Kharif-2014

Basmati Acreage & Yield Estimation in Punjab, Haryana, Delhi, Uttarakhand, Himachal Pradesh, Western Uttar Pradesh and Parts of Jammu & Kashmir

Report Volume - 6

Submitted to

Basmati Export Development Foundation (APEDA), New Delhi

AgriNet Solutions

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EXECUTIVE SUMMARY

Scope of the Report

The present report being the sixth cycle of report for Kharif - 2014 covers the results of field survey based (a) Acreage estimation of all rice, Basmati (all varieties) and other non-notified selected varieties (b) Field Survey based crop health monitoring and (c) Field survey and crop Cutting Experiment based production estimate of Basmati and other Non-notified, Non-basmati long grain varieties in the different districts of Punjab, Haryana, Delhi, Uttar Pradesh, Uttarakhand, Himachal Pradesh and Jammu & Kashmir.

Study districts

The study area covers 81 districts, which includes 22 districts of Punjab, 21 districts of Haryana, 30 districts of Uttar Pradesh, 4 districts of Uttarakhand, 1 district of Himachal Pradesh and 3 districts of Jammu & Kashmir.

Rice Acreage

In **Punjab**, the total basmati area has been 8,57,680 ha. Out of which, Pusa Basmati-1121 has 5,42,430 ha, PUsa Basmati-1 24,620 ha, Pusa Basmati-1509, 2,47,120 ha, CSR-30/Basmati-386, 15,100 ha. The area under Pusa Basmati-1121 has increased by 1.97%. Whereas, Pusa Basmati-1509 has increased by 59.3% this year. Northern districts Gurdaspur, Tarantaran, Amritsar & Fazilka have maximum area under Pusa Basmati – 1121. The Production of Pusa Basmati-1121 and Pusa Basmati-1509 is likely 21,17,940 and 11,25,000 Metric tons respectively in the state this year. The area & production under Punjab Basmati-3 is likely 28,410 ha and 1,03,270 metric tons. The area under Sharbati has reduced significantly to 5,790 ha. this year. And the production is likely 22,410 metric tons.

In **Haryana**, the total basmati area has been 8,32,530 ha. Out of which, Pusa Basmati - 1121 has 4,13,390 ha, Pusa Basmati-1, 96,430 ha, Pusa Basmati-1509, 1,35,040 ha, CSR-30, 1,48,550 ha, Pusa Basmati-1401, 27,090 ha, Super, 3,100 ha and Punjab Basmati-3, 8,940 ha. The area under Pusa Basmati-1121 has reduced by 14.8%. Whereas, CSR-30 area has increased by 53.39% this year. Karnal, Jind, Kaithal, Sonepat and Panipat have maximum area under Pusa Basmati – 1121. The Production of Pusa Basmati-1121 and Pusa Basmati-1 is likely 17,61,270 and 5,28,090 Metric tons respectively in the state this year. The production under Pusa

Basmati – 1509 and CSR-30 is likely 6,79,600 and 5,02,340 metric tons respectively.

In Western Uttar Pradesh, the total basmati area has been 3,54,390 ha. Out of which, Pusa Basmati-1121 has 1,87,690 ha, Pusa Basmati-1, 1,83,210 ha, Type-3 & others, 13,220 ha. The area under Pusa Basmati-1121 has reduced significantly by 22.49% and Non-notified Sugandha has replaced the area. Resultantly Sugandha area has increased by 14.32% and is 1,52,400 ha. Bulandshahr, Aligarh, Saharanpur and Badaun have maximum area under Pusa Basmati – 1121. The Production of Pusa Basmati-1121 and Pusa Basmati-1 is likely 6,57,470 and 1,83,210 Metric tons respectively in the state this year. The area under Sharbati has increased significantly to 1,41,280 ha. this year. And the production is likely 5,27,250 metric tons.

In Uttarakhand, the total basmati area has been 20,340 ha. Out of which, Pusa Basmati-1121 has 4,710 ha, Pusa Basmati-1, 1,700 ha, Type-3 & others, 6,570 ha. Udham Singh Nagar has maximum area under Pusa Basmati – 1121 (2,200 ha). The Production of Pusa Basmati-1121 and Type-3 is likely 16,240 and 15,460 Metric tons respectively in the state this year. The area under Sharbati has reduced to 11,720 ha. this year. And the production is likely 44,950 metric tons.

In Jammu & Kashmir, the total basmati area has been 68,450 ha. Out of which, Pusa Basmati-1121 has 6,290 ha and Basmati-370, 59,970 ha. The estimated production of Pusa Basmati-1121 and Basmati 370 are likely 22,330 metric tons and 2,10,440 metric tons respectively. Pusa Basmati-1509 has been grown in 2,200 ha this year and the production is likely 8,000 Metric tons. Non-basmati long Grain variety Sharbati is grown in 220 ha. with a likely production 8,000 metric tons. Since the last three years efforts of trade and BEDF, the area under Pusa Basmati-1121 has increased in Kathua district as the produce is being marketed in the markets of Punjab. In Jammu, the farmers are still preferring traditional basmati variety Basmati-370 as its straw has a good demand as fodder having more carbohydrate and is liked by the cattle.

In Himachal Pradesh, this year Pusa Basmati-1121 has been sown in 430 ha. area only with a likely production 1,590 metric tons and Sharbati in 10,990 ha. with an estimated production 38,430 metric tons.

State wise total rice, Basmati varieties area

has been given in table below:

Table 1A: State-wise Basmati Area during Kharif 2014

Area '000 ha

S. No.	State	Pusa Basmati-1121	PB-1	Pusa Basmati - 1401	Punjab Basmati-3	Super	Pusa Basmati-1509	CSR-30	Type-3, Basmati-370/386
1	Haryana	413.39	96.43	27.09	8.94	3.10	135.04	148.55	
2	Punjab	542.43	24.62		28.41		247.12	15.10	
3	W. Uttar Pradesh	187.69	46.29				107.19		13.22
4	Uttarakhand	4.71	1.70				7.36		6.57
5	Himachal Pradesh	0.43							
6	Jammu & Kashmir	6.29					2.20		59.97
7	Delhi	0.63					0.07		
Total		1155.57	169.04	27.09	37.35	3.10	498.98	163.65	79.76

Table 1B: State-wise Basmati Production Estimates During Kharif 2014

Production '000 tons

S. No.	State	Pusa Basmati - 1121	PB-1	Pusa Basmati - 1401	Punjab Basmati-3	Super	Pusa Basmati - 1509	CSR-30	Type-3 & Others
1	Haryana	1761.27	528.09	177.52	40.93	12.12	679.60	502.34	
2	Punjab	2117.94	114.13		103.27		1125.00	38.54	
3	W. Uttar Pradesh	657.47	183.21				381.54		38.47
4	Uttarakhand	16.24	6.54				28.17		15.46
5	Himachal Pradesh	1.59							
6	Jammu & Kashmir	22.33					8.00		210.44
7	Delhi	2.66					0.34		
Total		4579.50	831.97	177.52	144.20	12.12	2222.65	540.88	264.37

Table 2: State-wise Non Basmati Long Grain Rice Area & Production during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	State	Sharbati		Sugandha	
		Area	Production	Area	Production
1	Haryana	5.79	22.40		
2	Punjab	38.37	160.64		
3	Uttar Pradesh	141.28	527.25	152.40	593.91
4	Uttarakhand	11.72	44.95	0.33	1.41
5	Himachal Pradesh	0.22	0.90		
6	Jammu & Kashmir	10.99	38.43		
Total		208.37	794.57	152.73	595.32

Table-3 State-wise Area and Paddy production of Basmati in Kharif 2013 and Comparison with Kharif 2014

Area in '000 ha; Production in '000 t

Sl. No.	State	2013		2014	
		Area	Production	Area	Production
1	Punjab	590.01	2292.75	857.68	3498.88
2	Haryana	711.11	2898.98	832.54	3701.88
3	Uttar Pradesh	318.75	1270.09	354.39	1260.69
4	Uttarakhand	18.30	54.16	20.34	66.41
5	Jammu & Kashmir	37.28	92.66	68.45	240.77
6	Himachal Pradesh	1.00	3.40	0.45	2.15
7	Delhi	1.00	4.09	0.70	3.00
Total		1677.45	6616.13	2134.55	8773.78

Table-4 State-wise Area and Paddy production of Non notified Non-Basmati in Kharif 2013 and Comparison with Kharif 2014

Area in '000 ha; Production in '000 tons

State	2013				2014			
	Sharbati		Sugandha		Sharbati		Sugandha	
	Area	Production	Area	Production	Area	Production	Area	Production
Punjab	17.02	61.84	0.44	1.80	5.79	22.40		
Haryana	39.11	159.85			38.37	160.64		
Uttar Pradesh	132.40	487.03	133.30	631.97	141.28	527.25	152.40	593.91
Uttarakhand	33.00	129.20	3.00	12.50	11.72	44.95	0.33	1.41
Jammu & Kashmir	1.87	6.33			0.22	0.90		
Himachal Pradesh	22.24	77.84			10.99	38.43		
Total	245.64	922.09	136.74	646.27	208.37	794.57	152.73	595.32

Table : State-wise Transplanted Area during Kharif 2014

Area in '000 ha

S. No.	State	Rice
1	Haryana	1138.00
2	Punjab	2794.00
3	W.Uttar Pradesh	1411.97
4	Uttarakhand	125.80
5	Himachal Pradesh	56.00
6	Jammu & Kashmir	142.09
7	Delhi	1.00
Total		5668.86

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Project Background

Basmati rice is an important export commodity among the food grains exported from India. During the past few years, the Basmati export has been growing steadily, from 7.71 lakh metric tonnes in 2003 to >35.0 lakh metric tonnes in 2013-14 on robust demand from the traditional markets in West Asia. Iran alone has been importing >40% of the total Basmati export from India. Now China has taken a decision to import Indian Basmati rice which is likely to further increase the Indian Basmati demand.

Timely information on the area and likely production of the crop before the harvest helps exporters and other decision makers involved in Basmati trade to take decisions about the quantum and time of export. The export of Basmati is on continuous rise year by year from India and has reached to >3.76 million by 2013-14. Realizing this potential, the Basmati Export Development Foundation (BEDF), New Delhi contracted M/s. Agri Net Solutions (A division of BPPL – a UPL Group Company) the work of field survey validation based acreage estimation for all rice, for Basmati crop for selected other non-notified varieties), crop health monitoring and yield estimation and production for Basmati rice and non-notified varieties and questionnaire based sample survey of farmers, for 75 selected districts of Punjab, Haryana, Uttar Pradesh, Uttarakhand, Himachal Pradesh and Jammu & Kashmir, apart from Delhi, during Kharif 2011. During the year 2013, the number of districts has been increased to 81 in the selected seven states i.e. Punjab, Haryana, Uttar Pradesh, Uttarakhand, Himachal Pradesh, and Jammu & Kashmir apart from Delhi. This year the field survey based approach is being applied to collect the information at block level to improve the accuracy further to a desired level.

The Basmati varieties for which information is required include Basmati-370, Basmati-386, Type-3 (Dehraduni), Taraori (HBC-19), Ranbir (Basmati – 370), Pusa Basmati-1509, Pusa Basmati-1, CSR – 30 and Pusa Basmati-1121 and non-notified, non-Basmati (Sharbati and Sugandha -5).

Scope of the current report

The present report being the sixth & final cycle of report for Kharif-2014 covers the results of field survey based Basmati acreage & Production of various varieties based on Crop Cutting Experiments in different states.

Study Area Details

The study is confined to 81 districts, which includes 22 districts of Punjab (Amritsar, Barnala, Bathinda, Faridkot, Fatehgarh Sahib, Firozpur, Fazilka, Gurdaspur, Pathankot, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Mohali, Muktsar, Nawanshahar, Patiala, Ropar, Sangrur and Tarantaran), 21 districts of Haryana (Ambala, Faridabad, Bhiwani, Fatehabad, Gurgoan, Hissar, Jhajjar, Jind, Kaithal, Karnal, Kurukshetra, Mahendragarh, Mewat, Palwal, Panchkula, Panipat, Rewari, Rohtak, Sirsa, Sonepat, Yamunanagar), 3 Districts of Jammu & Kashmir (Jammu, Samba and Kathua), 30 districts of Uttar Pradesh (Agra, Aligarh, Auraiya, Baghpat, Bareilly, Bijnore, Budaun, Bulandshahr, Etah, Kasganj, Etawah, Ferozabad, Gautam Buddha Nagar, Ghaziabad, Hapur, Hathras, J. P. Nagar, Kannauj, Mainpuri, Mathura, Meerut, Moradabad, Sambhal, Muzaffarnagar, Shamli, Pilibhit, Rampur, Saharanpur, Shahjehanpur), 4 districts of Uttarakhand, 1 district of Himachal Pradesh and one of Delhi. The map of the study districts is given as Figure 1 The study districts form a part of the Himalayas and the Indo-Gangeic Plains.

Rainfall

The Basmati growing belt in all the states has witnessed deficient to scanty rainfall in the months of June, July & August this year leading to delayed transplanting and early earing of Pusa Basmati-1509. In Uttar Pradesh, the major western districts received scanty rainfall and facing electricity crunch due to which the crop looked weak but the final observation, the yield increased in the areas of Haryana. The new variety Pusa Basmati-1509 occupied the area from other non-Basmati early maturing rice. The rainfall during 1 June to 30 Sept. 2014 in meteorological divisions under study area is given in table-A and the rainfall in prominent districts in table-B.

Brief Profile of Organizations involved in the study

Agricultural and Processed Food Products Export Development Authority (APEDA):

APEDA came into existence in 1986 as an autonomous organization under Ministry of Commerce, Govt. of India, to develop India's agricultural commodities and processed foods, and to promote their exports. Its goals are to maximize foreign exchange earnings through increased agro exports, to provide better income to the farmers through higher unit value realization and to create employment opportunities in rural areas by encouraging value added exports of farm produce. APEDA has been achieving these objectives by identifying new markets, providing better support systems to our exporters and manufacturers, and introducing new products to the international market.

Basmati Export Development Foundation (BEDF)

BEDF is a registered society promoted by APEDA and Basmati Development Fund (BDF). It came into existence in the year 2003. The main objective of BEDF is to undertake and promote programs relating to application technology, research and development, including evaluation of region-specific agronomic practices. Evaluation trials of new promising varieties, seed multiplication projects, development and execution of contract farming and field-execution projects, and development of other relationship patterns between various stakeholders involved in development, growing, milling, processing, trading and exporting of Basmati rice are the other objectives of BEDF. The laboratory recently been developed at Meerut has state of the art research facilities including DNA finger printing technique for basmati which has started working this year.

All India Rice Exporters' Association (AIREA)

All India Rice Exporters' Association (AIREA) born in October 1989 is presently recognized as the only Apex Body of Indian Rice exporters both in India and abroad. Apart from major rice exporters, its members include Multinationals, Co-operative bodies and Public Sector Undertakings, etc. It has been representing the trade within the states / country as well as abroad and has established a proven track record in grappling and solving the

problems of the rice exporters. The Association offers numerous services to its members and it deals with various ministries/ government agencies, APEDA/ EIC/ EIA, FCI, etc., for projecting the problems of its members and finding solutions for the same. It also arranges meetings with State/ Central Government Officials/ Ministries, Organizes National/ International Conferences and circulating Daily Rice news etc. The Association's monthly publication, Rice India, gives comprehensive coverage regarding complete rice situation and it is widely circulated and respected amongst exporters and traders both nationally and internationally.

Agri Net Solutions / United Phosphorus Ltd. (UPL)

Agri Net Solutions, a subsidiary of United Phosphorus Ltd., is a spatial technology company which pioneered the remote sensing and GIS applications to agriculture and natural resource management among the private sector companies in India. The company, established in the year 2000, adheres to good corporate governance practices with emphasis on business ethics and values. AgriNet Solutions has one of the best infrastructures with several ERDAS Imagine image processing soft wares, ARC Info GIS and state-of-art hard wares. Crop acreage and yield estimation, soil suitability for crop area expansion, impact evaluation of irrigation projects, water resources development planning, farm forestry development are the major areas in which AgriNet has provided value added products to central and state governments, public and private sector organizations in India. The main strength of Agri Net is its strong team of long experienced domain experts and its origin from UPL.

United Phosphorus Ltd. (UPL) an ISO 9002 & 14001 Indian multinational is a leading global producer of generic crop protection products, intermediates, specialty agro-chemicals and other industrial chemicals. UPL is the largest producer of crop protection products with a wide range of products that include insecticides, fungicides, herbicides, fumigants and rodenticides. The company ranks fourth amongst the generic agrochemical companies in the world, and has a commitment to provide cost effective quality solutions in crop protection for farmers globally. The group of companies

includes seed multinational 'ADVANTA', which is committed for high quality seeds to farmers across the country. Jai Research Foundation, a numero-uno Contract Research Organization contributes in Mammalian Toxicology and Eco-Toxicology conducts studies with the latest international GLP guidelines.

Project Team

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Table A: Rainfall (mm) in the Meteorological Divisions in different states (1.6.2014 to 30.9.2014)			
Met. Division	1 June to 30 Sept.		Remarks
	Normal	Actual	
Punjab	491.9	243.9 (-50)	Deficient
Haryana, Delhi	466.3	203.2 (-56)	Deficient
Western UP	769.4	340.3 (-56)	Deficient
Himachal Pradesh	825.3	521.8 (-37)	Deficient
Uttarakhand	1229.1	897.6 (-27)	Deficient
Jammu & Kashmir	534.6	633.0 (18)	Normal

Figures in parantheses show percent deviation from normal. Source: IMD

Fig. 1: Map Showing The Districts of The Study Area

Table B: Rainfall in the monsoon season at important locations (1 June to 30 Sept. 2014)				
Location / District	Total Rainfall (mm)	Normal Rainfall	% Departure from normal	Status
Ambala	424.9	916.6	-54	Deficient
Hissar	112.0	325.1	-66	Scanty
Karnal	320.4	577.0	-44	Deficient
Jammu	940.8	860.5	9	Normal
Kathua	816.8	982.0	-17	Normal
Amritsar	223.7	537.6	-58	Deficient
Sangrur	134.4	436.8	-69	Scanty
Patiala	228.5	615.2	-63	Scanty
Nainital	1418.0	1439.1	-1	Normal
Dehradun	1271.7	1802.1	-29	Deficient
Kangra	1058.2	1582.1	-33	Deficient
Meerut	281.0	778.5	-64	Scanty
Saharanpur	341.3	804.6	-58	Deficient
Bulandshaher	208.9	670.7	-69	Scanty
Source: IMD				

During the second week of October there was hailstorm in Punjab & Haryana which caused a nominal damage to the matured crop of Pusa-1121. Due to which the quality of the initial produce in markets was 1-2% poor.

Crop Health Monitoring and Analysis

The scope of the present study included only ground survey based crop health monitoring. A state-wise summary on crop health is being presented here.

Punjab:

Crop Vigour: Crop vigour throughout the season was satisfactory.

Disease and insects / pests: Brown Spot, Neck blast and Brown Plant Hopper were noticed in some of the districts. However, it was below Economic Threshold Level (ETL).

1) Nutritional Deficiency: No nutritional deficiency was observed in this cropping season.

Haryana

1) Crop Vigour: Crop vigour throughout the season was satisfactory.
2) Disease and insects / pests: Neck Blast and Brown Plant Hopper affected some areas

under all the varieties resulting non-significant crop damage.

Nutritional Deficiency: No nutritional deficiency has been observed in the cropping season.

Crop Health and Yield Loss

In general, the crop has been good in the state. The yield has been at higher side due to deficient rains.

Uttar Pradesh and Uttarakhand:

Crop Vigor: Crop vigor throughout the season was satisfactory.

Disease and insects / pests: Brown plant hopper has affected the crop in several districts. Bakanae outbreak was observed in Pusa Basmati-1121 and Pusa Basmati-1509 in a few districts. Blast was observed in Pusa Basmati-1 and Pusa Basmati-6.

Nutritional Deficiency: Zinc deficiency has been observed in most of the area during the cropping season.

Himachal Pradesh

Crop Vigour: Crop vigor throughout the season was satisfactory though the transplanting was delayed due to delayed monsoon.

Disease and insects/pests: The damage to crop was non-significant below ETL.

Nutritional Deficiency: No nutritional deficiency has been observed in the cropping season.

Jammu and Kashmir

Crop Vigour: Crop vigor throughout the season was satisfactory.

Disease and insects/pests: The damage to crop was non-significant and below ETL.

Nutritional Deficiency: No nutritional deficiency has been observed in the cropping season.

Crop Maturity Survey

AgriNet field survey team collected information on crop growth stages of different varieties of interest in different districts and the compiled information was included in every report volume, so that the trade can plan the procurement of paddy accordingly.

In Crop Maturity Survey, primarily four crop stages were considered viz., Vegetative, Reproductive, Maturity and Harvesting. Percent area under different crop stages in each district for Basmati and other non-Basmati varieties were provided at a regular periodicity.

Table 6: District-wise Acreage & Production Estimates under Basmati Varieties in Punjab during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	CSR-30/Basmati-386		Pusa Basmati 1121		Pusa-1509		Punjab Basmati-3		Pusa Basmati -1	
		Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
1	Amritsar	1.01	1.98	76.90	284.85	43.15	193.85	9.33	33.61		
2	Barnala			2.80	11.25	0.56	2.45			2.64	12.18
3	Bhatinda			7.86	29.45	11.82	52.30			4.91	21.27
4	Faridkot			20.90	83.60	1.10	5.35				
5	Fatehgarh Sahib	0.28	0.82	8.91	35.24	9.13	44.70	0.68	2.63		
6	Fazilka			50.40	211.78	21.60	104.00				
7	Firozepur			26.01	100.45	10.22	48.10			5.77	28.26
8	Gurdaspur	6.60	16.38	49.94	180.54	24.37	107.75	3.83	14.02		
9	Pathankot			7.81	27.65	3.19	12.30				
10	Hoshiarpur	1.10	2.75	6.95	26.98	5.34	24.00	1.61	5.37		
11	Jalandhar			16.61	67.12	5.30	24.50	2.09	7.99		
12	Kapurthala			15.08	61.66	5.47	24.80	1.38	5.32		
13	Ludhiana			24.29	101.72	7.89	36.70	2.02	7.68		
14	Mansa			7.69	29.63	5.90	26.65			1.41	6.73
15	Moga			25.42	100.84	9.16	43.50	0.70	2.62	1.72	8.30
16	Mohali			2.79	10.88	0.78	3.45	0.43	1.64		
17	Muktsar			66.99	271.20	7.01	31.70				
18	Nawanshahar			5.06	19.20	1.77	7.90	1.17	4.49		
19	Patiala	2.10	5.86	16.83	69.97	13.06	59.50	0.76	2.38	4.94	21.71
20	Roopnagar	0.31	0.78	4.05	15.34	2.10	9.50	0.54	1.51		
21	Sangrur			21.25	89.66	17.66	81.20			3.23	15.68
22	Tarantaran	3.70	9.97	77.89	288.93	40.54	180.80	3.87	14.01		
Total		15.10	38.54	542.43	2117.94	247.12	1125.00	28.41	103.27	24.62	114.13

Table 6A: District-wise Acreage & Production Estimates under Sharbati (Non-Basmati) in Punjab during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	Sharbati	
		Area	Production
1	Amritsar	5.81	24.69
2	Barnala		
3	Bhatinda		
4	Faridkot		
5	Fatehgarh Sahib		
6	Fazilka		
7	Firozepur		
8	Gurdaspur	16.11	68.40
9	Pathankot	12.64	50.75
10	Hoshiarpur		
11	Jalandhar		
12	Kapurthala		
13	Ludhiana		
14	Mansa		
15	Moga		
16	Mohali		
17	Muktsar		
18	Nawanshahar		
19	Patiala		
20	Roopnagar		
21	Sangrur		
22	Tarantaran	3.81	16.80
Total		38.37	160.64

Table 5: District-wise Acreage & Production Estimates of Basmati Varieties Varieties in Haryana during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	Pusa Basmati-1121		Pusa-1509		Pusa - 1401		Punjab Basmati-3		Pusa Basamti - 1		Super		CSR-30	
		Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
1	Ambala	11.18	44.73	8.47	35.53	0.03	0.19	0.04	0.16	0.21	0.98	1.18	4.35	16.78	52.03
2	Bhiwani	10.47	43.61	0.58	2.73					0.46	2.16				
3	Faridabad	6.04	24.33	0.15	0.65					1.01	4.95			0.20	0.55
4	Gurgaon	2.50	12.25							0.50	2.25				
5	Fatehabad	21.37	94.77	9.40	52.97	2.06	14.10	0.82	3.62	19.01	102.44			1.34	4.58
7	Hisar	24.77	101.53	7.03	32.36	0.14	0.79			1.01	4.68	0.42	1.85	1.52	5.17
8	Jajjhar	20.99	82.26			0.03	0.16							4.04	13.72
9	Jind	47.49	190.23	11.25	50.77	2.18	9.61	1.66	8.26	14.67	73.61	0.42	1.22	9.30	27.68
10	Kaithal	48.18	199.14	17.67	90.19	4.12	22.81			12.66	66.72			34.06	102.29
11	Karnal	52.37	226.08	27.22	151.36	0.51	2.75	2.36	10.99	1.89	10.42			44.82	170.85
12	Kurukshetra	18.81	85.23	18.74	97.61	0.48	2.59	1.29	6.32	0.70	3.47	0.50	1.59	20.82	73.08
13	Mewat	2.38	10.50	0.13	0.61										
14	Palwal	17.90	78.92	3.20	15.30					1.42	6.76			0.35	0.96
15	Panipat	44.41	199.44	5.78	30.42			1.28	5.62	7.18	35.97			9.92	34.22
16	Rewari	1.16	4.92							0.14	0.67				
17	Rohtak	19.19	70.52	2.49	8.99			0.50	2.08	0.37	1.43			1.79	5.47
18	Sirsa	10.88	55.31	4.88	27.26	17.55	124.52	0.84	3.29	23.94	152.15				
19	Sonepat	50.86	226.41	11.78	54.46			0.15	0.59	1.75	9.22	0.59	3.11	3.47	11.18
20	Yamunanagar	2.45	11.10	6.30	28.40					9.54	50.21			0.17	0.56
	Total	413.39	1761.27	135.04	679.60	27.09	177.52	8.94	40.93	96.43	528.09	3.10	12.12	148.55	502.34

Table 5A: District-wise Acreage & Production Estimates under Long Grain Non- Basmati Sharbati in Haryana during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	Sharbati	
		Area	Production
1	Ambala	0.75	3.29
2	Bhiwani		
3	Faridabad		
4	Gurgaon		
5	Fatehabad		
7	Hisar	1.10	3.77
8	Jajjhar	0.03	0.12
9	Jind	2.29	9.24
10	Kaithal	0.05	0.17
11	Karnal	0.59	1.79
12	Kurukshetra	0.18	0.58
13	Mewat		
14	Palwal		
15	Panipat		
16	Rewari		
17	Rohtak		
18	Sirsa		
19	Sonepat	0.51	2.23
20	Yamunanagar	0.31	1.52
Total		5.79	22.72

Table 7: District-wise Acreage & Production Estimates under Basmati Varieties in Uttar Pradesh during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	Pusa Basmati-1121		Pusa Basmati-1		Pusa-1509		Type-3 & others	
		Area	Production	Area	Production	Area	Production	Area	Production
1	Agra	0.36	1.12	0.08	0.31	0.43	1.48		
2	Aligarh	18.35	65.23	4.47	16.55	6.99	26.35	0.03	0.89
3	Auraiya	5.59	16.25	0.18	0.68	2.96	8.91	0.98	2.45
4	Baghpat	1.47	6.77	1.14	4.87	1.08	4.27	0.13	0.41
5	Bareilly	2.59	8.47	0.88	3.17	7.26	26.50	0.50	1.33
6	Bijnore	3.24	10.85	3.16	12.17	3.99	14.46	0.20	0.60
7	Budaun	3.09	9.12	1.30	4.21	5.96	18.30	8.89	26.23
8	Bulandshahr	21.07	82.59	6.15	25.50	6.35	24.13	0.05	0.15
9	Etah+Kasganj	5.46	17.43	0.57	2.05	4.75	14.96		
10	Farukhabad	0.37	1.12	0.04	0.12	0.95	3.03		
11	Firozabad	2.99	9.54	0.22	0.73	1.99	6.37		
12	Etawah	9.92	34.35	0.15	0.51	6.25	21.15		
13	Gautam Buddha Nagar	18.01	71.05	1.60	6.49	1.49	5.89	0.03	0.11
14	Ghaziabad+Hapur	5.69	22.57	1.10	4.73	3.45	13.80	0.03	0.10
15	Hathras	4.44	14.87	0.82	3.06	2.88	9.42		
16	Mathura	28.87	99.02	1.18	4.42	4.64	17.40		
17	Mainpuri	19.77	63.46	0.24	0.88	11.15	40.12		
18	Meerut	3.26	11.99	3.27	14.21	3.12	12.17	0.18	0.58
19	Moradabad	2.64	8.77	0.73	2.68	3.15	10.71	0.25	0.69
20	J. P. Nagar	1.72	5.35	1.35	4.99	2.55	8.54	0.03	0.09
21	Kannauj	1.40	4.54	0.11	0.38	1.30	4.03		
22	Muzaffarnagar+Shamli	4.69	17.21	5.10	21.13	2.88	10.89	0.20	0.61
23	Pilibhit	2.02	7.02	0.16	0.61	2.23	7.96	0.03	0.08
24	Rampur	1.20	4.04	0.29	1.08	4.91	19.15	0.13	0.41
25	Saharanpur	12.82	42.95	10.45	41.98	6.90	26.57	0.27	0.82
26	Shahjehanpur	3.18	10.13	0.76	2.72	4.13	13.94	1.14	2.57
27	Sambhal	3.48	11.66	0.79	2.98	3.45	11.04	0.15	0.35
Total		187.69	657.47	46.29	183.21	107.19	381.54	13.22	38.47

Table 7A: District-wise Acreage & Production Estimates under long grained non-Basmati varieties in Uttar Pradesh during Kharif 2014

Area in '000 ha, Production ('000 tons)

S. No.	District	Sharbati		Sugandha	
		Area	Production	Area	Production
1	Agra			2.50	9.63
2	Aligarh	1.40	5.61	15.80	61.94
3	Auraiya			3.70	15.24
4	Baghpat	0.07	0.28	1.03	4.19
5	Bareilly	44.40	170.05	2.96	11.25
6	Bijnore	15.77	61.50	2.29	9.05
7	Budaun	14.92	54.46	7.82	28.93
8	Bulandshahr	1.31	5.04	22.42	93.49
9	Etah+Kasganj	0.65	2.37	11.51	44.31
10	Farukhabad	0.01	0.04	3.05	11.74
11	Firozabad	0.11	0.40	7.43	28.23
12	Etawah	0.05	0.18	5.70	22.23
13	Gautam Buddha Nagar	0.51	1.95	1.13	4.58
14	Ghaziabad+Hapur	0.94	3.64	8.20	33.62
15	Hathras	0.32	1.17	9.25	36.54
16	Mathura	0.25	0.95	7.28	29.12
17	Mainpuri			8.32	32.03
18	Meerut	0.30	1.15	4.19	17.26
19	Moradabad	8.50	28.05	4.60	15.27
20	J. P. Nagar	6.18	22.56	3.32	12.35
21	Kannauj			4.43	16.04
22	Muzaffarnagar+Shamli	0.80	3.08	2.30	9.13
23	Pilibhit	2.59	9.38	0.44	1.56
24	Rampur	21.56	80.20	0.74	2.63
25	Saharanpur	7.11	26.80	4.71	17.52
26	Shahjehanpur	6.47	23.62	1.37	4.45
27	Sambhal	7.06	24.78	5.91	21.57
Total		141.28	527.25	152.40	593.91

Table 8: District-wise Acreage & Production under Basmati Varieties in Uttarakhand during Kharif 2014

Area in '000 ha, Production '000 tons

S. No.	District	Pusa Basmati- 1121		Pusa Basmati-1		Pusa-1509		Type-3 & others	
		Area	Production	Area	Production	Area	Production	Area	Production
1	Dehradun	0.3	1.0	0.0		0.1	0.37	2.3	4.83
2	Haridwar	2.1	7.3	1.3	5.1	0.8	2.70	2.8	7.56
3	Nainital	0.2	0.6	0.07	0.28	0.4	1.60	1.06	2.07
4	Udham Singh Nagar	2.2	7.4	0.29	1.12	6.1	23.50	0.4	1.00
Total		4.71	16.24	1.70	6.54	7.36	28.17	6.57	15.46

Table 8A: District-wise Acreage & Production under Non-Basmati Long grain Varieties in Uttarakhand during Kharif 2014

Area in '000 ha, Production '000 tons

S. No.	District	Sharbati		Sugandha	
		Area	Production	Area	Production
1	Dehradun	2.06	8.0		
2	Haridwar	3.39	13.4	0.28	1.218
3	Nainital	0.01	0.0	0.02	0.082
4	Udham Singh Nagar	6.26	23.5	0.025	0.113
Total		11.72	44.95	0.33	1.41

Table 9: District-wise acreage under Basmati rice in Jammu & Kashmir during Kharif 2014

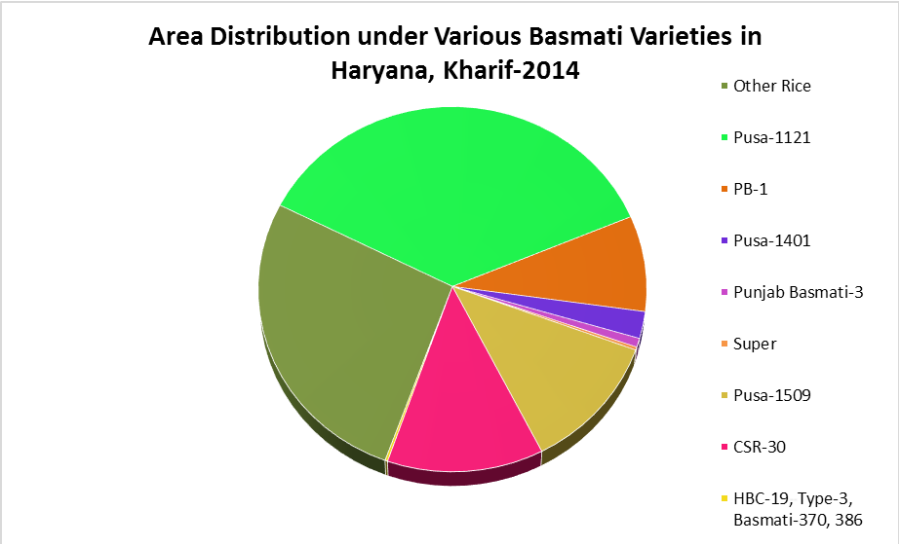
Area '000 ha, Production ('000 tons)

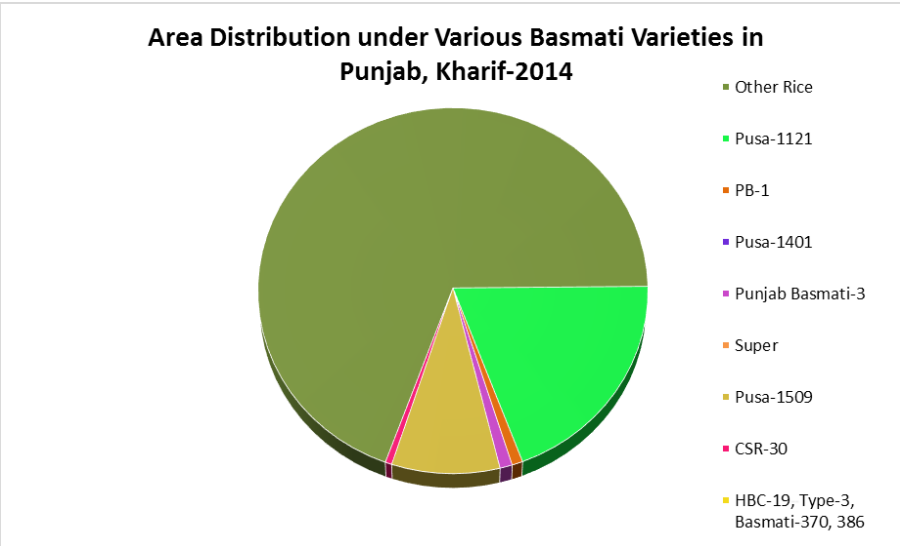
S. No.	District	Pusa-1121		Pusa-1509		Basmati-370	
		Area	Production	Area	Production	Area	Production
1	Jammu	1.58	5.37			50.13	120.31
2	Kathua	4.55	16.38	1.80	6.60	7.03	18.28
3	Samba	0.16	0.58	0.40	1.40	2.82	71.85
Total		6.29	22.33	2.20	8.00	59.97	210.44

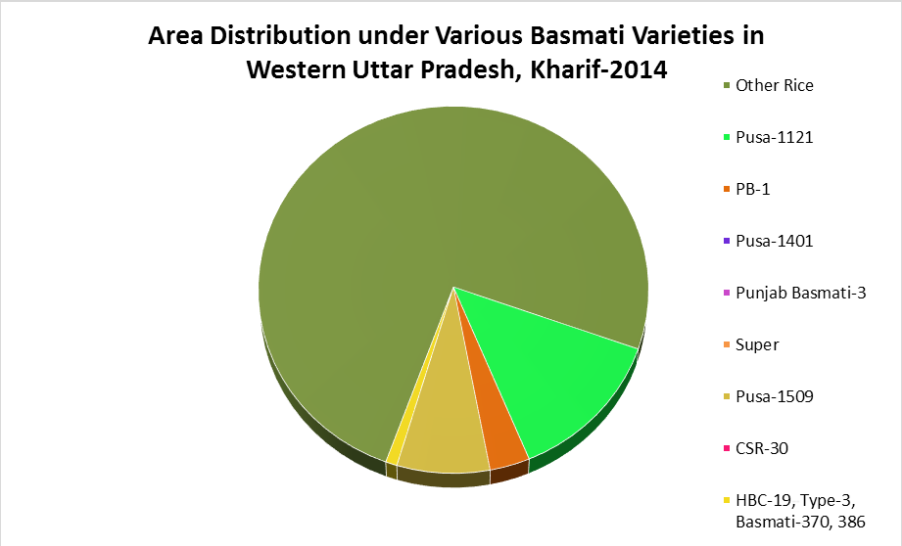
Table 10: District-wise acreage & Production Estimates under Pusa-1121 and Non-Basmati Sharbati in Himachal Pradesh during Kharif 2014

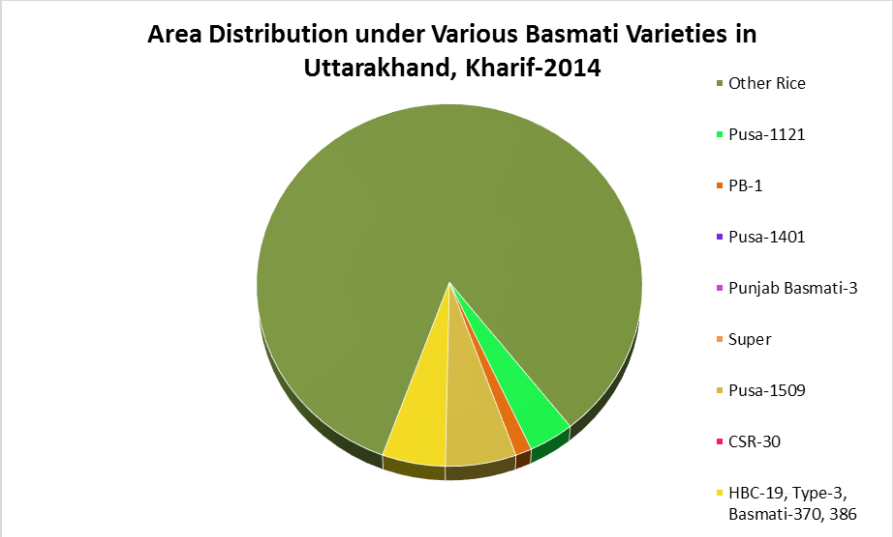
Area '000 ha, Production ('000 tons)

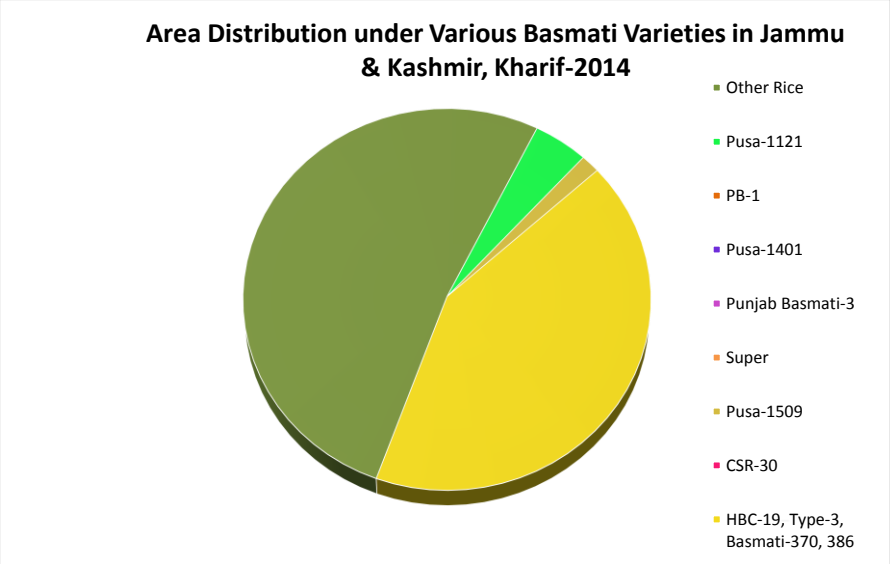
S. No.	District	Pusa-1121		Basmati	
		Area	Production	Area	Production
1	Kangra	0.43	1.59	0.02	0.55
Total		0.43	1.59	0.02	0.55






Area Distribution under Various Basmati Varieties in Western Uttar Pradesh, Kharif-2014
Other Rice
Pusa-1121
PB-1
Pusa-1401
Punjab Basmati-3
Super
Pusa-1509
CSR-30
HBC-19, Type-3, Basmati-370, 386


Area Distribution under Various Basmati Varieties in Uttarakhand, Kharif-2014
Other Rice
Pusa-1121
PB-1
Pusa-1401
Punjab Basmati-3
Super
Pusa-1509
CSR-30
HBC-19, Type-3, Basmati-370, 386


Area Distribution under Various Basmati Varieties in Jammu & Kashmir, Kharif-2014
Other Rice
Pusa-1121
PB-1
Pusa-1401
Punjab Basmati-3
Super
Pusa-1509
CSR-30
HBC-19, Type-3, Basmati-370, 386

Crop Cutting Experiments (CCE) for Validation

Crop Cutting Experiments have been conducted using standard procedures in all the states for assessment of yield. All important Basmati varieties in all the important districts have been taken up for CCE. The CCE derived yield was averaged for the district and a conversion factor used for offsetting the moisture content of the grain for estimation of district level production.

In ***Punjab***, Crop Cutting Experiments has been conducted in 134 plots covering 10 districts. Based on CCE data, the range of productivity of different Basmati and non-Basmati varieties has been found to be as follows:

Mean of Crop Cutting Experiment Yield Data (T/Ha) of Basmati Varieties in Punjab During Kharif 2014							
S. No.	District	Pusa Basmati-1121	Pusa Basmati-1	Punjab Basmati-3	CSR-30	Pusa Basmati-1509	Basmati-386
1	Amritsar	4		4	2.58	4	2
2	Barnala	4.18				5.5	
3	Gurdaspur	3.91		3.71		4.48	2.41
4	Ferozpur	4.17					
5	Kapurthala	3.48		3.27		4.26	2.50
6	Mansa	4.25				5.41	
7	Moga	4.45				5.75	
8	Sangrur	4.05				5.25	
9	TarnTaran	4.06		3.81	2.63	4.31	2.50
10	Patiala	4.13	4.43	3.58	2.63	4.60	2.33

In ***Haryana***, Crop Cutting Experiments has been conducted in 464 plots covering 14 districts. Based on CCE data, the range of productivity of different Basmati varieties has been found to be as follows:

Mean of Crop Cutting Experiment Yield Data (T/Ha) of Basmati Varieties in Haryana During Kharif 2014								
S. No.	District	Pusa-1121	PB-1	Pusa-1509	Pusa-1401	CSR-30	Super	Sharbati
1	Ambala	4.00	4.66	4.20		3.10	3.70	4.41
2	Kaithal	4.13	5.27	5.11	5.54	3.00		3.43
3	Karnal	4.32	5.51	5.56	5.39	3.81		3.06
4	Jind	4.01	5.00	4.51	4.41	2.98	2.94	4.04
5	Sonepat	4.45	5.27	4.62	4.62	3.23	5.27	4.37
6	Hisar	4.10	4.66	4.61			4.41	3.43
7	Kurukshetra	4.53	4.96	5.21	5.88	3.47	3.19	3.31
8	Panipat	4.49	5.01	5.27	5.39	3.09		
9	Rohtak	3.68	3.92	3.61		3.06		
10	Jhajjar	3.92	4.41	3.59				4.17
11	Yamunanagar	4.53	5.26	4.51				4.90
12	Fatehabad	4.43	5.39	5.64	6.86			
13	Sirsa	5.08	6.36	5.59	7.10			
14	Faridabad	4.03	4.90	4.33				

In ***Uttar Pradesh***, Crop Cutting Experiments have been conducted in 380 farmers' fields distributed over 21 districts. The average productivity of crop has been estimated on the basis of 5 crop cuttings of one sq. m. each in the field with 14% moisture content. Based on the data of crop cutting experiments, the range of productivity of different basmati and non-basmati varieties has been found to be as shown below:

Mean of Crop Cutting Experiment Yield Data (T/Ha) of Basmati Varieties in Uttar Pradesh During Kharif 2014							
S. No.	District	Pusa Basmati-1121	Pusa Basmati-1	Sharbati	Sugandha	Pusa Basmati-1509	Basmati-370, Type-3
1	Agra				3.80	3.50	
2	Aligarh	3.50		4.01	3.90	3.80	
3	Auraiya	2.90	3.80			3.10	
4	Baghpat		4.30			4.00	3.10
5	Bareilly		3.60			3.60	2.70
6	Bijnore			3.90	4.00		
7	Budaun					2.90	
8	Bulandshahr	3.80	4.00			3.80	3.10
9	Etah + Kasganj			3.60	3.90	3.00	
10	Firozabad	3.20	3.20				
11	Gautam Buddha Nagar			3.90	4.10	4.10	
12	Ghaziabad + Hapur	4.00	4.20			4.00	3.10
13	Hathras	3.30	3.30			3.20	
14	Kannauj	3.20			3.60	3.00	
15	Mainpuri		3.20			3.40	
16	Mathura				4.00	3.70	
17	Meerut	3.70	3.70	3.90			3.20
18	Moradabad	3.30			3.30		2.70
19	Muzaffarnagar + Shamli		4.00		4.00	3.80	
20	Rampur			3.70	3.60		
21	Saharanpur	3.50	3.40	3.90			3.00

In ***Uttarakhand***, Crop Cutting Experiments has been conducted in 48 farmers' fields of 4 districts. Based on CCE data, the range of productivity of different Basmati and non-Basmati varieties has been found to be as follows:

Mean of Crop Cutting Experiment Yield Data (T/Ha) of Basmati Varieties in Uttarakhand During Kharif 2014							
S. No.	District	Pusa-1121	PB-1	Sharbati	Sugandha	Pusa Basmati-1509	Basmati-370, Type-3
1	Hardwar	3.40		3.90	4.20	4.10	2.70
2	Dehradun					4.00	2.10
3	U.S. Nagar	3.30	4.00	4.20		3.80	2.50