6.4	38%	5.7	34%	1.7	10%	2.9	18%	-	-	-	-	-	-
6	Bijnore	10.0	0.8	8%	2.1	21%	1.8	18%	-	-	5.4	54%	-	-	-	-
7	Budaun	17.1	2.1	13%	3.7	22%	0.8	5%	10.5	61%	-	-	-	-	-	-
8	Bulandshahr	71.6	43.7	61%	15.0	21%	12.9	18%	-	-	-	-	-	-	-	-
9	Etah	13.4	1.8	14%	11.1	83%	0.5	4%	-	-	-	-	-	-	-	-
10	Kasganj	10.8	0.7	6%	9.8	91%	0.3	3%	-	-	-	-	-	-	-	-
11	Farukhabad	9.6	0.7	8%	8.9	92%	-	-	-	-	-	-	-	-	-	-
12	Firozabad	2.2	0.8	37%	0.8	36%	0.1	2%	-	-	0.5	24%	0.8	34%	-	-
13	Etawah	7.4	4.5	61%	2.7	37%	0.1	2%	-	-	-	-	-	-	-	-
14	Gautam Buddha Ngr	20.6	17.6	85%	1.2	6%	1.9	9%	-	-	-	-	-	-	-	-
15	Ghaziabad	5.4	2.4	44%	2.3	43%	0.7	13%	-	-	-	-	-	-	-	-
16	Hapur	15.1	7.5	50%	5.3	35%	2.3	15%	-	-	-	-	-	-	-	-
17	Hathras	21.7	9.3	43%	11.1	51%	1.3	6%	-	-	-	-	-	-	-	-
18	Mathura	25.3	13.4	53%	6.1	24%	0.8	3%	-	-	5.1	20%	-	-	-	-
19	Mainpuri	19.4	14.9	77%	4.2	22%	0.2	1%	-	-	-	-	-	-	-	-
20	Meerut	3.9	0.9	23%	1.6	40%	1.0	25%	-	-	0.4	11%	-	-	-	-
21	Moradabad	15.7	1.9	12%	7.2	46%	0.5	3%	-	-	-	-	-	-	6.1	39%
22	J.P.Nagar/Amroha	11.0	2.6	24%	6.6	60%	1.8	16%	-	-	-	-	-	-	-	-
23	Kannauj	2.6	0.4	15%	2.1	80%	0.1	5%	-	-	-	-	-	-	-	-
24	Muzaffarnagar+Shamli	24.1	6.3	26%	5.1	21%	3.2	13%	0.1	0%	9.4	39%	0.1	0%	-	-
25	Pilibhit	7.5	1.0	14%	6.2	83%	0.3	3%	-	-	-	-	-	-	-	-
26	Rampur	4.9	1.1	22%	3.7	74%	0.2	4%	-	-	-	-	-	-	-	-
27	Saharanpur	33.8	9.4	28%	6.0	18%	12.2	36%	-	-	6.1	18%	-	-	-	-
28	Shahjehanpur	22.7	1.1	5%	19.9	88%	0.3	1%	1.4	6%	-	-	-	-	-	-
29	Sambhal	14.2	4.7	33%	8.1	57%	1.3	10%	-	-	-	-	-	-	-	-
Total		**486.1**	**165.7**	**34%**	**216.9**	**45%**	**47.6**	**10%**	**19.9**	**4%**	**29.8**	**6%**	**0.9**	**0.18%**	**6.1**	**1.26%**

Pictures from the field Survey – Haryana

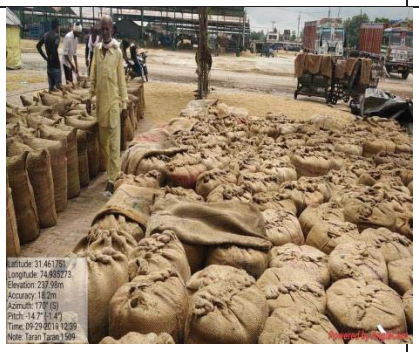


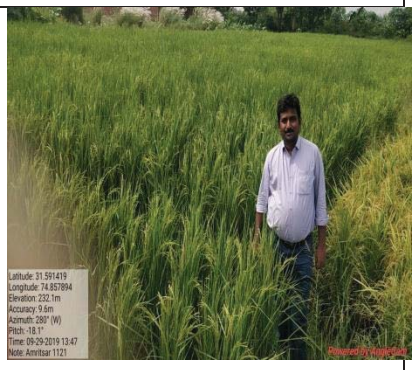


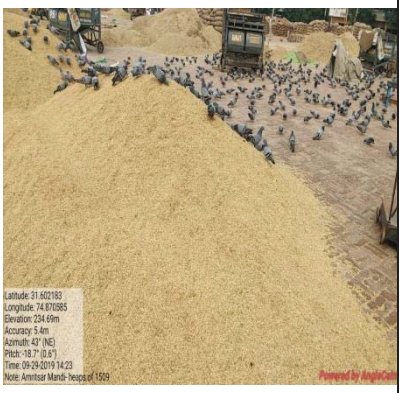
Pictures from the field Survey – Uttar Pradesh

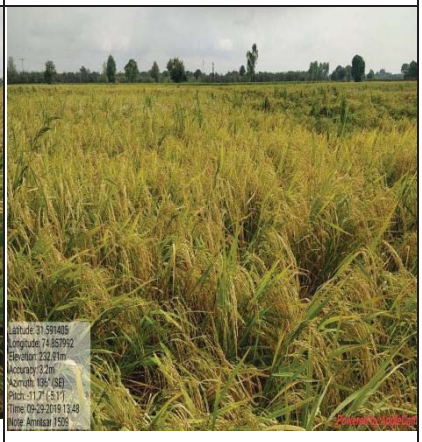


Pictures from the field Survey – Punjab

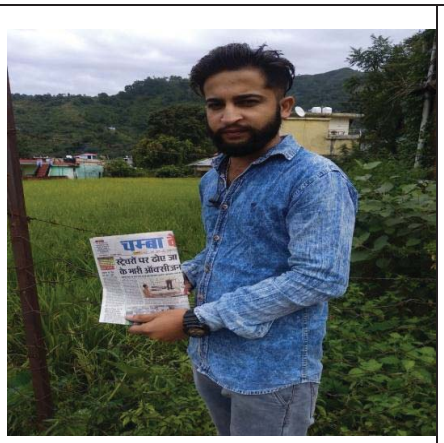


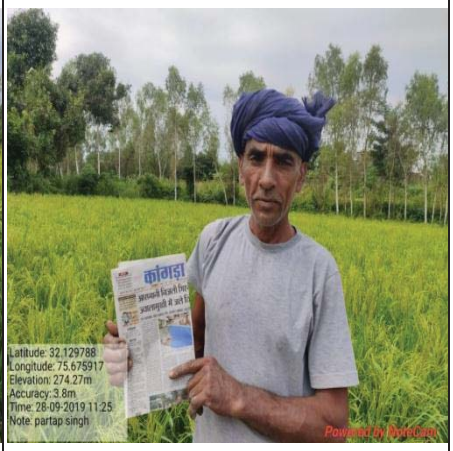


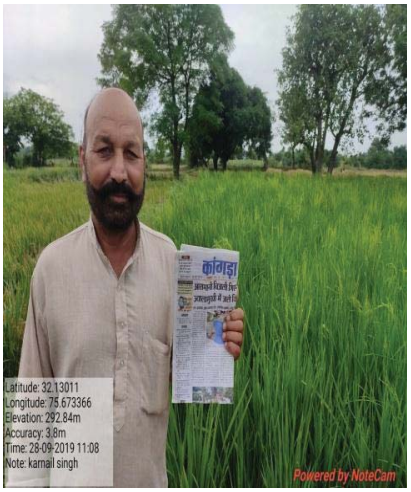


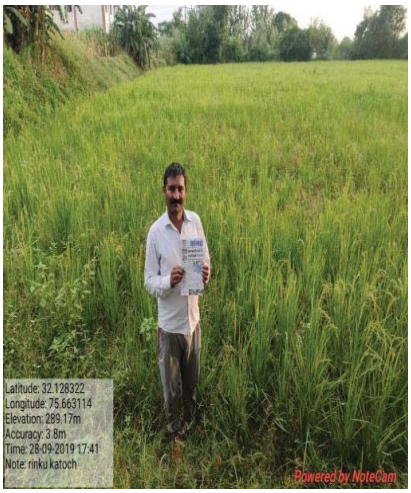


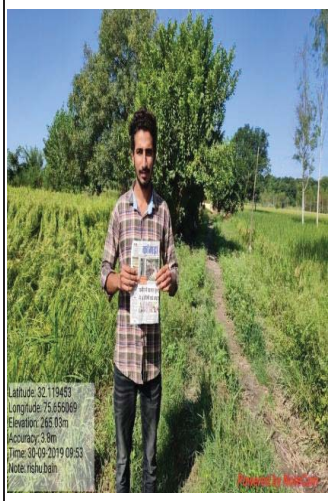
Pictures from the field Survey – Himachal Pradesh











Pictures from the field Survey – Uttarakhand