

Crop Survey for Estimation/Assessment of Acreage, Crop Health and Expected Yield of Basmati Rice during Kharif-2023

Volume: VI



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Basmati Export Development Foundation

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We look forward to having similar support and guidance in our future endurance too.

Team Leads

LeadsConnect Services Private Limited

Noida



1. Executive Summary:

An abundance of people worldwide depends on paddy rice. Paddy is a staple crop. The majority of paddy is cultivated worldwide by hand, with seedlings being transplanted into puddled soil. Different varieties of paddy are used by farmers across the world. Because of its texture, nutty flavour, and aroma reminiscent of popcorn, basmati is one of the most widely used long-grain rice kinds. India is the primary producer and exporter of basmati rice, with a large portion of the rice grown there. LeadsConnect Services Pvt. Ltd. has been hired by BEDF to conduct a field-based crop study along with estimation/assessment of crop acreage, crop health and expected production of Basmati Rice during Kharif-2023.

LeadsConnect carried out field surveys from July to October at each crop stage, gathering signatures according to crop stage to estimate from paddy acreage to basmati rice acreage and variety-wise basmati rice acreage until basmati crop harvesting. Questionnaire based survey was also conducted to know the field based estimations.

As per the Data Analysis by LeadsConnect, total Basmati Rice acreage and Production in the study area during Kharif 2023 is estimated at 2135.36 thousand ha and 9845.75 thousand tons respectively. The variety wise total production estimates are being given below:

State Name	Paddy or Rice Acreage (000'Ha)
Punjab	2969
Haryana	1280
Uttar Pradesh (West)	1577
Uttarakhand*	120
Jammu & Kashmir*	99
Himachal Pradesh*	43
Total	6090

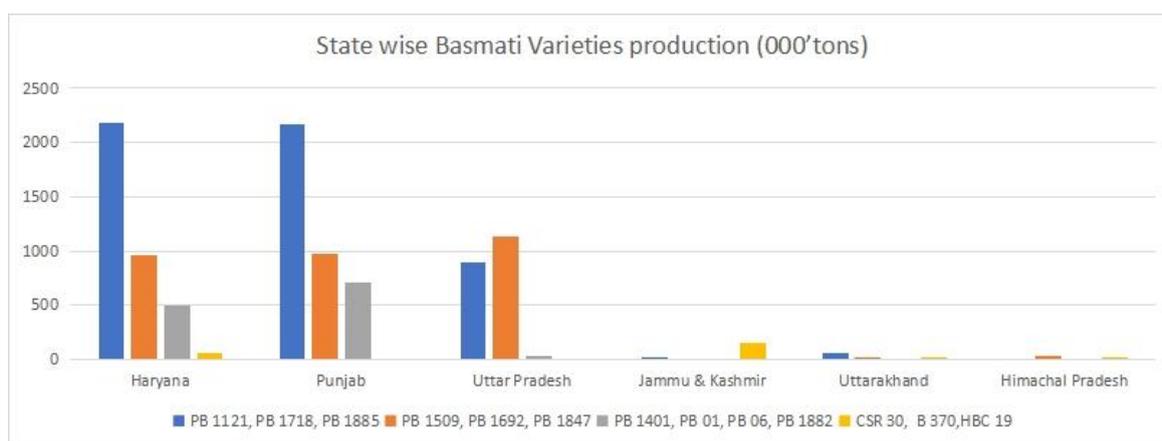


Fig. 1 : State wise Basmati varieties production detail

Note:

- Total Production Figures do not include Sharbati & Sugandha Production.

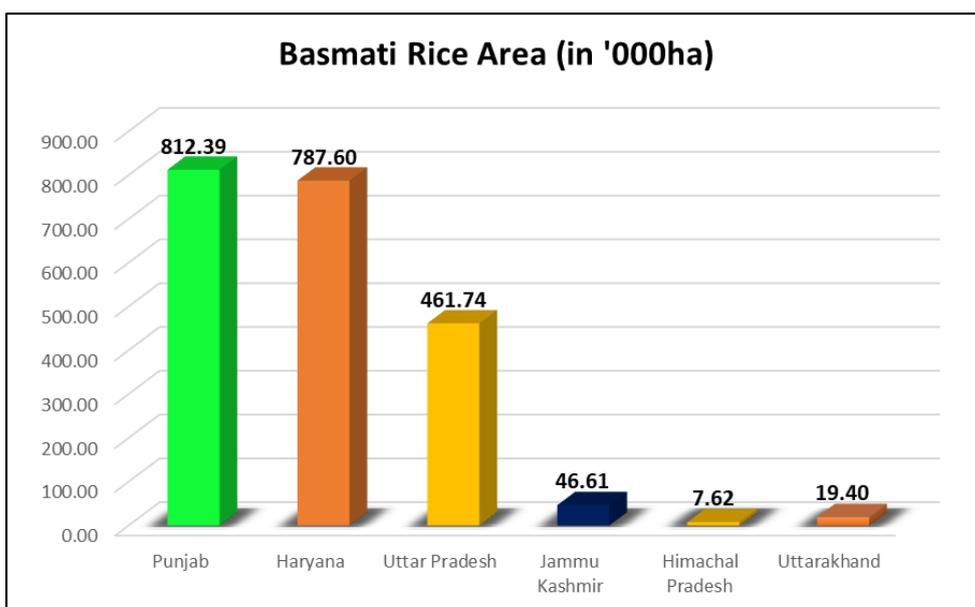


Fig. 2: State level satellite data and field-based Basmati area Details-2023

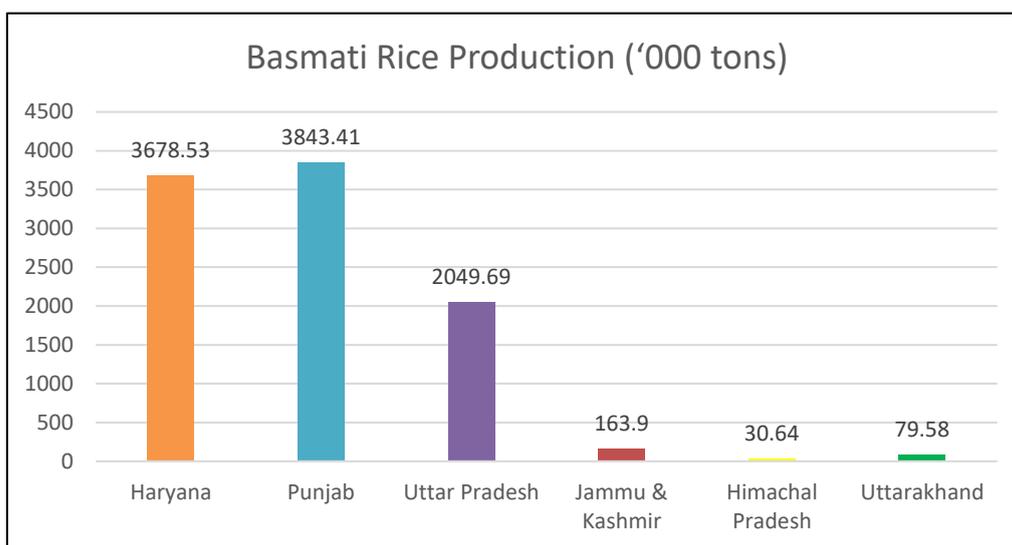


Fig. 3 : State level Satellite data and field-based Basmati Production Details-2023

Satellite data and Field-based Basmati Rice and other varieties Production (in'000 tons)										
States	Total Acreage ('000 ha)	Total Production ('000 tons)	PB 1121, PB 1718, PB 1885		PB 1509, PB 1692, PB 1847		PB 1401, PB 01, PB 06, PB 1882		CSR 30, B 370, HBC 19	
			Area	Production	Area	Production	Area	Production	Area	Production
Haryana	787.60	3678.53	476.73	2180.08	196.53	955.64	100.68	491.34	13.66	51.47
Punjab	812.39	3843.41	477.39	2163.04	190.63	967.73	144.37	712.64		
Uttar Pradesh	461.74	2049.69	207.29	894.23	248.10	1130.78	6.35	24.67		
Jammu & Kashmir	46.61	163.9	4.76	17.18					41.85	146.71
Uttarakhand	19.40	79.58	12.71	51.76	5.46	23.98			1.23	3.86
Himachal Pradesh	7.62	30.64			6.37	26.70			1.25	3.94
Grand total	2135.36	9845.75	1178.88	5306.29	647.09	3104.83	251.4	1228.65	57.99	205.98

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

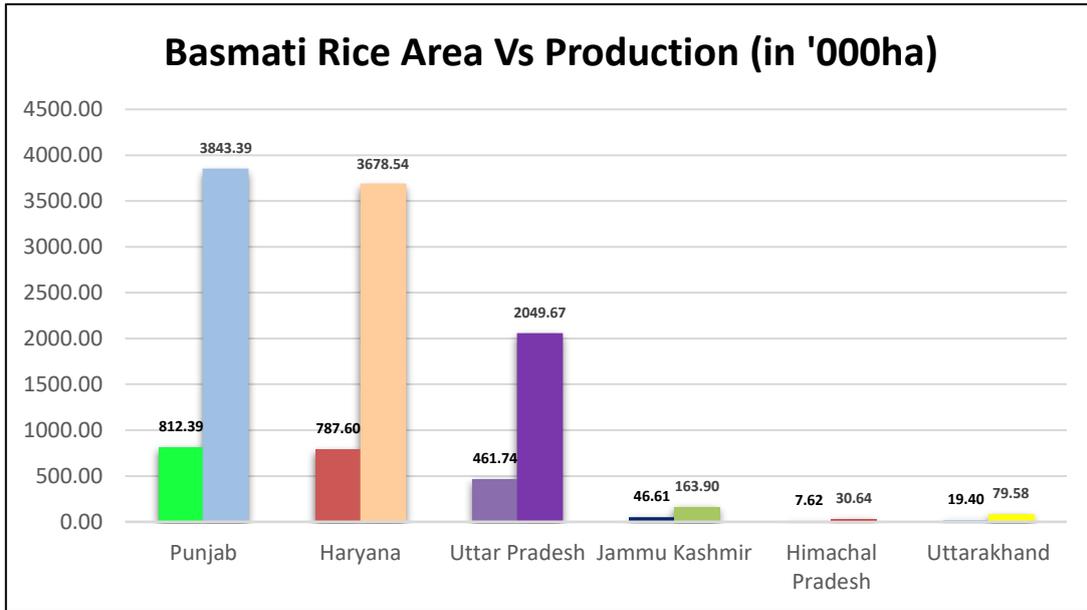


Fig. 4 : State level satellite data and Field-based varieties Area & Production Details-2023

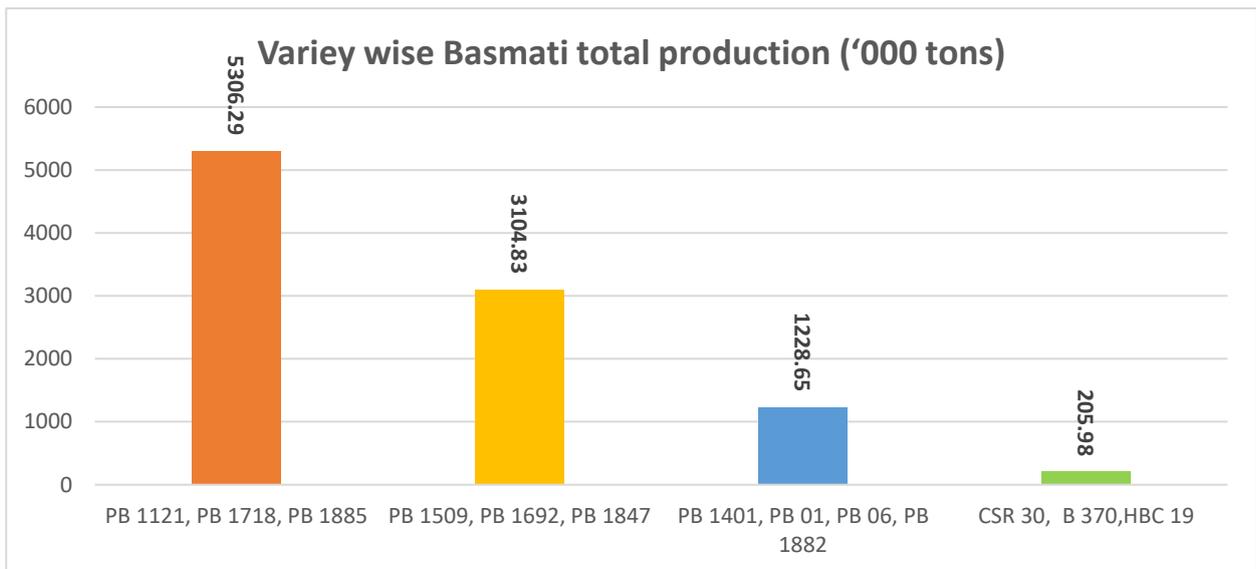


Fig. 5 : Variety wise Basmati total production in study area

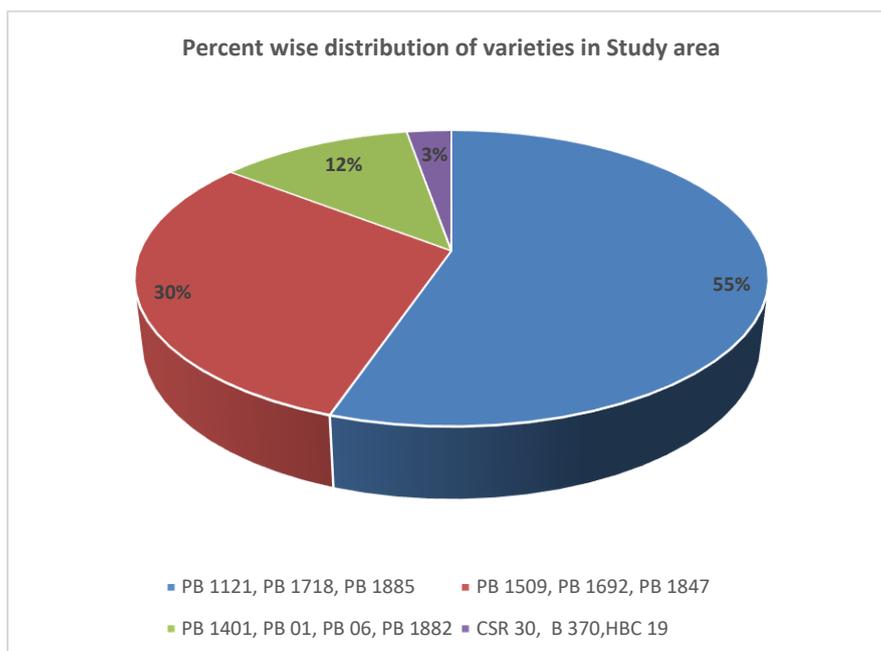


Fig. 6 : Percent wise distribution of basmati varieties in study area

➤ Paddy Acreage and Basmati Varieties Acreage & Production:

The Remote Sensing and Field Information based analysis shows that total Paddy Acreage is of about 6090 thousand ha in which the Basmati varieties covers 2135 The total production of Basmati varieties is analyzed as 9845 thousand tons.

Haryana

Paddy acreages in Haryana are estimated at 1280 thousand hectares. The acreage of Basmati Rice is observed in Haryana is 787 thousand hectares. In Haryana highest acreage of sown varieties are 1121, 1718 and 1885 collectively. The other varieties are found in comparatively lower quantity. The production of basmati varieties in Haryana is 3678 thousand tons.

Punjab

The total area of Paddy coverage is about 2969 thousand hectares while Basmati varieties covers about 812.39 thousand hectares. In Punjab also the cropping pattern suggests that Basmati varieties are consistently spread in across the state and found in almost all the districts. In Punjab the highest acreage of sown varieties are 1121, 1718 and 1885 collectively followed by PB 1509, PB 1692, PB 1847 and PB 1401, PB 01, PB 06, PB 1882. The total production figures of the Basmati Varieties are 3843 thousand tons which is slightly higher than Haryana predicted production.

Uttar Pradesh

The paddy acreages in study area of Uttar Pradesh are estimated at 1577 thousand hectares in which

contribution of Basmati Varieties area 461.74 thousand hectares. In UP the acreage of sown varieties of PB 1509, PB 1692, PB 1847 collectively is higher than PB 1121, PB 1718, PB 1885. The predicted production of Basmati Rice is 2049.69 thousand tons.

Jammu & Kashmir

Total paddy acreages in Jammu & Kashmir during kharif 2023 are estimated at 99 thousand hectares in which share of Basmati Varieties area are about 46.61 thousand hectares. In J&K the acreage of Basmati Rice is observed around 46.61 thousand hectares in which maximum area covered by CSR 30, HBC19, 370, varieties which are dominant in the state. The production estimates of Basmati Varieties are 163.90 thousand tons.

Uttarakhand

In Uttarakhand the acreage of Basmati Rice is observed in Uttarakhand which is 19.40 thousand hectares. In Uttarakhand the acreage of sown varieties of PB 1121, PB 1718, PB 1885 collectively is higher than PB 1509, PB 1692, PB 1847. The other varieties like CSR 30, B 370, HBC 19 are also reported from the state, but its coverage is quite lower than others. The predicted production estimates of basmati varieties are 79 thousand hectares.

Himanchal Pradesh

The acreage of Basmati Rice is observed in Himachal Pradesh which is of 7.62 thousand hectares in which PB 1509, PB 1692, PB 1847 varieties are dominantly reported. The production estimates of Basmati Varieties are 30.64 thousand hectares. The other varieties are found in comparatively lower quantity.

➤ Soil and Irrigation system :

The soil type found in Haryana is alluvial. Alluvial soil is the predominant soil type in the Basmati farming region of Haryana. The state is located near the Ganges and Indus river valley. Most of Haryana's soil is loamy to sandy. In all irrigated areas in Haryana, basmati varieties are sown. In Haryana, canals (46%) and tube wells (54%) are the two main irrigation sources.

Alluvial soil is the predominant soil type in Punjab. The state is located near the Satluj, Jhelum, Chenab, Ravi, and Beas river depressions. Punjab has primarily dark, sandy, clay-lo Deep layers of alluvium, deposited by the Ganges system's sluggish rivers, envelop Uttar Pradesh.

The two most common soil types in states are clay loam and loam. Soils mostly composed of clay are used to grow rice. Basmati is grown under guaranteed irrigation, and over 95% of producers have their own irrigation system. Irrigation sources include canals, pumping units, and private tube wells. In Punjab, canal and tube wells are the main sources of irrigation.

➤ **Cropping Pattern:**

The principal cropping patterns seen in Haryana include rice-wheat, rice-mustard, rice-potato, rice-vegetable, rice-mustard-sugarcane, and rice-fodder. The two principal varieties of Basmati that were grown were PB-1121 and PB-1509.

In Punjab, the predominant cropping pattern is rice-wheat. Nonetheless, three crops are also cultivated yearly in some high-productivity regions, such as those located near cities: rice, potatoes, and vegetables. According to data gathered from farmers and other sources, basmati varieties were planted on 27% of the rice-growing land. The main varieties for this year include PB-1121, PB-1718, PB-1509, 1692, and 1401.

Rice-Wheat is a dominant planting pattern in Uttar Pradesh and Uttarakhand, with Basmati rice being a prominent crop. The cropping pattern, however, also contain other crops, such as Rice, Mustard and sugarcane, fodder, and pulses. In the cropping sequence, short duration crops and vegetable peas come after the short duration variety (Sharbati).

➤ **Transplanting and Harvesting:**

In Haryana state, transplanting of PB-1509& 1692 was done on June 2nd fortnight to mid of July. Transplanting of PB-1121& PB-1718 was started in July mid and continued up to the end of July days. Transplanting PB-1509& 1692 in Punjab begins in the second fortnight of June. PB-1121&PB-1718 and Basmati-1401 are then sown in the first and second fortnights of July, respectively.

In Uttar Pradesh, transplanting of PB-1509& 1692 was completed on July 1st week to mid of July. Transplanting of PB-1121 & PB-1718 was started in July mid and continued up till early August days. The harvesting of early sown varieties was completed by the end of September to early October. And late sown Basmati varieties were harvested in late October to late November.

➤ **Weed Control:**

Herbicide treatment and hand weeding are two methods used to manage weeds. Pretilachlor 50 EC, Pendimethalin 30 EC, Butachlor 50 EC, and Anilofos 30 EC are the most often used herbicides. Herbicides are used wisely by farmers to better manage weeds.

➤ **Crop Health Condition:**

Despite an irregular pattern of rainfall, the crop health status appears to be normal over the whole study region. There were no unusual reports, with the exception of a few disease cases.

2. Background of the Project:

Among the food grains exported from India, basmati rice is a significant export product. Basmati rice is mostly farmed in India for export. A significant amount of money was made from exporting this fragrant rice product. The majority of the world's basmati rice production and exports come from India. It produces 75% of the world's basmati rice. Every year, India exports Basmati to close to 132 nations. Iran, Saudi Arabia, the United Arab Emirates, and Iraq are the main importers of these. For exporters and farmers alike, timely information regarding crop acreage, crop health, and crop varietal distribution may be essential in this situation. It aids exporters and other Basmati trade decision-makers in making judgements on the quantity and timeline.

Basmati rice is the most costly product in the world since its price is mostly set and it commands high rates on the worldwide market. Basmati rice is increasingly becoming the choice across consumer groups mainly because of its superior taste and aroma that is highly pleasing to the senses. India now has a fantastic chance to export Basmati rice to other nations. There are many downstream applications for basmati rice, and recently, deep processing and direct edible uses have elevated basmati rice to a more prominent position. The primary factor propelling the basmati rice market globally is the rise in demand for Direct Edible.

LeadsConnect services Pvt. Ltd. is working with BDEF for the estimation/assessment of acreage, crop health and expected yield of Basmati rice during 2022 and 2023. Basmati occupies a special status in Rice cultivation. It is a variety of long, slender grained, aromatic rice. In India, Basmati rice is grown in the specific geographical area, at the Himalayan foot-hills confined into few states of India. As part of scope, Basmati survey to be carried out in seven areas viz., Punjab, Haryana, Himachal Pradesh, Uttarakhand, Delhi, Western UP and J&K. These states are located at northern parts of our country.

Keeping this in view, the Basmati Export Development Foundation (BEDF), New Delhi awarded M/s. LeadsConnect services Pvt. Ltd. the work of Crop Survey for estimation/assessment of acreage, crop health and expected yield of Basmati rice during 2023. This will include the all basmati rice crop varieties differentiated in traditional and evolved varieties of Basmati rice and Sharbati and Sugandha varieties of Non-Basmati. Survey will be attempted through the satellite imageries and field based methods for assessment of acreage, crop health and yield of Basmati rice during Kharif 2023.

The use of Satellite Image based Remote Sensing and GIS technique offers an effective system for monitoring crops, its type, Crop health and acreage estimation at large spatial extent. The remote sensing based solution is relatively quick, affordable, and more successful. Additionally, remote sensing sensors are a great option for retrieving temporal information about crop phenology, plant health (stress), response to weather, and soil nutrients (such as manure and fertilizer) due to their repetitive data acquisition capabilities. Monitoring agricultural crops and export vegetation phenology is made possible by the free availability of optical remote sensing data from Sentinel-2 satellites with multiple spectral bands in the red, red edge, and near infrared (NIR). The present study has been conducted on area, production and productivity of basmati rice of India. The nature of data used for study is based on

the Remote sensing, field based study and secondary data collected from different sources. The growth in area, productivity and production of basmati rice was measured by integrated methods applied for the study.

The current report examines every aspect of the study, including the field-based crop survey used to estimate and evaluate the acreage, crop health, and anticipated yield of basmati rice in Kharif 2023. For the study of Basmati acreage and yield estimation, variety-specific data from field surveys and outputs from remote sensing technology were used. We used information gathered from a variety of sources, including field data, questionnaire survey data, and government data, to obtain the best and most accurate results. LeadsConnect carried out a thorough field survey in the research area using a mobile based application. The Basmati area has been identified using the temporal data of Sentinel-1 (SAR), Ground Control Points (GCPs), variety-specific parameters, and other relevant information like the sowing and harvesting time period. Crop health assessment using NDVI was done for all the study states over the crop growing season. questionnaire based survey was done to get the insight of various information and to draw outcomes on field practices, market insight and future planning.

3. Objective and Scope of work:

The major objective of the project can be listed as:

1. “Field based survey to be carried out on the basis of sample group of farmers selected at district level in seven GI area states viz., Punjab, Haryana, Himachal Pradesh, Uttarakhand, Delhi, Western UP and J&K”.
2. To provide Remote Sensing based estimation of Crop Area, Crop Health and Production estimate of notified Basmati Rice varieties.

The scope of work which included satellite imageries and field-based survey will cover the following activities:

1. Acreage estimation of all basmati rice crop varieties differentiated in traditional and evolved varieties of Basmati rice and Sharbati and Sugandha varieties of non-Basmati. Reports will be submitted on district level basis for each state.
2. Variety-wise Crop Health Monitoring and Analysis.
3. Variety-wise Crop maturity survey, describing the percentage of acreage under particular crop growth.
4. Climate based yield modeling using historical yield and climate data (10 years) in order to predict yield well in advance.
5. Questionnaire based sample survey of farmers for area/districts mentioned above with a suitable sample size covering all blocks of the respective districts. The sample size may be arrived at, taking in to view the crop density in the concerned block. The contact details of the farmers 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 block/district.
6. Percentage-wise sale/distribution of basmati seeds by different agencies including Govt. sources, private sector for each variety. This information should be contained in report for the month of July.
7. Crop cutting experiment in sample areas for yield estimation.

4. Study Area:

The study area includes total 85 districts of Basmati rice and non-Basmati rice (Sharbati and Sugandha), which includes

- 23 Districts of Punjab,
- 30 Districts of Uttar Pradesh,
- 22 Districts of Haryana,
- 3 Districts of Jammu & Kashmir,
- 4 Districts of Uttarakhand,
- 2 District of Himachal Pradesh and
- District of Delhi.

The map of the entire study area including all districts in the designated States is being given below:

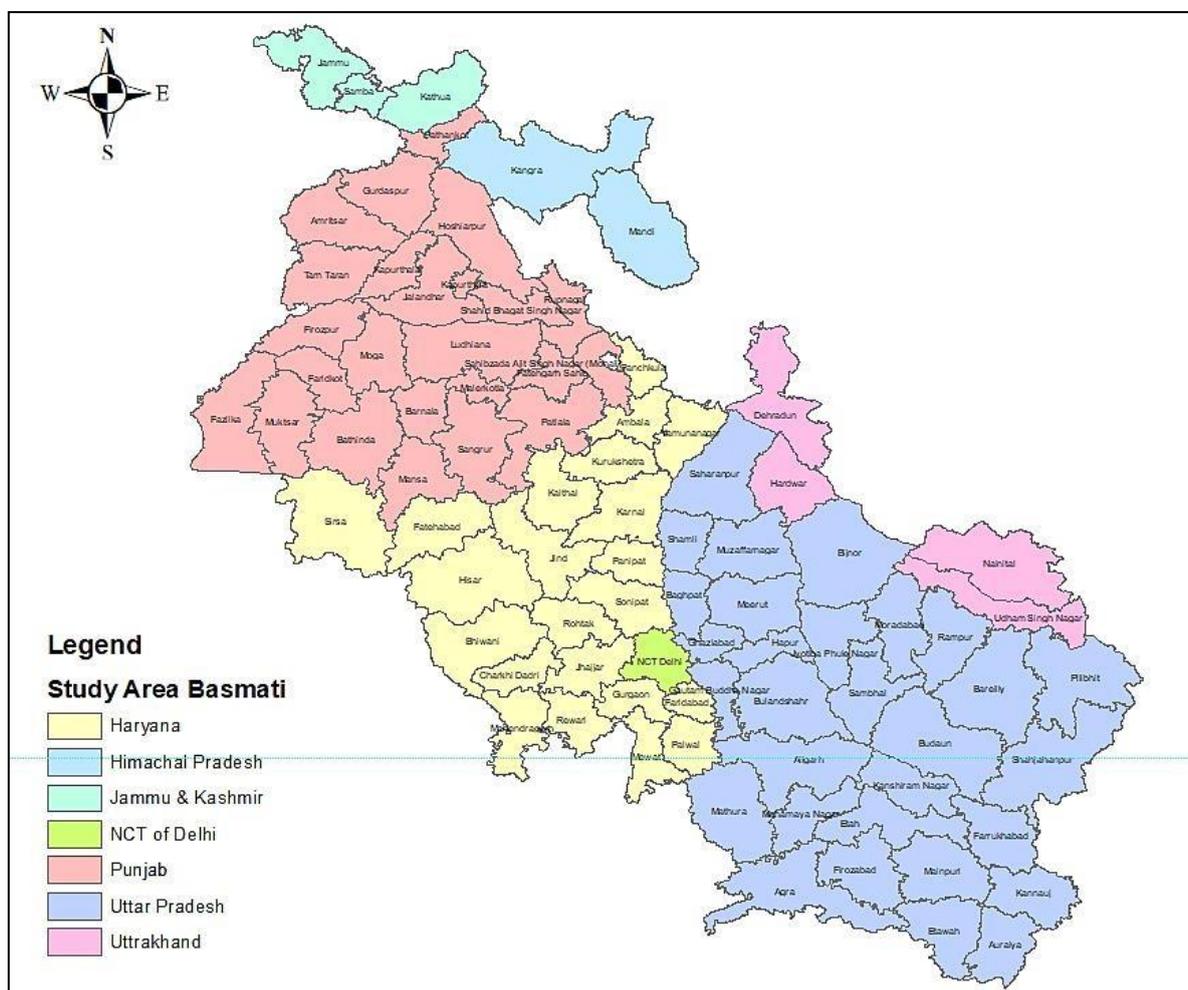


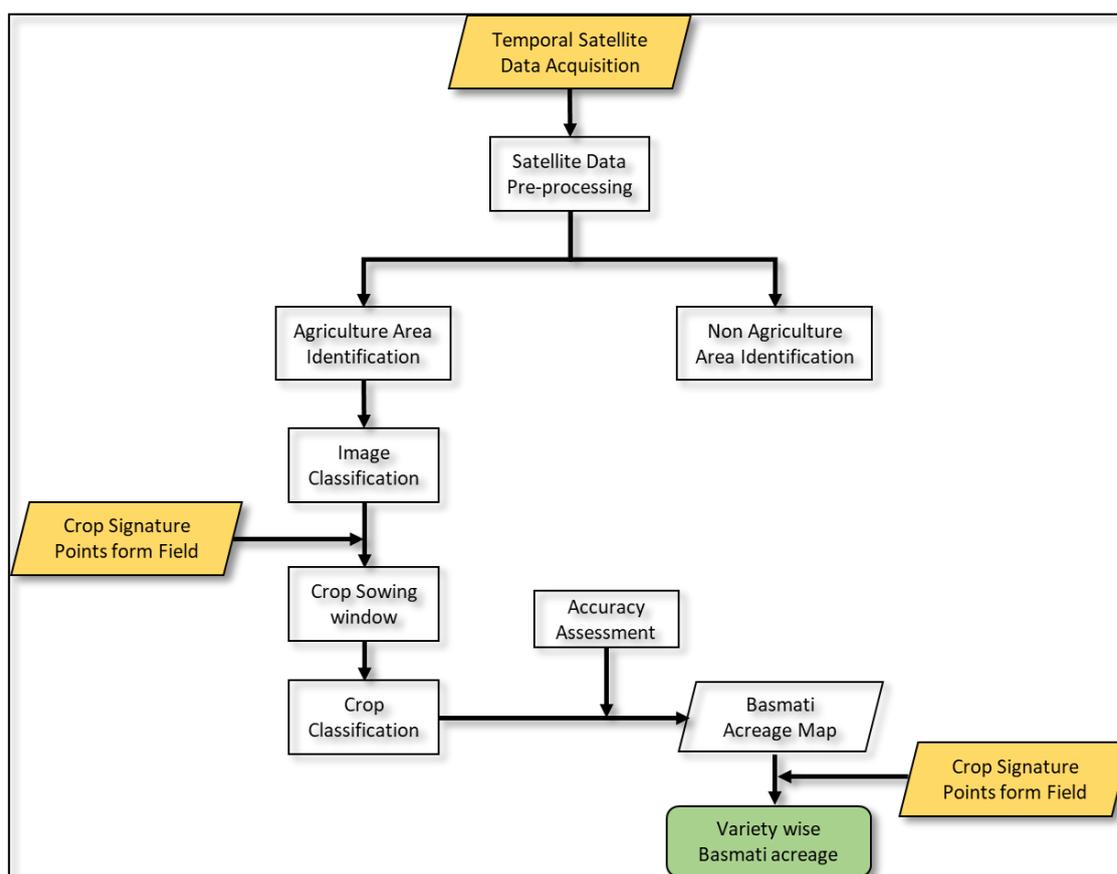
Fig. 7: Project Study area

5. Approach & Methodology:

In order to obtain the best and most accurate results for the current study, data gathered from various sources have been used and appropriately analyzed with the use of appropriate procedures. For the purpose of this study, data from field surveys and outcomes based on remote sensing technology were employed. Extensive app-based field survey was conducted by LeadsConnect in the study area. Using temporal data of sentinel-1 (SAR) and based on GCPs, variety wise details, and other related information such as sowing and harvesting time period Basmati area has been classified. Crop health assessment using NDVI was done for all the study states. Questionnaire based survey was done to get the insight of various information and to draw outcomes on field practices, market insight and future planning.

1. Variety wise Basmati Rice Acreage Estimation:

Remote sensing-based approach supported with field-based survey input is used for current study. The following methodology is used for variety wise Basmati acreage estimation which is depicted in the



process flow given below:

Fig. 8 : Crop classification using remote sensing

The details of the adopted methodology can be summarized as below:

- Temporal data of sentinel-2 (Optical) during the cropping period was used for remote sensing based crop variety acreage estimation. SAR data was also used where optical data was not

available for estimation of varieties.

- Pre-processing of satellite data was performed, and all necessary corrections applied to remove noise in satellite data. FCC was generated using temporal dates for better interpretation.
- Non- agriculture area was removed using latest available optical satellite data.
- To achieve the accuracy of crop classification, a field survey is conducted during 16th September to 26th September 2023 in different districts of Haryana, Punjab and Uttar Pradesh. During field survey, estimation of sowing, GCP point collection for crop signature, field photographs and discussion-based crop condition was assessed. This information was used for the finalization of sowing status in study area.
- Image classification was performed using suitable software and reliable ground truth information to get the area statistics of rice.
- Ancillary data collected from different sources were also used for Basmati area validation.

2. Crop Health Assessment

Crop Health Assessment is done using Normalized Difference Vegetation Index (NDVI) for all the study districts. NDVI measures the greenness and the density of the vegetation captured in a satellite image. NDVI calculated over a crop period can reveal a lot about the changes in their condition. Healthy vegetation has a very characteristic spectral reflectance curve which we can benefit from by calculating the difference between two bands – visible red and near-infrared. NDVI can be derived from satellite imagery and calculated in accordance with the formula:

$$NDVI = (NIR - Red) / (NIR + Red)$$

Where:

- NIR – light reflected in the near-infrared spectrum
- RED – light reflected in the red range of the spectrum

NDVI is that difference expressed as a number – ranging from -1 to 1. In most cases, NDVI values between 0.2 and 0.4 correspond to areas with sparse vegetation; moderate vegetation tends to vary between 0.4 and 0.6; anything above 0.6 indicates the highest possible density of green leaves.

For current study crop health assessment is done for all the study districts using MODIS NDVI product (250m). Current year's NDVI is compared with last year's NDVI .

- Punjab

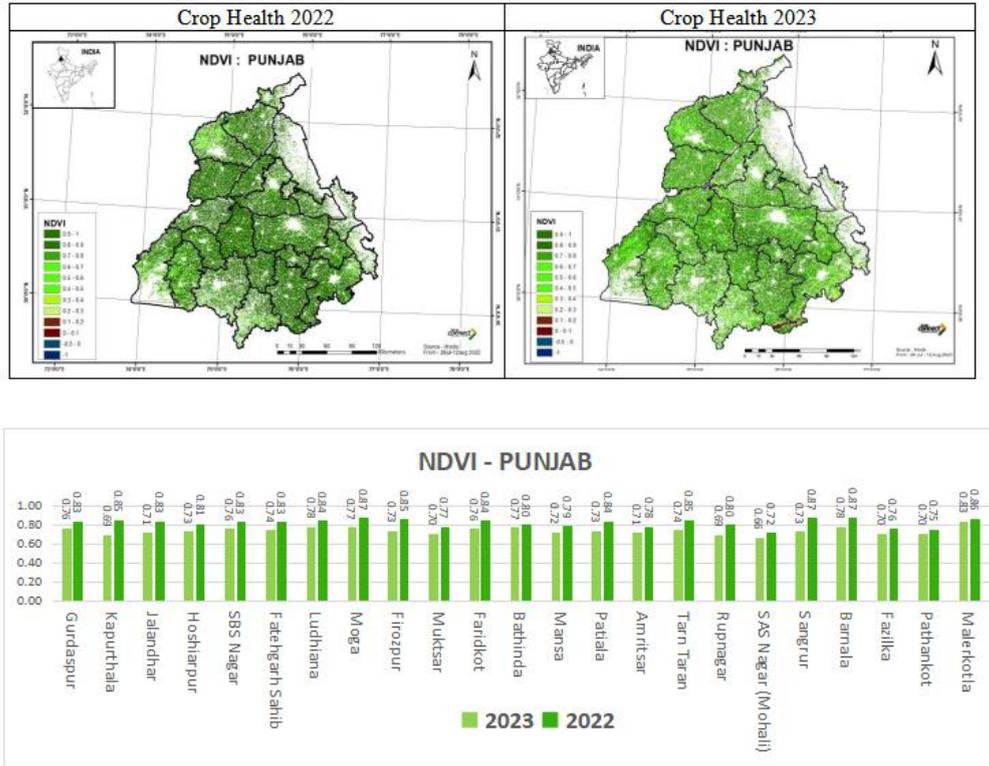


Fig. 9 : Crop health detail, Punjab

- Haryana

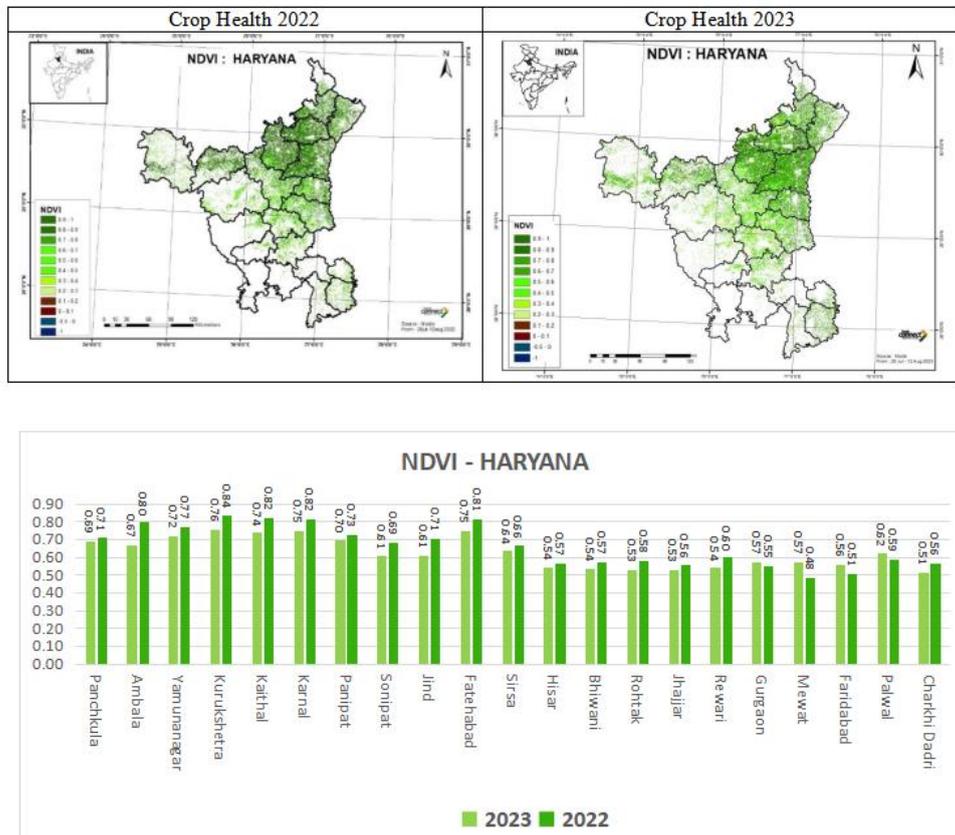


Fig. 10 : Crop health detail, Haryana

- Uttar Pradesh

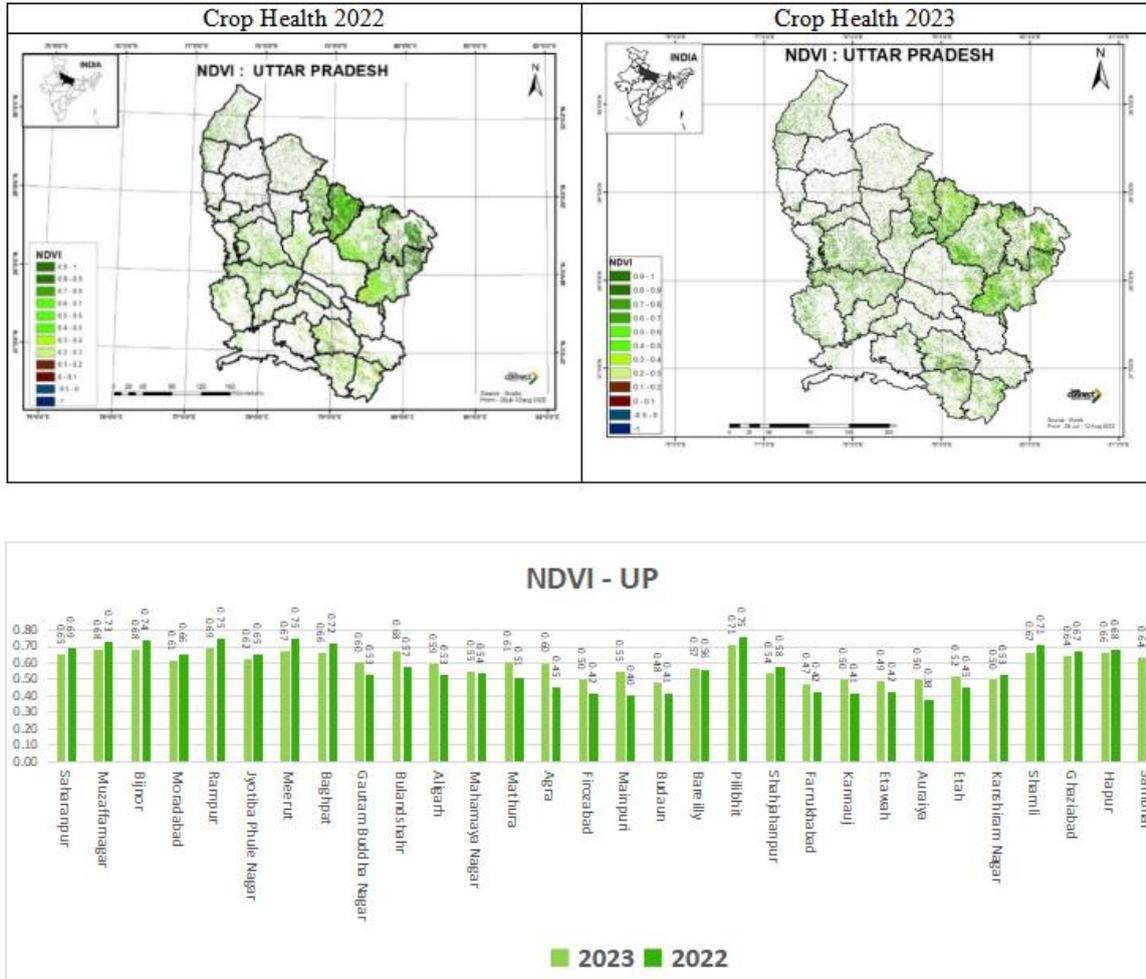


Fig. 11 : Crop health detail, Uttar pradesh

3. Questionnaire Based survey:

Questionnaire Based survey:

A questionnaire-based survey was conducted for the present study in order to gain insight into a variety of data. In order to get conclusions on field practices, market intelligence, and future planning, an evaluation was conducted. Annexure-1 has a sample questionnaire. Here are a few of the key data points gathered from the survey.

1. **Farmer's personal information:** Name, area owned by farmer, soil type, source of irrigation.
2. **Cropping Pattern:** Last year and current year crops grown, Basmati varieties grown and their area.
3. **Planting & harvesting:** Seed source and quantity used per acre (variety-wise), Sowing and Harvesting Period.
4. **Marketing:** variety wise production, selling information, channel used for selling, rate of selling. (for last year & Current year).
5. Weed controlling method used last year and current year.
6. **Manure & fertilizer:** Inorganic fertilizer, organic fertilizer, green manure used last year and current year.
7. **Pests & Disease Management:** Pest & insects attack details, control measures taken, preventive measures taken. Plant disease occurred, stage, extent of damage, control measures, preventive measures taken.
8. **General Information:** Basis of selection of variety, technical advancement if any, Total cost, yield, price, profit details (for Last year & current year).

Farmer's Suggestions: Farmer's plan to increase yield, support needed from government and from private parties.

All of the Basmati states were included in the study conducted above using questionnaires. From each of these states where basmati is grown, a random selection of farmers was made.

Sources of Irrigation:

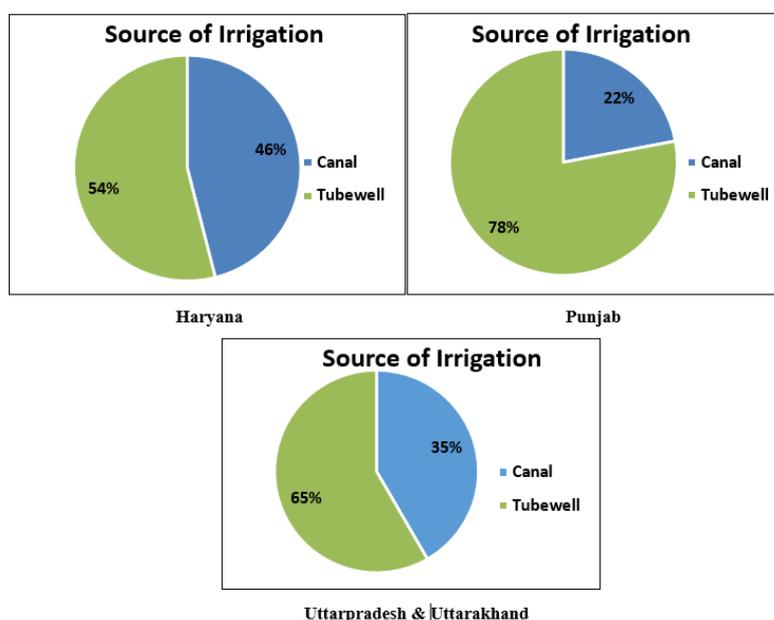


Fig. 12 : Source of Irrigation

Seed Sources:

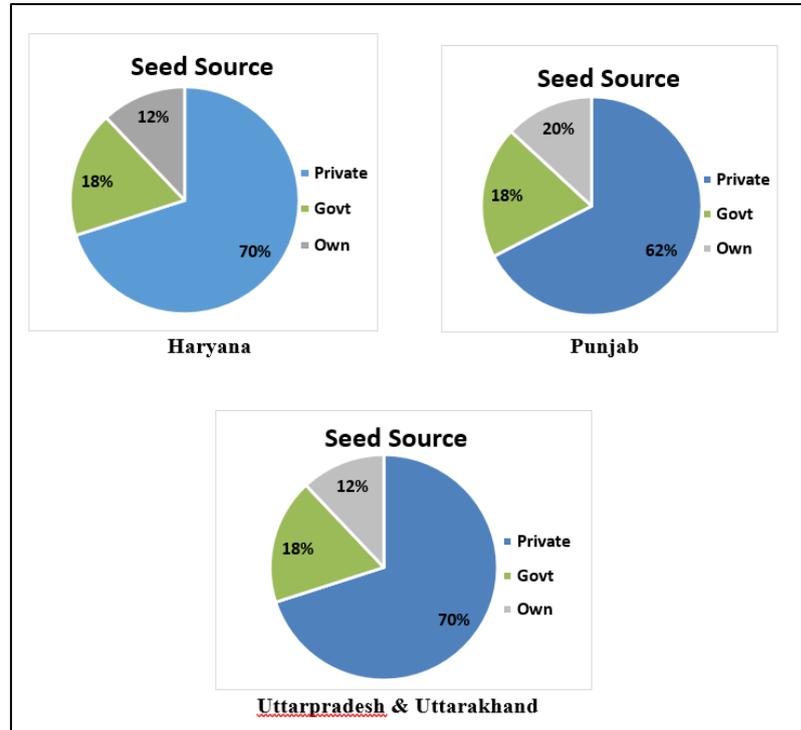


Fig. 13 : Seed Sources

Harvesting Method:

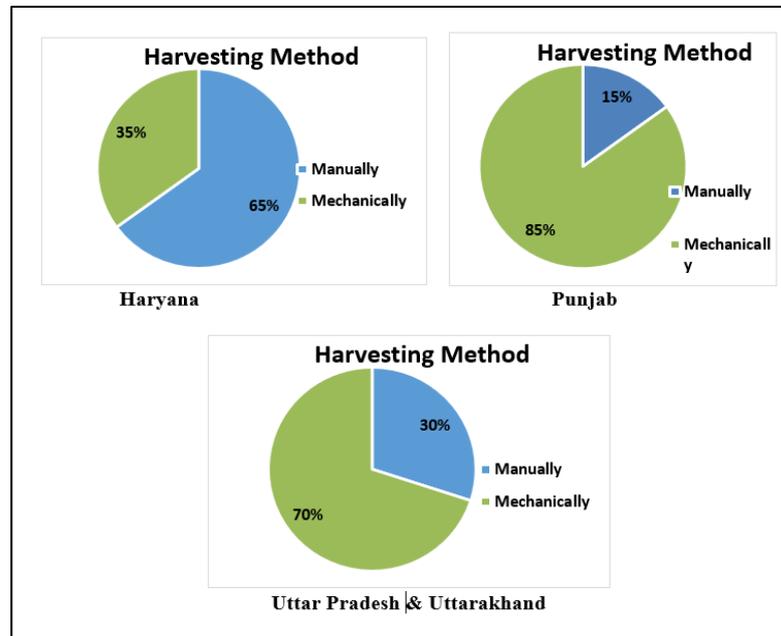


Fig. 14 : Harvesting Method

Sowing and Transplanting Details:

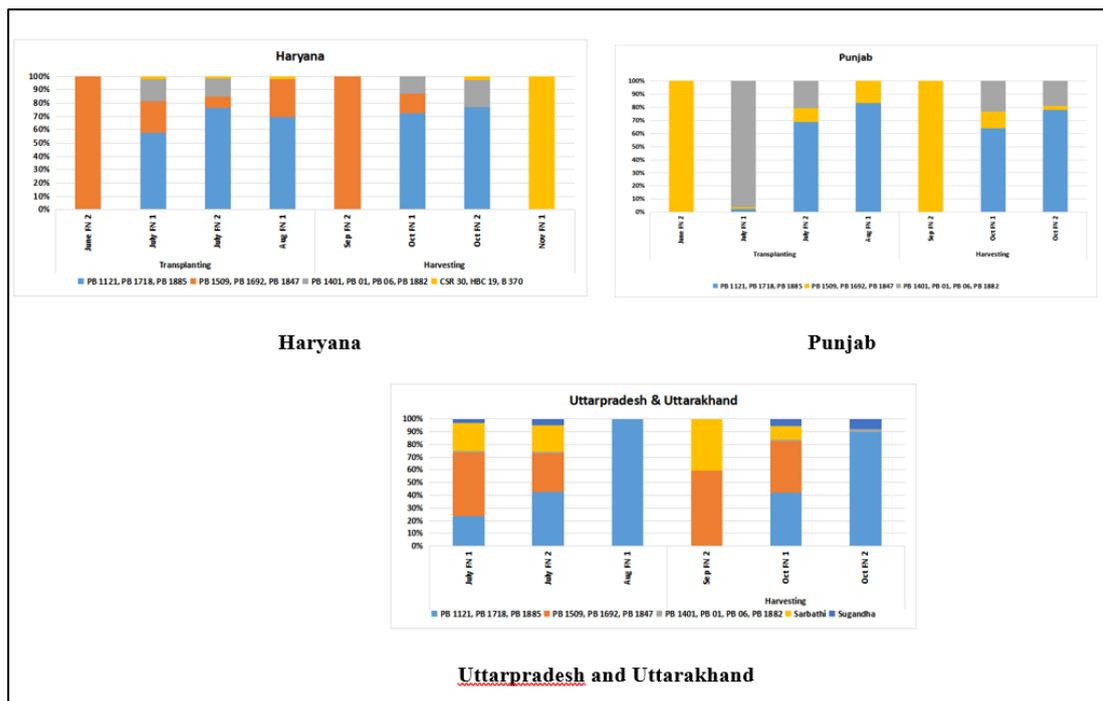


Fig. 15: Sowing and transplanting

4. Field Survey:

For Field based Basmati acreage and production estimation third field visits were done from July - October covering majority of the districts in study area of Punjab, Haryana, Uttarakhand, Jammu & Kashmir and Uttar Pradesh. During the field visit it is observed that major transplanting of Basmati varieties was done between 1st fortnight of July to 1st week of August. During the survey it was observed that the major sown Basmati varieties in the study area are (PB1121, PB1718, PB1885), (PB1509, PB1692, PB1847), and (PB1401, PB01, PB06). Sugandha variety was observed in Aligarh, Kasganj and Sharbati variety majorly observed in Moradabad and Bijnor districts of Uttar Pradesh. Varieties (CSR 30, B370, HBC19) are mostly sown in J&K and Haryana. During the field visit, a few traditional old varieties of Basmati are also observed specially in Muktsar and Malarkot.

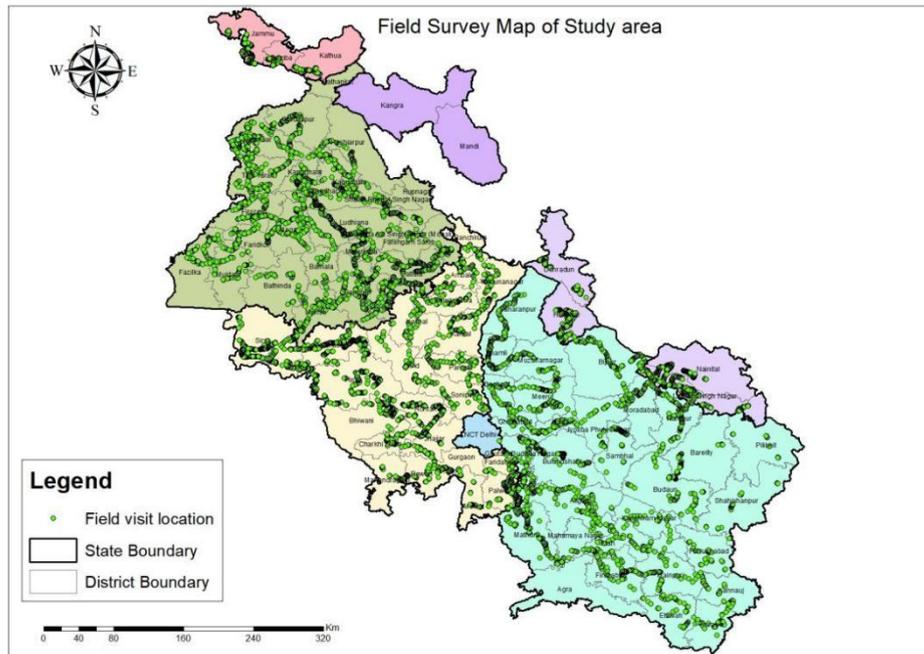


Fig. 16 : Ground Truth distribution in the study districts.

6. Results:

- Haryana:**

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)										
Districts	Basmati Acreage ('000' ha)	Total Production	PB 1121, PB 1718, PB 1885		PB 1509, PB 1692, PB 1847		PB 1401, PB 01, PB 06, PB 1882		CSR 30, B 370, HBC 19	
			Acreage	Prod.	Acreage	Prod.	Acreage	Prod.	Acreage	Prod.
Ambala	13.59	67.49	8.88	40.32	4.71	27.17				
Bhiwani	21.73	89.96	21.73	89.96						
Charkhi Dadri	7.13	31.74	5.94	26.37	1.19	5.37				
Faridabad	9.02	40.32	3.53	14.65	5.49	25.67				
Fatehabad	13.67	68.62	1.38	6.57	7.48	36.27	4.81	25.78		
Gurgaon	3.32	14.92	1.73	7.66	1.59	7.26				
Hisar	67.23	309.82	47.95	220.57	15.74	77.43	3.54	11.82		
Jhajjar	46.78	207.28	41.11	183.76	5.67	23.52				
Jind	100.66	450.04	71.04	326.07	14.38	70.49	15.24	53.48		
Kaithal	58.61	283.26	28.77	130.33	26.57	134.76	3.27	18.17		
Karnal	75.64	374.14	34.33	169.93	21.92	113.13	14.24	70.59	5.15	20.49
Kurukshetra	44.56	216.36	28.67	138.76	9.46	48.31	3.76	19.35	2.67	9.94
Mewat	5.16	22.67	3.86	16.68	1.3	5.99				
Palwal	22.24	98.8	12.34	53.43	9.9	45.37				
Panchkula	0.30	0.98							0.3	0.98
Panipat	63.92	307.76	37.46	179.06	17.72	89.17	5.15	25.75	3.59	13.78
Rewari	3.90	16.03	3.22	13.49	0.68	2.54				
Rohtak	67.96	286.04	52.43	223.35	15.53	62.69				
Sirsa	75.91	393.21	28.32	136.50	8.36	44.83	39.23	211.88		
Sonipat	80.88	374.95	43.26	199.43	25.91	122.50	9.76	46.74	1.95	6.28
Yamunanagar	5.39	24.14	0.78	3.19	2.93	13.17	1.68	7.78		
Grand Total	787.60	3678.53	476.73	2180.08	196.53	955.64	100.68	491.34	13.66	51.47

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

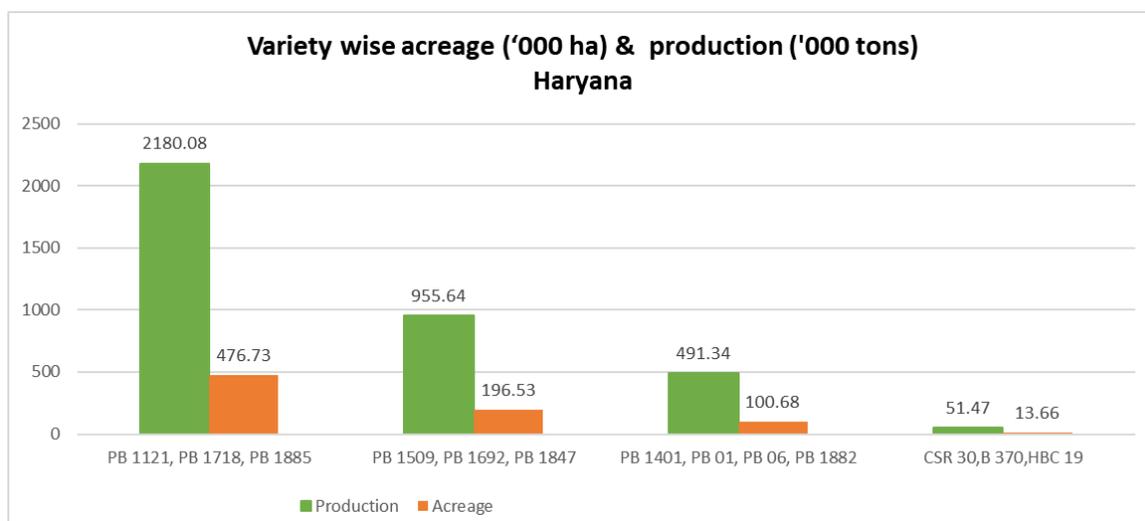


Fig. 17: Production and Acreage, Haryana

Total Basmati production in Haryana is estimated at 3678.53 thousand tons. Major sown varieties in Haryana are 1121, 1718, 1509, 1692 and 1401.

Marketing of Basmati Rice:

The price of paddy varies due to the percentage of moisture in the grain and other quality parameters. During the current year a variety-wise selling rate was analyzed & it shows that the selling rate of PB-1121/PB1718 is INR 4200-4500/- per Quintal which is higher side as compared to last year. Harvesting techniques also play an important role in the rate of selling. The rate of manually harvested Basmati is Rs200-300/- higher than mechanically harvested varieties. Selling rate of PB-1509 is 3200-3500/- per Quintal. PB-1401/PB01 is priced at around 3700-4400/- per Quintal.

Haryana is a high productivity area and farmers are highly adaptive to new technology. Cost of cultivation is very high due to input cost and farmers use all means to get higher productivity. Cost of cultivation in case of PB-1121/PB1718 is up to 22,000-25,000/- per Acre. For PB-1509 it has been Rs. 20,000-23,000/- per Acre. The market price of Basmati varieties during the current year has been very high than the previous year. Hence, net profit has been more than expected by the farmers.

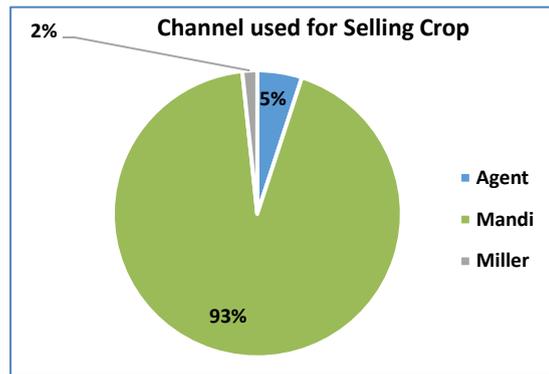


Fig. 18 : Channel used for Selling Crop

Pests & Disease Control:

The rice stem borer, leaf folder, plant hoppers, and rice hispa are the main insect pests. This year, at the vegetative stage, neck blast illness was observed in PB-1121, PB-1718, 1692, and PB-1509. In certain regions, fungus diseases and yellow leaves were also observed three to six weeks after the crop was planted. Noted damage, however, is under ETL. Farmers must apply pesticides for Basmati rice, and they have to use fungicides for fungi. Because PB-1718 is more susceptible to illness than PB-1121, farmers are choosing it instead. Farmers typically use granular Cartap Hydrochloride, Fipronil, or Monocrotophos or Chlorpyrifos for spraying. The four main diseases are Blast, Foot-Rot, Sheath Blight, and Bacterial Leaf Blight (BLB). Pusa Basmati-1121 has a higher risk of developing Foot Rot (bakanae). The weather in Basmati, namely the temperature, determines BLB. Farmers use 500 ml/ha of Tilt for various diseases. Emisan6 and streptocycline seed therapy is the sole preventative measure against foot-rot and Bakane disease.

• **Punjab:**

Note:

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)								
Districts	Basmati Acreage ('000' ha)	Total Production	PB 1121, PB 1718, PB 1885		PB 1509, PB 1692, PB 1847		PB 1401, PB01, PB06	
			Area	Prod.	Area	Prod.	Area	Prod.
Amritsar	131.84	646.4	58.72	282.26	65.87	329.22	7.25	34.92
Barnala	20.5	90.77	16.33	69.95	2.34	11.60	1.83	9.22
Bathinda	14.46	69.13	1.39	5.89	7.19	34.63	5.88	28.61
Faridkot	37.56	178.48	19.82	91.17	3.89	21.59	13.85	65.72
Fatehgarh Sahib	15.28	75.8	6.57	30.44	4.29	21.75	4.42	23.61
Fazilka	68.84	329.87	37.53	175.08	2.45	13.11	28.86	141.68
Firozpur	56.82	271.2	47.82	224.13	6.23	32.24	2.77	14.83
Gurdaspur	37.28	157.27	35.59	148.97	1.69	8.30		
Hoshiarpur	12.27	56.74	9.44	41.57	2.83	15.17		
Jalandhar	21.28	96.42	15.34	66.72	5.94	29.70		
Kapurthala	20.87	91.74	17.23	73.43	3.64	18.31		
Ludhiana	38.84	182.76	22.38	102.21	14.29	70.84	2.17	9.71
Malerkotla	10.93	49.51	8.45	37.58	2.48	11.93		
Mansa	36.06	167.29	13.65	59.81	6.74	32.95	15.67	74.53
Moga	12.32	51.91	2.61	11.10	2.75	13.59	6.96	27.22
Muktsar	55.73	282.78	27.72	134.46	2.16	11.04	25.85	137.28
Pathankot	3.8	16.27	2.27	9.28	1.53	6.99		
Patiala	35.46	176.02	14.70	66.82	11.39	60.36	9.37	48.84
Rupnagar	6.69	32.38	3.56	16.45	0.78	4.04	2.35	11.89
SAS Nagar (Mohali)	11.25	52.05	6.39	28.77	2.92	13.47	1.94	9.81
Sangrur	60.16	277.26	31.33	132.84	16.54	84.65	12.29	59.77
Shahid Bhagat Singh Nagar	11.65	57.56	6.48	29.67	5.17	27.89		
Tarn Taran	92.5	433.8	72.07	324.44	17.52	94.36	2.91	15.00
Grand Total	812.39	3843.41	477.39	2163.04	190.63	967.73	144.37	712.64

• Total Production Figures does not include Sharbati & Sugandha Production.

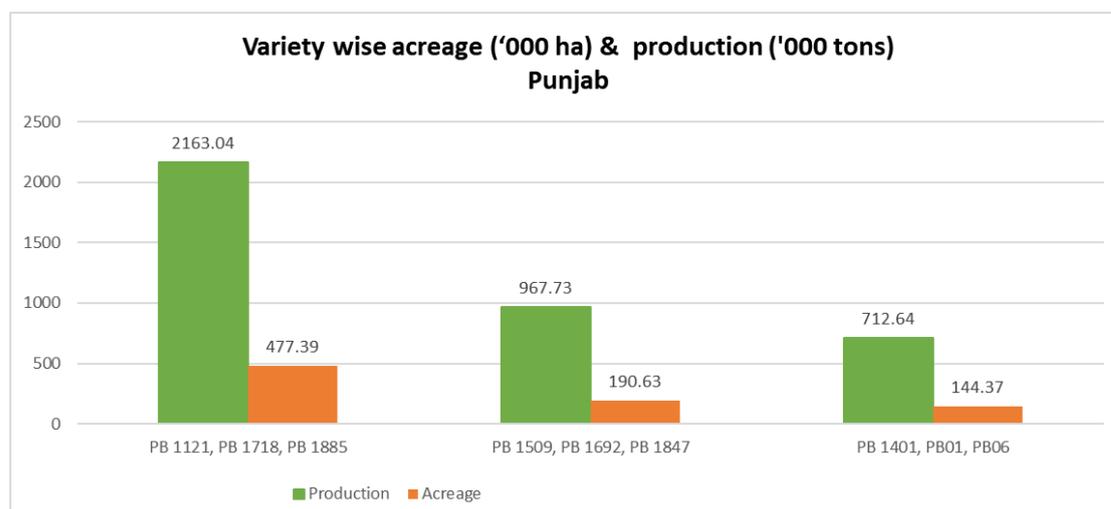


Fig. 19: Production and Acreage, Punjab

In Punjab total Basmati production is estimated at 3843.41 thousand tons. Major sown varieties in Punjab are 1121, 1718, 1509, 1692 and 1401.

Marketing of Basmati Rice:

Due to Punjab's well-established marketing infrastructure, harvested product is either delivered to market the day after or on the same day as threshing. Five to ten percent of farmers store their product for a month or more in the hopes of seeing a price increase. In the market yard, paddy is cleaned by a commission agent who then offers it for public auction the same day, collecting commission from both farmers and traders. The price that is being offered is influenced by the moisture content % of the grain and other quality variables.

This year, the market prices for PB-1121/PB1718 Rs. 4100-4500 per quintal, respectively. PB-1509 has been available for between Rs. 3300 and Rs. 3600. On the other hand, Basmati-1401 cost between 3800 and 4300 rupees.

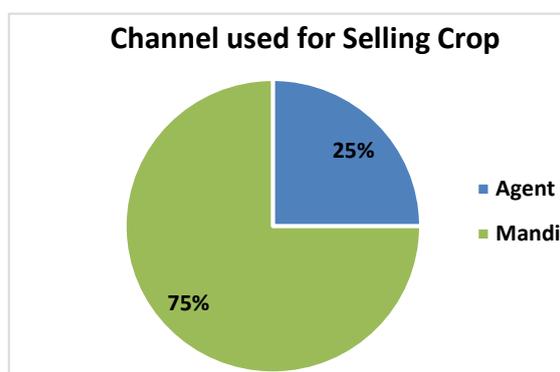


Fig.20 : Channel used for Selling Crop

Pests & Disease Control:

Significant pests are leaf folder insects. The Leaf Folder launched attacks in September. Farmers usually sprayed 1-2 sprays of Monocrotophos 36 SL/Chlorpyriphos 20 EC or applied 1-2 applications of granular Cartap Hydrochloride 4 Gr, Fipronil, etc.

In one or two sprayings, farmers treat Black Hopper, Fungus, Blast, and Pata lapait sundi with Syngenta Tilt 25EC @ 500 ml/ha. Foot-Root is managed by treating seeds with streptocycline and the fungicide Bavistin. Crops worldwide can be harmed by pests and diseases. Many pests have detrimental effects on agricultural crop yield. Overuse of pesticides in agriculture has several detrimental effects, such as higher plant residue levels, insect resistance, and pollution of the land, water, and air.

- Uttar Pradesh:**

In Uttar Pradesh total Basmati production is estimated at 2049.69 thousand tons. Major sown varieties are 1121, 1718 and 1509. Sharbati and Sugandha are major non-Basmati varieties sown in Uttar Pradesh.

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)								
Districts	Basmati Acreage ('000' ha)	Total Production ('000 tons)	PB 1121, PB 1718, PB 1885		PB 1509, PB 1692, PB 1847		PB 1401, PB 01, PB 06, PB 1882	
			Area	Prod.	Area	Prod.		Prod
Agra	1.69	6.27	1.69	6.27				
Aligarh	52.62	242.45	38.63	171.52	13.99	70.9343364		
Auraiya	10.02	41.95	4.7	16.69	5.32	25.2648928		
Baghpat	6.48	33.34	2.37	11.55	4.11	21.787932		
Bareilly	10.33	45.51	4.18	17.45	6.15	28.0563		
Bijnor	5.14	21.97	1.32	5.51	2.24	9.9596672	1.58	6.50
Budaun	12.23	49.26			12.23	49.2565696		
Bulandshahr	71.27	313.62	27.85	124.89	43.42	188.7258984		
Etah	16.13	72.99	11.45	51.60	4.68	21.389472		
Etawah	20.03	83.20	4.65	17.60	15.38	65.6006216		
Farrukhabad	9.88	39.21	4.15	15.39	5.73	23.8221312		
Firozabad	11.42	47.16	7.9	31.66	3.52	15.495744		
Gautam Buddha Nagar	17.85	88.26	13.46	67.38	4.39	20.87884		
Ghaziabad	12.29	62.64	7.12	35.17	5.17	27.4731732		
Hapur	15.22	75.36	5.85	27.66	9.37	47.7049188		
Jyotiba Phule Nagar	2.58	9.81	1.25	4.04	1.33	5.7747004		
Kannauj	6.26	22.69	4.73	16.70	1.53	5.9881752		
Kanshiram Nagar	8.18	33.01	5.62	23.39	2.56	9.621504		
Mahamaya Nagar	18.65	81.15	5.2	21.99	13.45	59.162784		
Mainpuri	40.14	159.52	22.27	84.54	17.87	74.9775164		
Mathura	33.19	160.42	5.6	25.55	27.59	134.8665416		
Meerut	9.47	44.95	6.61	31.04	2.37	12.3384096	0.49	1.57
Moradabad	2.44	11.05			2.44	11.0498816		
Muzaffarnagar	3.94	15.95	0.88	2.47	1.77	8.3421516	1.29	5.14
Pilibhit	10.01	44.98	1.89	7.87	8.12	37.111648		
Rampur	5.26	24.58	1.13	5.17	4.13	19.4075308		
Saharanpur	12.7	49.23	2.76	8.18	6.95	29.595602	2.99	11.45
Sambhal	7.61	33.98			7.61	33.9774324		
Shahjahanpur	14.69	64.57	8.59	37.19	6.1	27.38412		
Shamli	14.02	70.61	5.44	25.78	8.58	44.8274112		
Grand Total	461.74	2049.69	207.29	894.23	248.10	1130.78	6.35	24.67

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

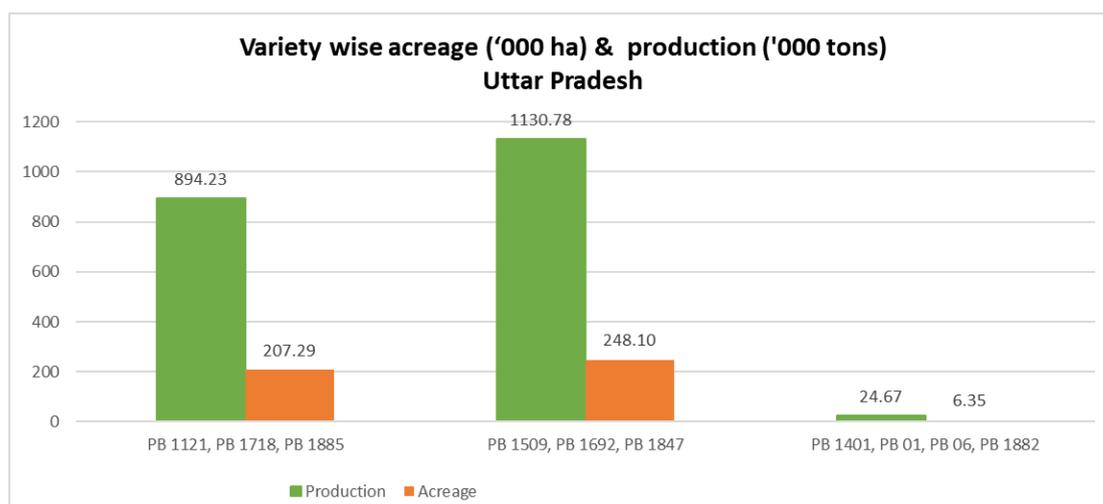


Fig. 20: Production and Acreage, Uttar Pradesh

Marketing of Basmati Rice:

Most of the farmers sell their produce after harvest in nearby primary or secondary markets, agents and 'Mandis'. The market rates of different varieties of Basmati, evolved varieties and Sharbati vary from market to market. However, on an average the market price of the varieties studied in the project during as follows: PB-1121/PB1718 is INR 3900-4300/- per Quintal. Selling rate of PB-1509/PB1692 is 3150-3400/- per Quintal. Sharbati is 2200-2800/- per Quintal. Cost of cultivation is very high due to input cost and farmers use all means to get higher productivity. Average cost of cultivation in case of PB-1121/1718 is up to 21,000-23,000/- per Acre. For PB-1509 it has been Rs. 20,000-23,000/- per Acre. .

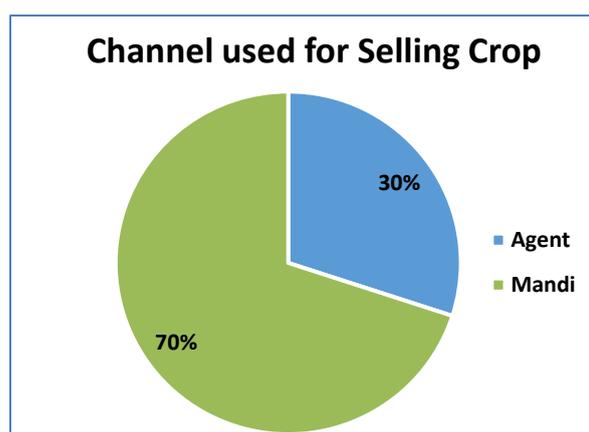


Fig. 21 : Channel used for Selling Crop

Pests & Disease Control:

There is a tendency in the Upper Midwest where a large number of farmers use pesticides based on dealer recommendations. The rice stem borer, leaf folder, brown plant hopper, and gundhi bug are the main insect pests.

The three main illnesses are Blast, Sheath Blight, and Bacterial Leaf Blight (BLB). This year, the main causes of illness occurrence in Uttar Pradesh's Basmati rice are White Fungus and Neck. Unexpected rain in October

damaged a few Uttar Pradesh districts and could have had an impact on output in other places.

Some regions have seen a prolonged dry period in August and late rains in October, which has hampered the quality and development of seed during the first week.

- **Jammu & Kashmir:**

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)						
Districts	Basmati Acreage ('000' ha)	Total Production	PB 1121, PB 1718, PB 1885		CSR 30, HBC 19, B 370	
			Area	Production	Area	Production
Jammu	35.66	125.42			35.66	125.42
Kathua	6.42	22.77	4.76	17.18	1.66	5.59
Samba	4.53	15.71			4.53	15.71
Grand Total	46.61	163.9	4.76	17.18	41.85	146.71

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

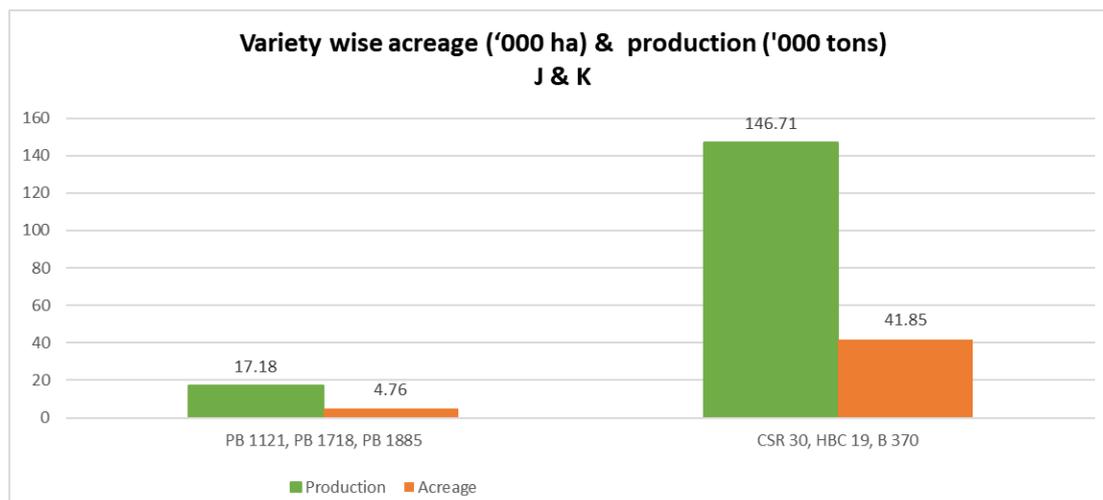


Fig. 22: Production and Acreage, J&K

In Jammu & Kashmir total Basmati production is estimated at 163.9 thousand tons. Major sown Basmati varieties in Jammu & Kashmir are 1121, 1718 and Basmati 370. Sharbati is the major non-Basmati varieties sown in Jammu & Kashmir.

• **Uttarakhand:**

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)								
Districts	Basmati Acreage ('000 ha)	Total Production	PB 1121, PB 1718, PB 1885		PB 1509, PB 1692, PB 1847		CSR 30, HBC 19, B 370	
			Area	Production	Area	Production	Area	Production
Dehradun	2.15	8.82			1.67	7.44	0.48	1.38
Hardwar	3.65	14.27	2.66	10.16	0.99	4.11		
Nainital	2.97	11.57	2.22	9.10			0.75	2.47
Udham Singh Nagar	10.63	44.92	7.83	32.49	2.80	12.43		
Grand Total	19.40	79.58	12.71	51.76	5.46	23.98	1.23	3.86

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

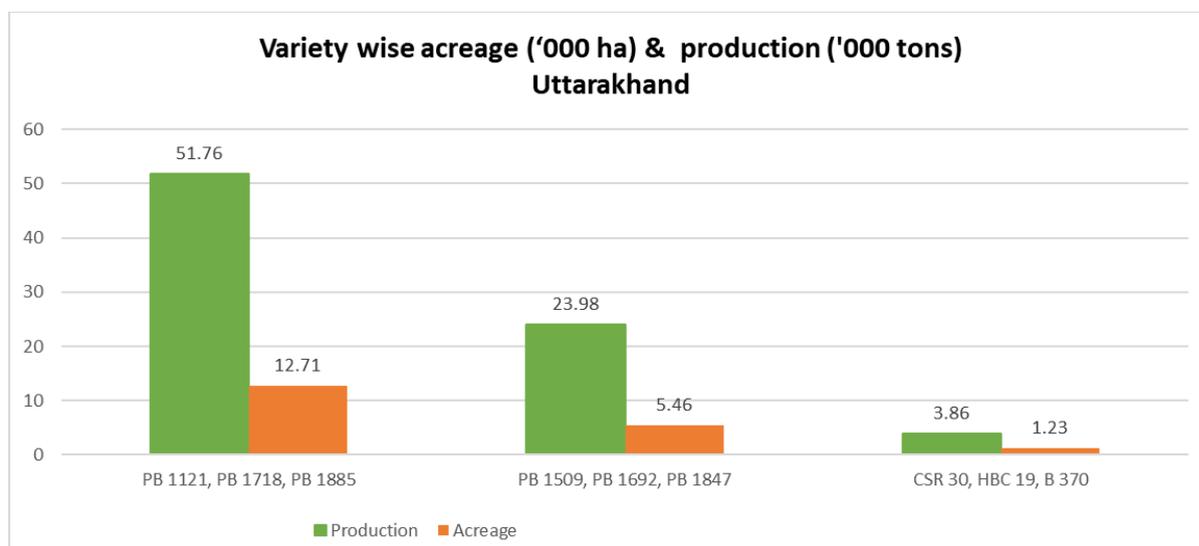


Fig. 23: Production and Acreage, Uttarakhand

In Uttarakhand total Basmati production is estimated at 79.58 thousand tons. Major sown varieties in Uttarakhand are 1121, 1718, CSR30 and 1509. Sharbati is the major non-Basmati varieties sown in Uttarakhand.

- Himachal Pradesh:**

Satellite data and Field-based Basmati varieties Area ('000 ha) and Production Details (in '000 tons)						
Districts	Basmati Acreage (000' ha)	Total Production	PB 1509, PB 1692, PB 1847		CSR 30, HBC 19, B 370	
			Area	Production	Area	Production
Kangra	3.97	14.3	2.72	10.36	1.25	3.94
Mandi	3.65	16.34	3.65	16.34		
Grand Total	7.62	30.64	6.37	26.70	1.25	3.94

Note:

- Total Production Figures does not include Sharbati & Sugandha Production.

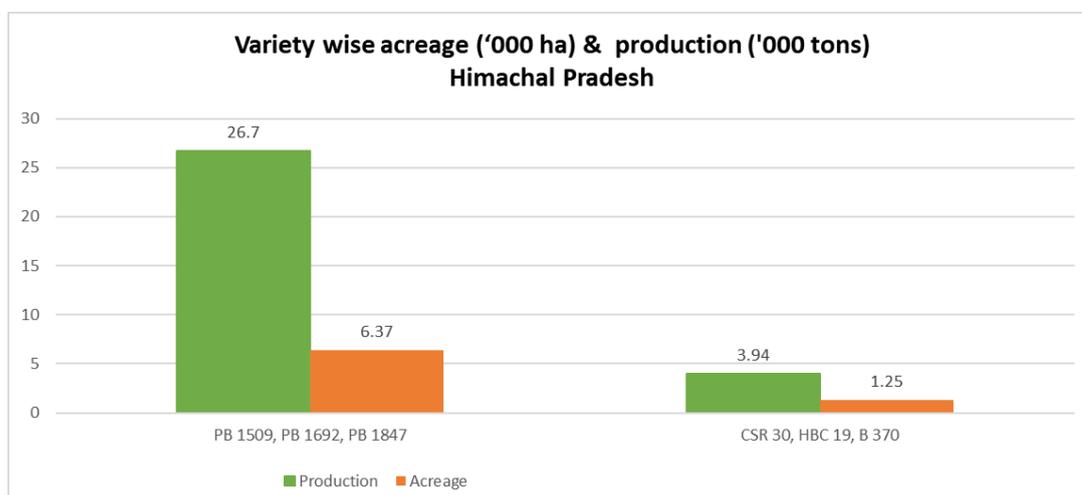


Fig. 24: Production and Acreage, Himachal Pradesh

In Himachal Pradesh total Basmati production is estimated at 30.64 thousand tons. Major sown varieties in Himachal Pradesh are CSR30, Basmati 370 and 1509.

7. Non-Basmati varieties Acreage & Production Details-2023:

Satellite Data and Field-based Non-Basmati Rice Varieties Area Details (Area in '000 ha, Production ('000 tons)						
States	Total Acreage	Total Production	Sharbati		Sugandha	
			Acreage	Production	Acreage	Production
Haryana	5.35	22.86	5.35	22.86		
Uttar Pradesh	151.64	577.33	128.04	486.19	23.60	91.14
Jammu Kashmir	14.81	60.59	14.81	60.59		
Uttarakhand	11.78	47.33	11.78	47.33		
Grand Total	183.58	708.11	159.98	616.97	23.60	91.14

Note: The figures are for only non-Basmati varieties like Sharbati and Sugandha Area

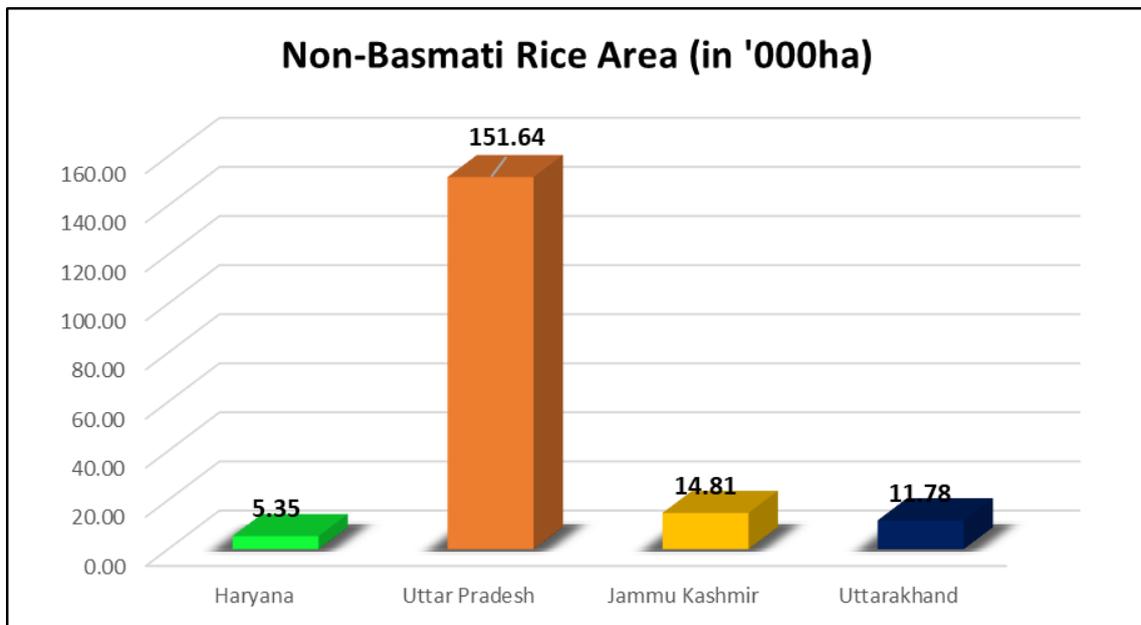


Fig. 25: Non-Basmati Area Details

8. Schedule wise Report Status:

The present report is the sixth volume of reports to be delivered. This report covers the whole scenario about the current study i.e., field-based crop survey for estimation/assessment of acreage, crop health and expected production of Basmati Rice during Kharif-2023. The status of Schedule wise report status is being given for the reference below.

Report Schedule				
S. No.	Report	Report Content	Submission Date	Status
1	1 st Report	District wise total rice area (Basmati + Rice) Basmati seed sale distribution (in percent)	30th July 2023	Submitted
2	2 nd Report	Basmati rice acreage and health monitoring	31st August 2023	Submitted
3	3 rd Report	Basmati rice acreage estimation (Variety wise evolved Sharbati and Sugandha)	30th September 2023	Submitted
4	4 th Report	Climate based Basmati rice yield model and production	31st October 2023	Submitted
5	5 th Report	Questionnaire based farmer survey report of Basmati rice	01 December 2023	Submitted
6	6 th Report	Final Report (All statistics and maps)	31st December 2023	Submitted

Note: The green highlighted row shows report is submitted.

Annexure -1:

G.B Nagar

Basmati Crop Survey

Present Location (Lat/Long) ... 28.190981, 77.574229

Name: -	Ram Anwar
Phone no: -	7055 570089
Village: -	Dayanat Pur
Soil: -	Alluvial soils / Black Soils / <input checked="" type="checkbox"/> Clay soil / Sandy Soil / Other
Irrigation Mode: -	Pump / <input checked="" type="checkbox"/> Canal / River

Variety and area: Current Year: (i) Sowing ^{17/10 -> 10/11/21} ~~11/21 - 20/11/21~~ (ii) Plantation ^{13 July} ~~20 June~~ (iii) Harvesting ^{First week Nov}

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
Pusa Basmati - 1121	80%	10 kg	8-10 man	Mandi	DAP	3500	100%	-
Pusa Basmati - 1718	70%	10 kg	8-10 man	"	NPK	3500-3800	100%	-
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Government/Mandi/ Market Details: ^{Rabupura} ~~Jewar~~ ^{Haryana} Harvesting Instrument: ^{Hand} Cost(Acr):-

Variety and area: Last Year:

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
80-90% Pusa Basmati - 1121	✓	10 kg	4 q/ha	Mandi	DAP	3200-3500	100%	
70% Pusa Basmati - 1718	✓	10 kg	4 q/ha	"	NPK	3200	100%	
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Any Suggestion: -

Surveyor Signature: -

Aligaoh

Basmati Crop Survey

Present Location (Lat/Long) 28.06552, 77.512931

Name: -	shamlal.		
Phone no: -	Na.		
Village: -	gharbasa Aligaoh.		
Soil: -	Alluvial soils	/ Black Soils	/ Clay soil / Sandy Soil / Other
Irrigation Mode: -	Pump	/ Canal	/ River

Variety and area: Current Year: (i) Sowing May (ii) Plantation 10 July (iii) Harvesting Oct 1st Wee

10%
80-90%
40-50%

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847	✓	6 kg	4.2	Mandi	DAP Urea	3600	100%	
Pusa Basmati - 1121	✓	6 kg	3.2	"	"	4200	100%	
Pusa Basmati - 1718	✓	6 kg	3.2	"	"	4200	100%	
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Government/Mandi/Market Details:- Palwal Jattara Harvesting Instrument:- Hand Cost(Acr):-

Variety and area: Last Year:

57%
80-90%
60-70%
1%
1%

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847	✓	6 kg	4.5	Mandi	Urea DAP	3200		
Pusa Basmati - 1121	✓	6 kg	3.5	"	"	3800	100%	
Pusa Basmati - 1718	✓	6 kg	3.5	"	"	3700	100%	
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati	✓	6 kg	3.2	"	"			
Sugandha	✓	6 kg	3.2	"	"			

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Any Suggestion: -

Surveyor Signature: -

J. Phule Nagar

Point-167

Basmati Crop Survey

Present Location (Lat/Long) 28.692636, 78.390907

Name: -	Hazi Bande
Phone no: -	9690154382
Village: -	Dhakkra
Soil: -	Alluvial soils / Black Soils <input checked="" type="checkbox"/> Clay soil <input checked="" type="checkbox"/> Sandy Soil / Other
Irrigation Mode: -	Tubewell <input checked="" type="checkbox"/> Pump / Canal / River

Variety and area: Current Year: (i) Sowing 10 June (ii) Plantation 15 July (iii) Harvesting 20 Sept

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847	10% M	5kg	3-3.5	Mand	DAP Urea	2600	100%	
Pusa Basmati - 1121					Zinc			
Pusa Basmati - 1718				"				
Pusa Basmati - Basant 1401/PB01/PB06/1886	80%	"	5.9	"	Urea	2500	100%	
Sharbati	"							
Sugandha 6741 Basmati	"	"	5.9	"		2000	100%	

Government/Mandi/ Market Details: Sambhal Harvesting Instrument: Hand Cost(Acr):- 400

Variety and area: Last Year:

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847	10%	5kg	3.9	Mandi	DAP Urea	2200	100%	
Pusa Basmati - 1121					Zinc			
Pusa Basmati - 1718								
Pusa Basmati - Basant 1401/PB01/PB06/1886	80%	"	5.9	"	Urea	2500	100%	
Sharbati 10%			2.59	"		2300	100%	
Sugandha 6741 80%		"	5.9	"		2000	100%	

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Any Suggestion: -

Surveyor Signature: -

Sambhal
Point 25

Basmati Crop Survey

Present Location (Lat/Long) 28.650594, 78.621283

Name: -	<u>Kasmuddin</u>
Phone no: -	<u>NA</u>
Village: -	<u>Mukarrampur</u>
Soil: -	Alluvial soils / Black Soils <input checked="" type="checkbox"/> Wet soil <input checked="" type="checkbox"/> Sandy Soil / Other
Irrigation Mode: -	<u>Tubewell</u> ^{Pump} / Canal / River

Variety and area: Current Year: (i) Sowing 15 June (ii) Plantation 20 July (iii) Harvesting 10 Oct

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
27% Pusa Basmati - 1509/1692/1847	<u>बट न लाना</u>	<u>1</u>						
Pusa Basmati - 1121								
Pusa Basmati - 1718								
50% Pusa Basmati - 4007	<u>PVT</u>		<u>3-4</u>	<u>Mandi</u>		<u>2600</u>	<u>95%</u>	<u>5%</u>
1401/PB01/PB06/1886								
5% Sharbati								
1 no - Sugandha	<u>Basanti PVT</u>		<u>4</u>	<u>4</u>		<u>2600</u>		

Government/Mand / Market Details: Sambhal Harvesting Instrument: Machine Hand Cost(Acr):- 700/bigha
25kg/dhan

Variety and area: Last Year:

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
1-2% Pusa Basmati - 1509/1692/1847	<u>बट न लाना</u>	<u>1</u>						
Pusa Basmati - 1121								
Pusa Basmati - 1718								
40-50% Pusa Basmati - 4007	<u>PVT</u>		<u>4</u>	<u>Mandi</u>	<u>DAP Urea</u>	<u>2600</u>	<u>100%</u>	
1401/PB01/PB06/1886								
90% Sharbati								
Sugandha	<u>Basanti PVT</u>		<u>4.5</u>	<u>4</u>		<u>2600</u>	<u>100%</u>	

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Any Suggestion: -

market rate had 50 aur 31 aur 31
aur 31

Surveyor Signature: -

majorly
sown

Basmati Crop Survey

Present Location (Lat/Long)

Name: -	Kansarajet Singh.		
Phone no: -	94782 09693		
Village: -	Udeksaran, Sri Mataksa Sahib.		
Soil: -	Alluvial soils / Black Soils / Clay soil / Sandy Soil / Other		
Irrigation Mode: -	Pump / Canal / River		

Variety and area: Current Year: (i) Sowing.....1 July..... (ii) Plantation 25 July..... (iii) Harvesting...10 October

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Total 23 kila	1885 1 July Sowing							
Basmati - CSR30/HBC19/370	Own Seed	4 kg.						
5 kila Pusa Basmati - 1509/1692/1847	"	"			Urea-2 bag DAP-0.5 bag			
7 kila Pusa Basmati - 1121	"	"			Zinc 2 bag			
11 kila Pusa Basmati - 1718	"	"	1 July Sowing to 25 August					
Pusa Basmati - 1885	"	"						
1401/PB01/PB06/1886	"	"						
Sharbati								
Sugandha								

0.5 Basmati 386
acre
Government/Mandi/ Market Details:- " sowing 1 July to 10 August ->
Harvesting Instrument:- Combine Cost(Acr): 2000/acre

Variety and area: Last Year: 1 July

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
11 kila Basmati - CSR30/HBC19/370								
2 acre Pusa Basmati - 1509/1692/1847	Own Seed	4 kg.	20 g/acre	Mandi		4500/-		
Pusa Basmati - 1121								
Pusa Basmati - 1718	Own Seed	4 kg.	15 g/acre	Mandi		4200/-		
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures
-	-	-	-	only herbicide
-	-	-	-	Miniree Control

Support From Govt: - From Private Parties: - Next year Plan: -

Any Suggestion: - Surveyor Signature: -

Basmati Crop Survey

Present Location (Lat/Long)

Name: -	Jaswant Singh S/o Nikhola Singh
Phone no: -	94172-41090.
Village: -	Kaladi, Sangam
Soil: -	Alluvial soils / Black Soils / Clay soil / Sandy Soil / Other
Irrigation Mode: -	Pump / Canal / River

Variety and area Current Year: (i) Sowing 24 May (ii) Plantation 25 June (iii) Harvesting 25 October

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
Pusa Basmati - 1121								
Pusa Basmati - 1718								
Pusa Basmati - 1401/PB01/PB06/1886	Prink	4 kg/a	-	Mandi	DAP-0.5 Urea-2.5 bag			
Sharbati								
Sugandha								

9 kha
Increase basmati

Government/Mandi/ Market Details:- _____ Harvesting Instrument:- Combine Cost(Acr):- 20-22000

Variety and area: Last Year:

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
Pusa Basmati - 1121								
Pusa Basmati - 1718								
Pusa Basmati - 1401/PB01/PB06/1886	Prink	4 kg/a	2.5 kg/a	Mandi		3800		
Sharbati								
Sugandha								

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Insed - NPK Kidan Eman -
Any Suggestion: -
Fungus

Emamete Benzad. S.C. SCA
Surveyor Signature: -
Manozeb A. Azaykhalia

Divotefma
20/10/2023

C.B. Nagar

Basmati Crop Survey

Present Location (Lat/Long) 28.190981, 77.574229

Name: -	Ram Anand
Phone no: -	7055570089
Village: -	Daganat Pur
Soil: -	Alluvial soils / Black Soils <input checked="" type="checkbox"/> Clay soil / Sandy Soil / Other
Irrigation Mode: -	Pump <input checked="" type="checkbox"/> Canal / River

Variety and area: Current Year: (i) Sowing 17/8 → 10 May 11/21 → 20 June (ii) Plantation 13 July (iii) Harvesting 1st & 2nd Nov

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
Pusa Basmati - 1121	80%	10 kg	8-10 man	Mandi	DAP	3500	100%	✓
Pusa Basmati - 1718	70%	10 kg	8-10 man	4	NPK	3500-3800	100%	✓
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Government/Mandi/ Market Details: Rabupura Harvesting Instrument: Hand Cost(Acr):-

Variety and area: Last Year: Jewar Haryana

Variety Name	Seeds Source	Seed used Acre/KG	Produce Quintal/Acre	Channel for selling (Mandi)	Fertilizers used per Acre (in KG)	Rate of Selling		
						Rs	Immediate sell in (%)	After Storage in (%)
Basmati - CSR30/HBC19/370								
Pusa Basmati - 1509/1692/1847								
80-90% Pusa Basmati - 1121	✓	10 kg	4 qtr	Mandi	DAP	3200-3500	100%	
70% Pusa Basmati - 1718	✓	10 kg	4 qtr	"	NPK	3200	100%	
Pusa Basmati - 1401/PB01/PB06/1886								
Sharbati								
Sugandha								

Time	Damage (%)	Diseases Name	Stage (Diseases Occur)	Measures

Support From Govt: -

From Private Parties: -

Next year Plan: -

Any Suggestion: -

Surveyor Signature: -





Punjab

Basmati Variety – 1121		
		
Basmati Variety – 1509		
		
Basmati - 1401		
		
Basmati Variety - 1718		
		
Basmati Variety - 1692		
		

Haryana

Basmati Variety – 1121		
		
Basmati Variety – 1509		
		
Basmati Variety - 1718		
		
Basmati Variety – 1692		
		
Basmati Variety – 1401		
		

Uttar Pradesh

Basmati Variety – 1121		
		
Basmati Variety – 1509		
		
Basmati Variety - 1718		
		
Sharbati		
		
Sugandha		
		