

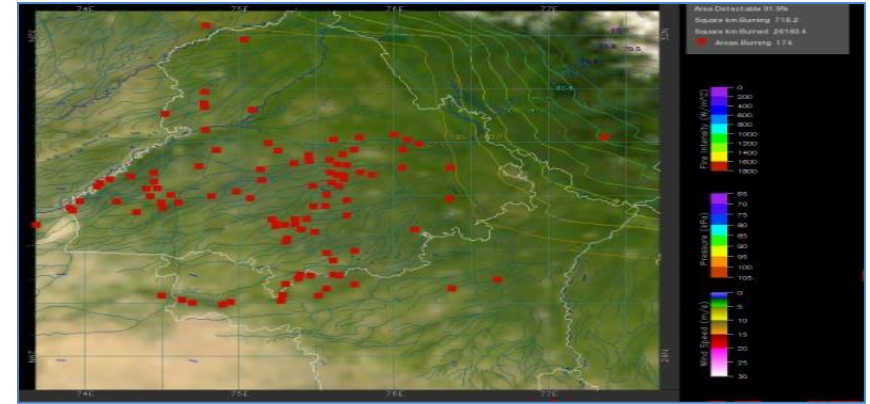
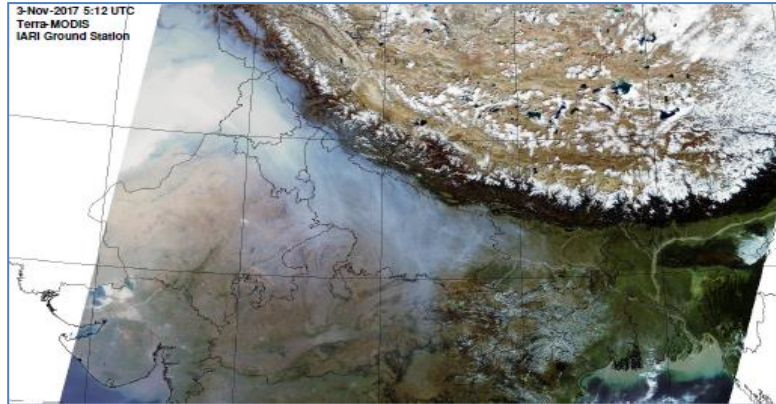


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2024

Bulletin
No. 10

Events Date:
24-Sep-2024

Issued on:
24-Sep-2024



Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS)
Laboratory,

Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

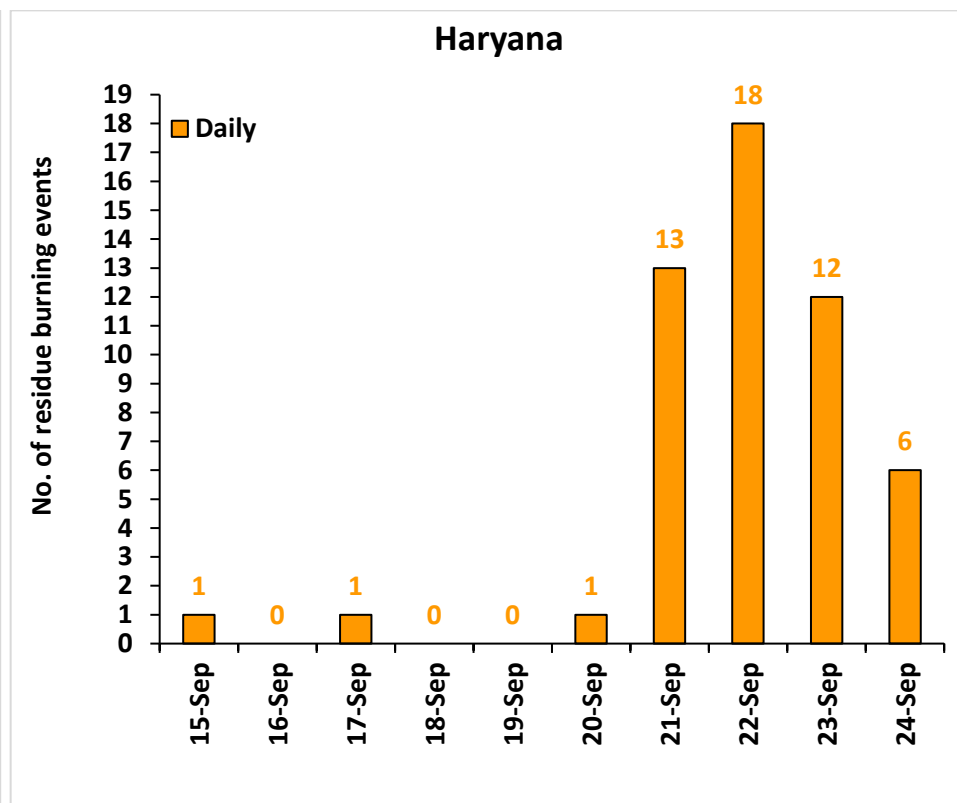
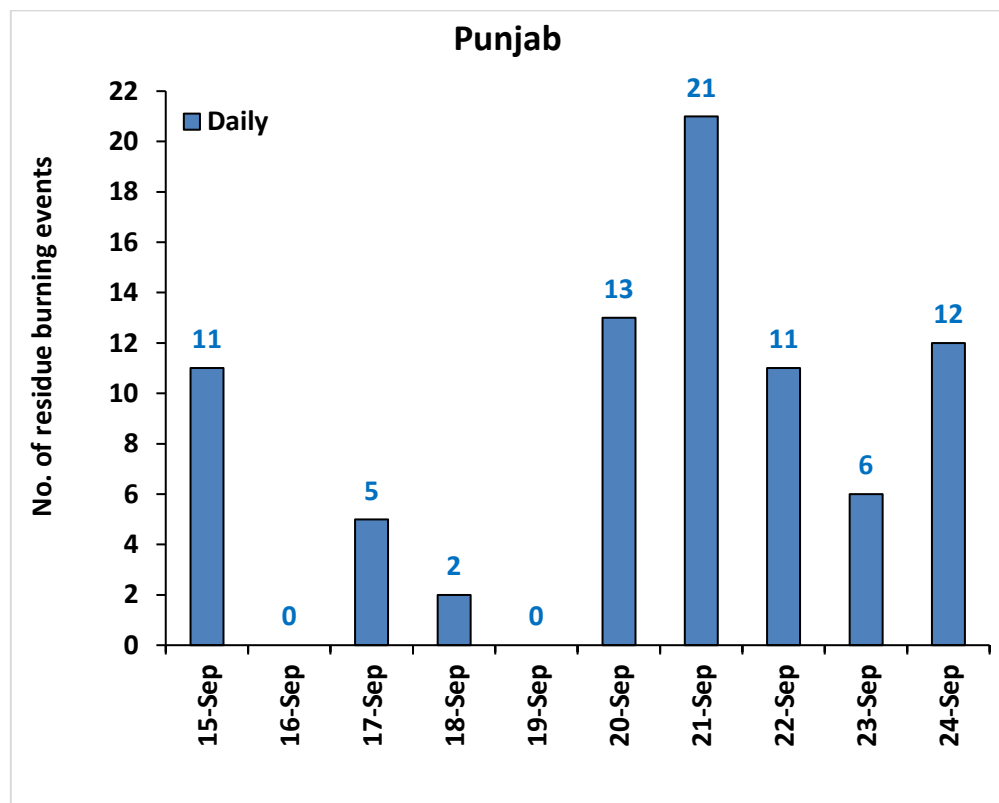
<https://creams.iari.res.in>



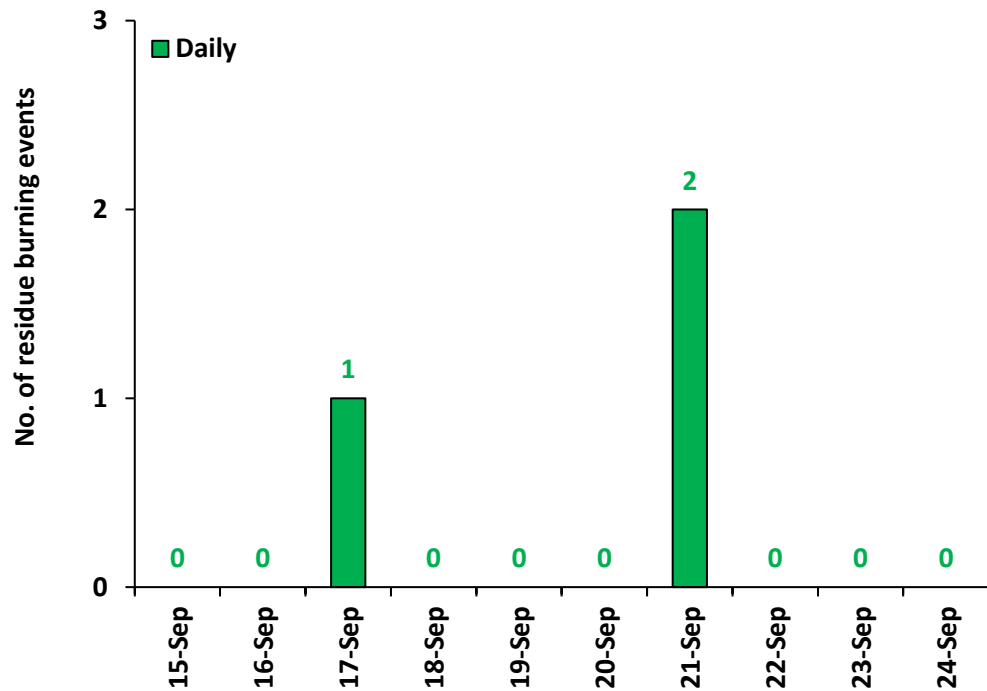
Highlights for 24-Sep-2024

- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **18** residue burning events in the six study States on **24-Sep-2024**.
- The state wise events detected on **24-Sep-2024** were **12** in Punjab, **06** in Haryana, **00** in UP, **00** in Delhi, **00** in Rajasthan and **00** in MP.
- Detection of residue burning events was hampered by the presence of thick clouds over Madhya Pradesh state.

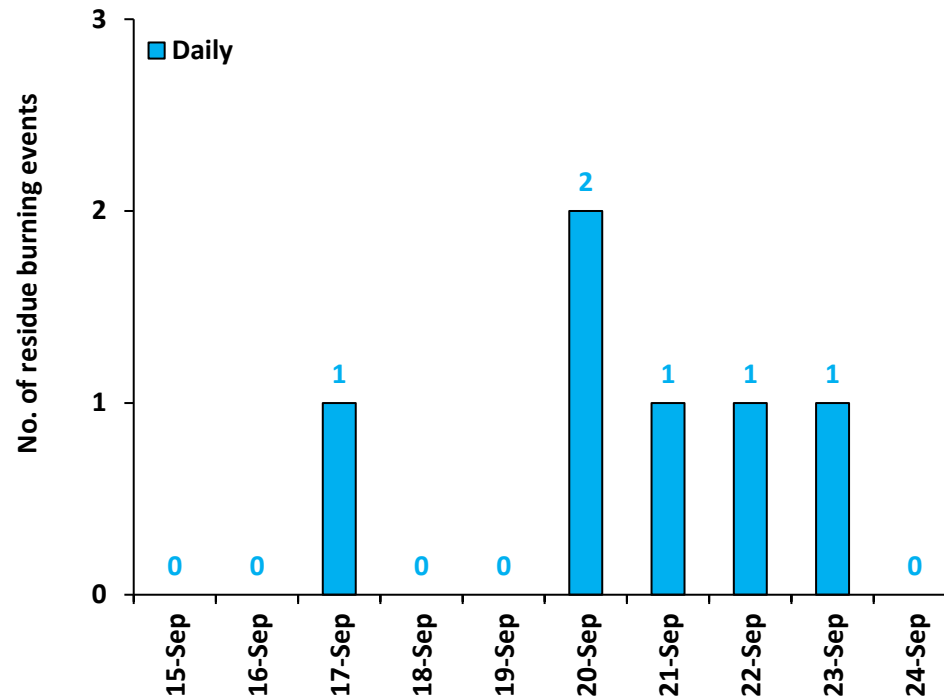
Temporal distribution of rice residue burning events for the study States in 2024



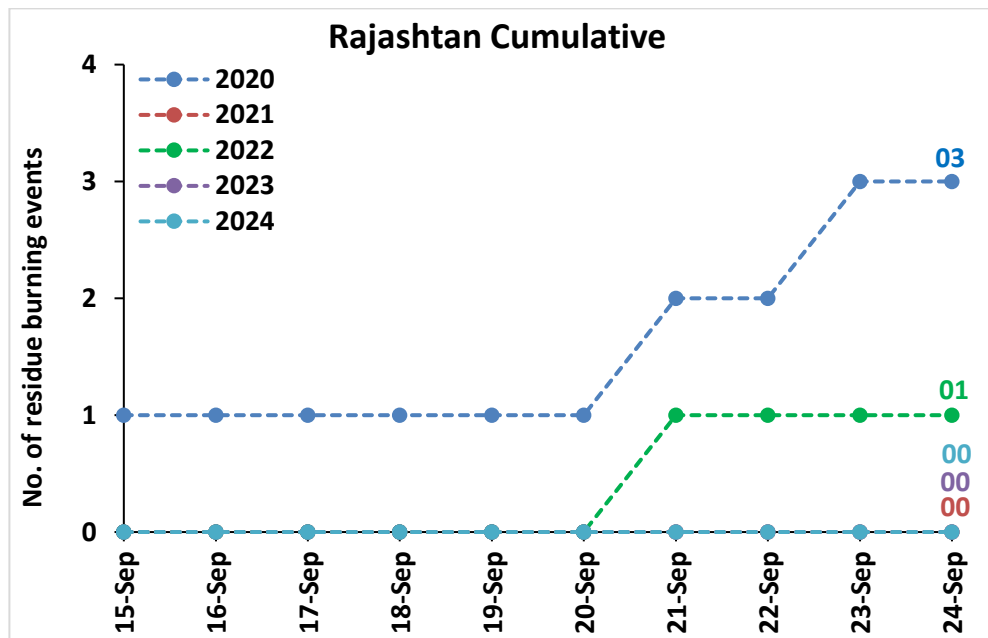
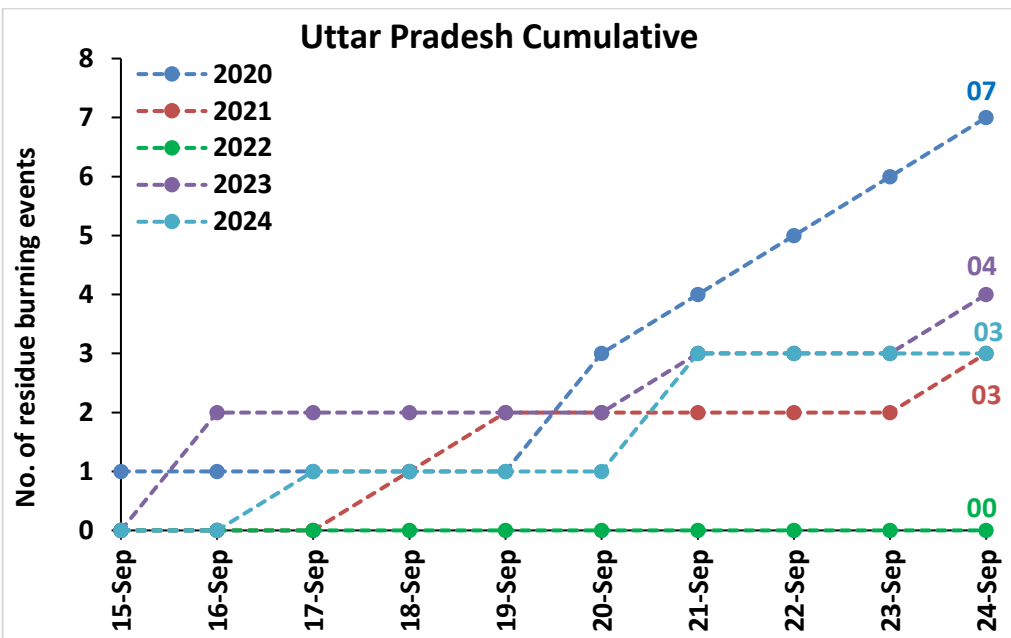
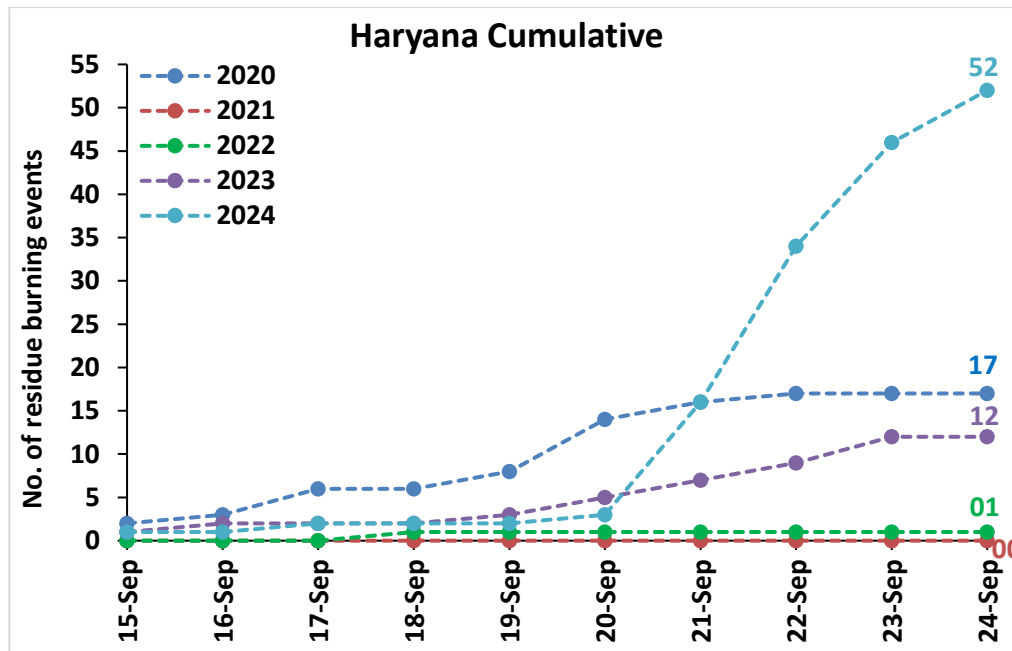
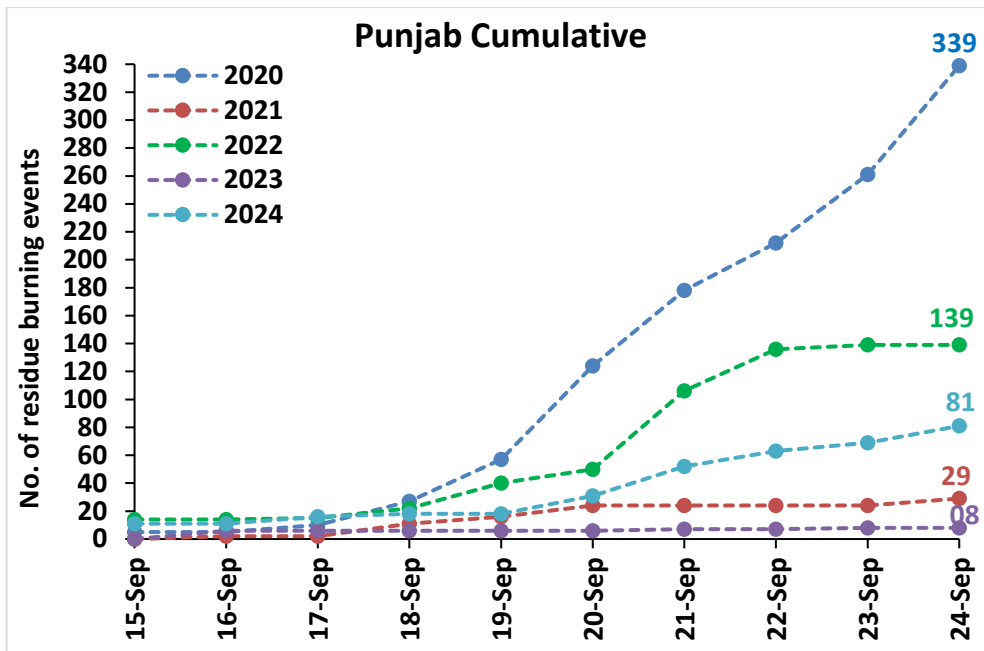
Uttar Pradesh

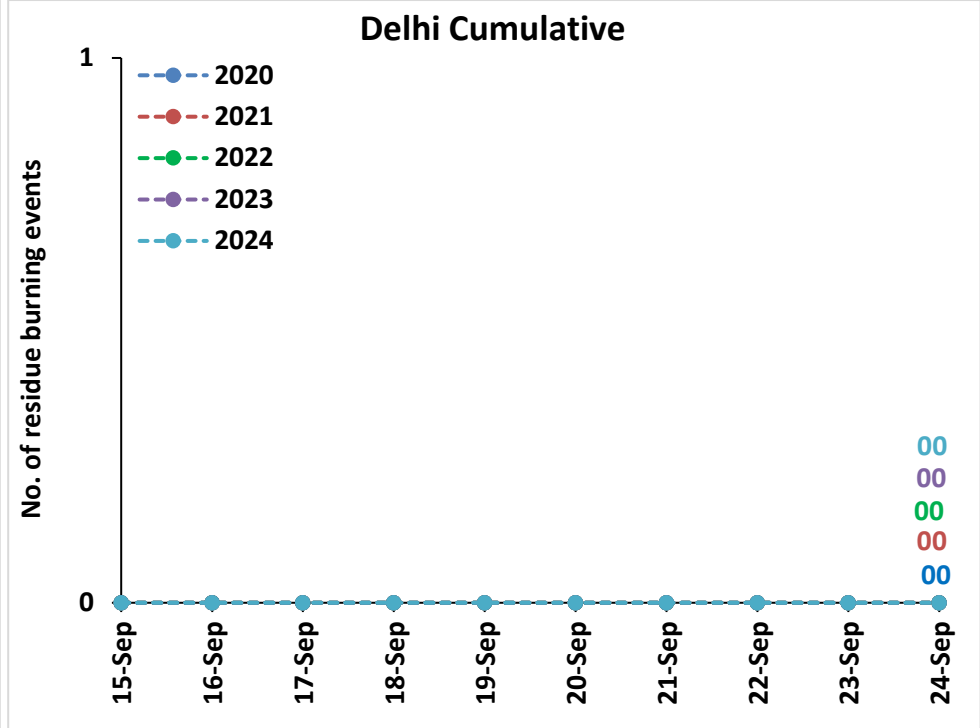
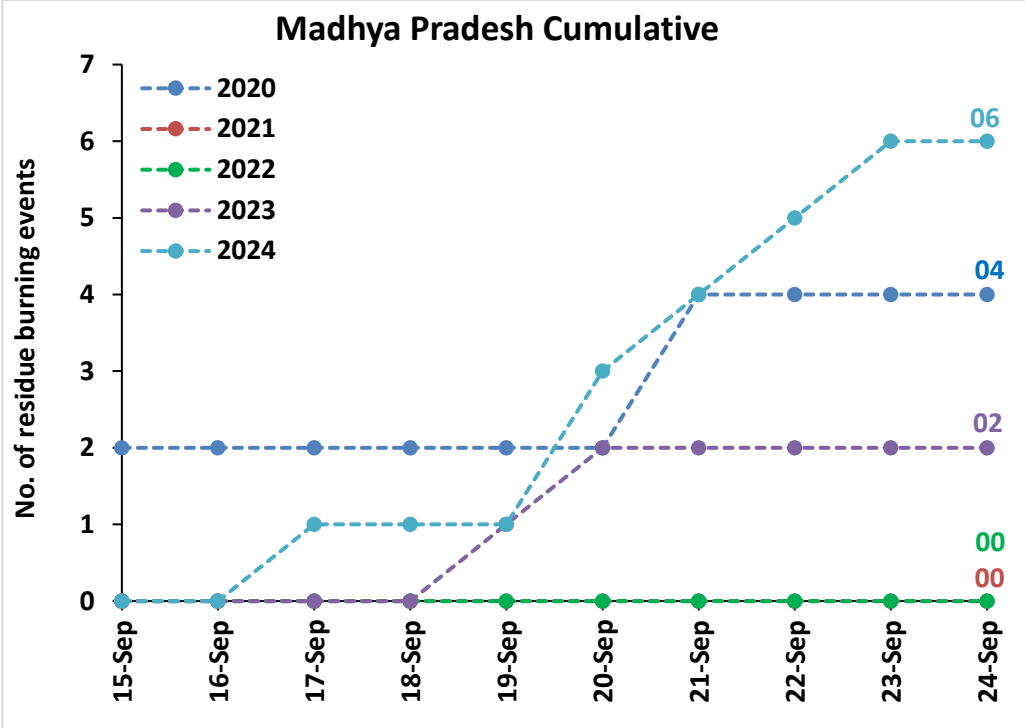


Madhya Pradesh

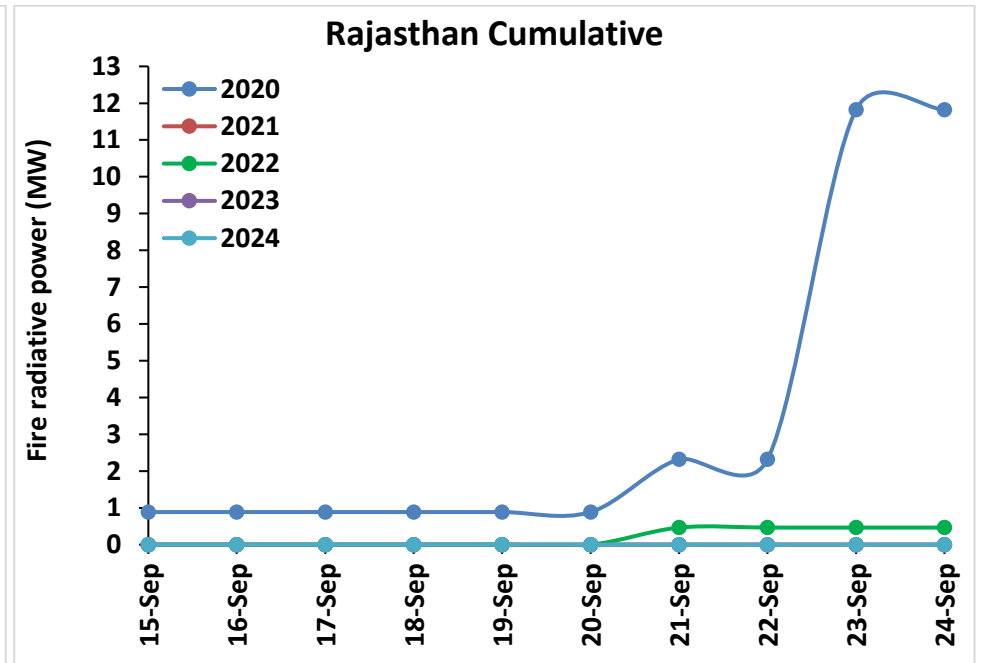
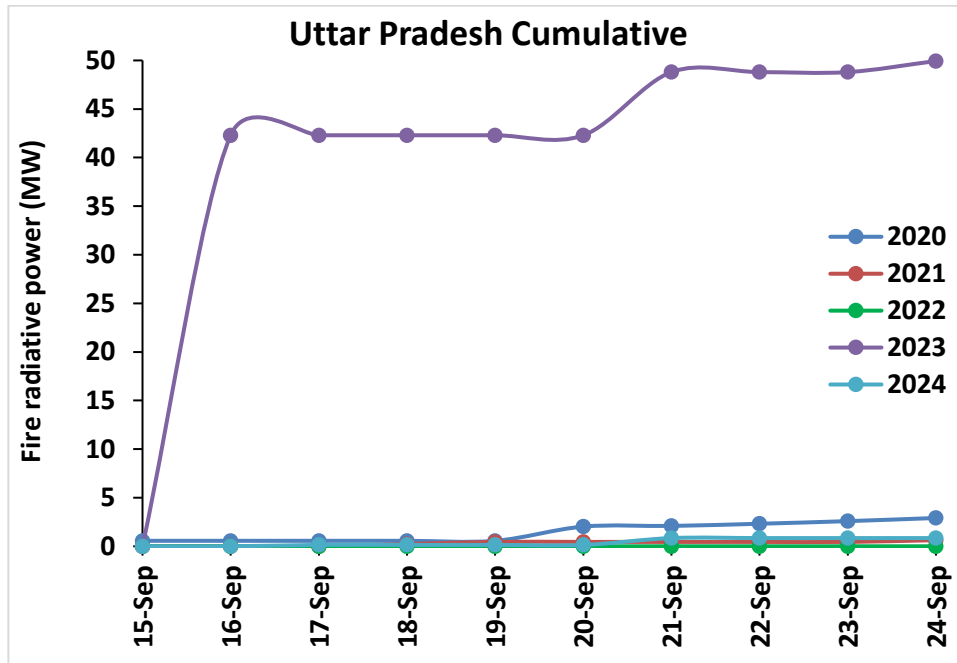
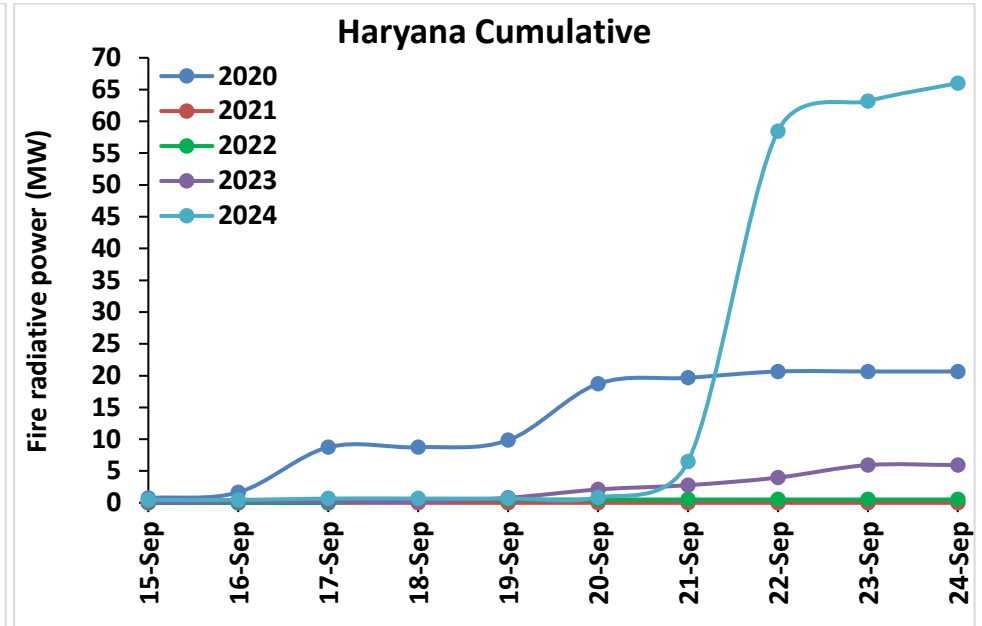
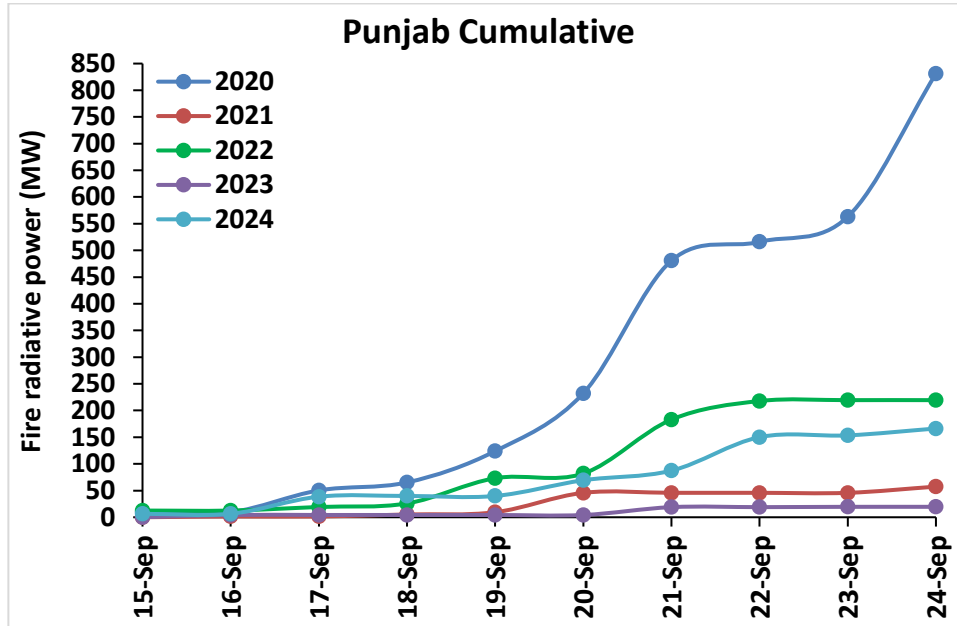


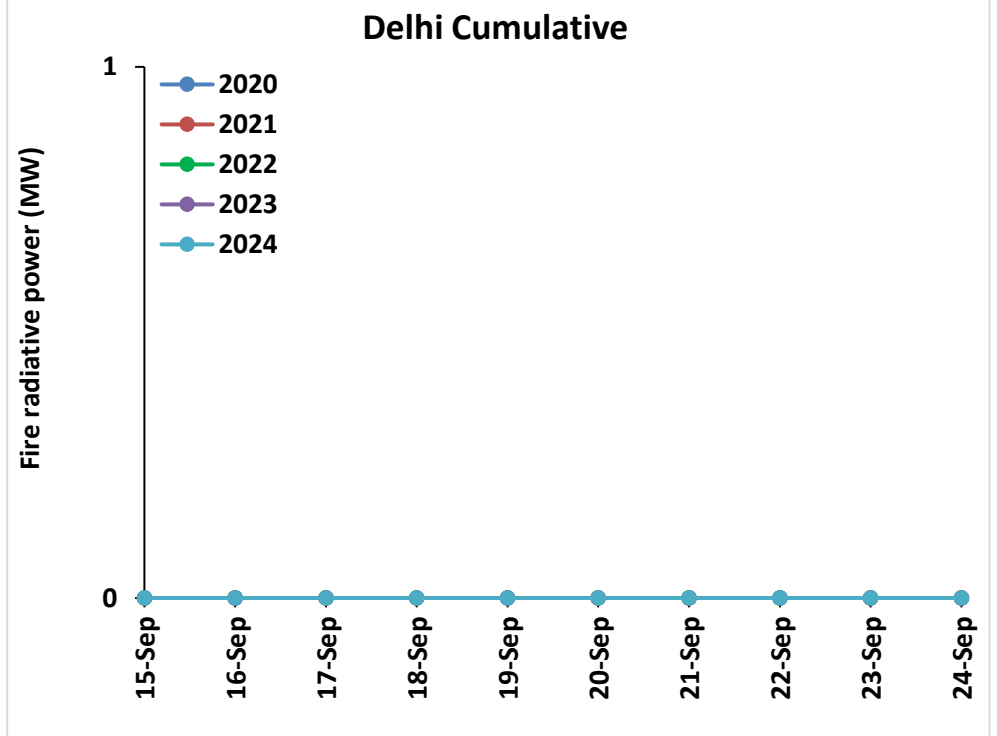
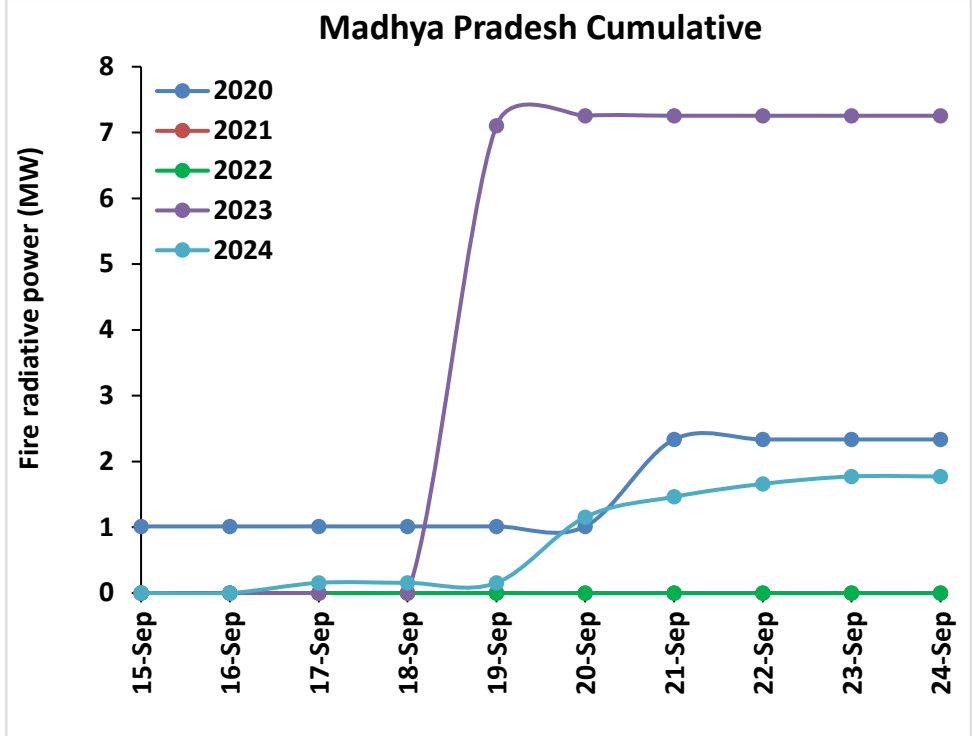
Comparison of residue burning events in current year (2024) with previous years (2020, 2021, 2022 and 2023) for the study States



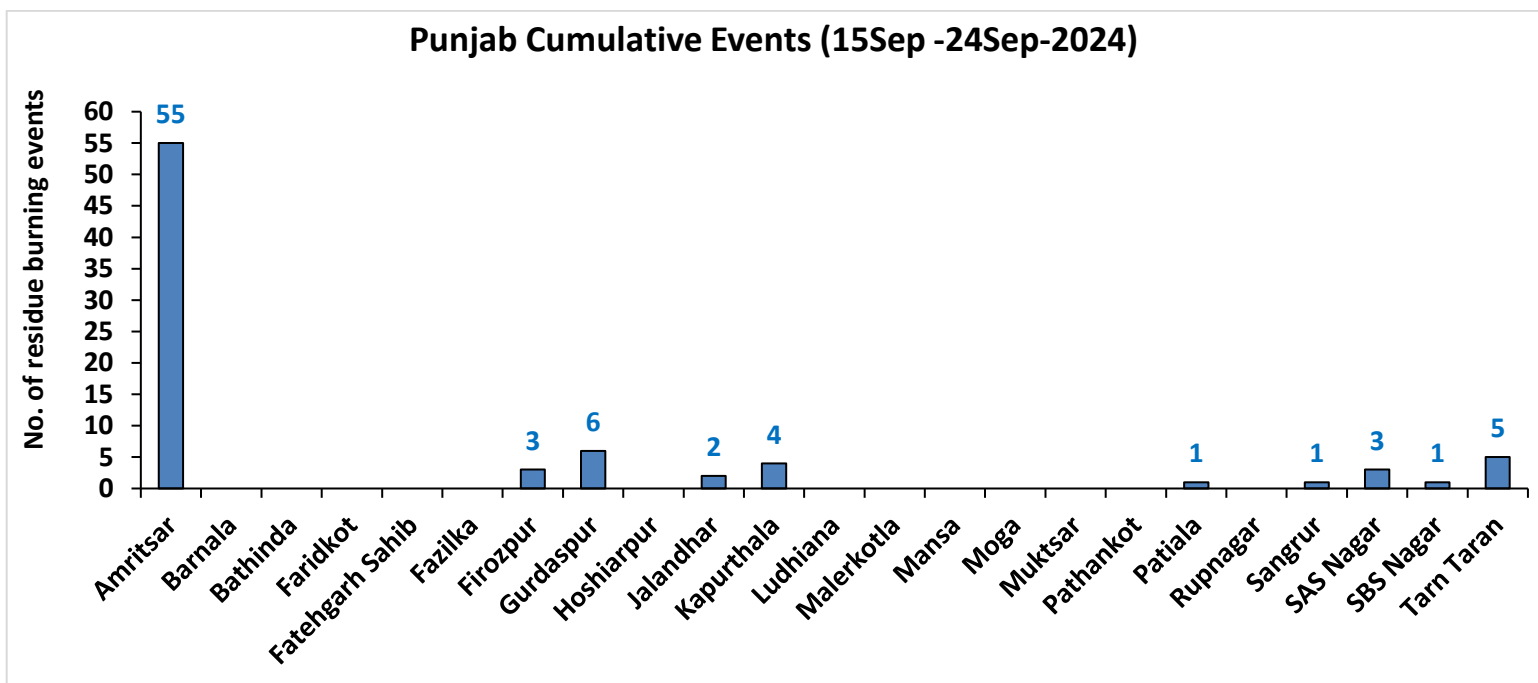
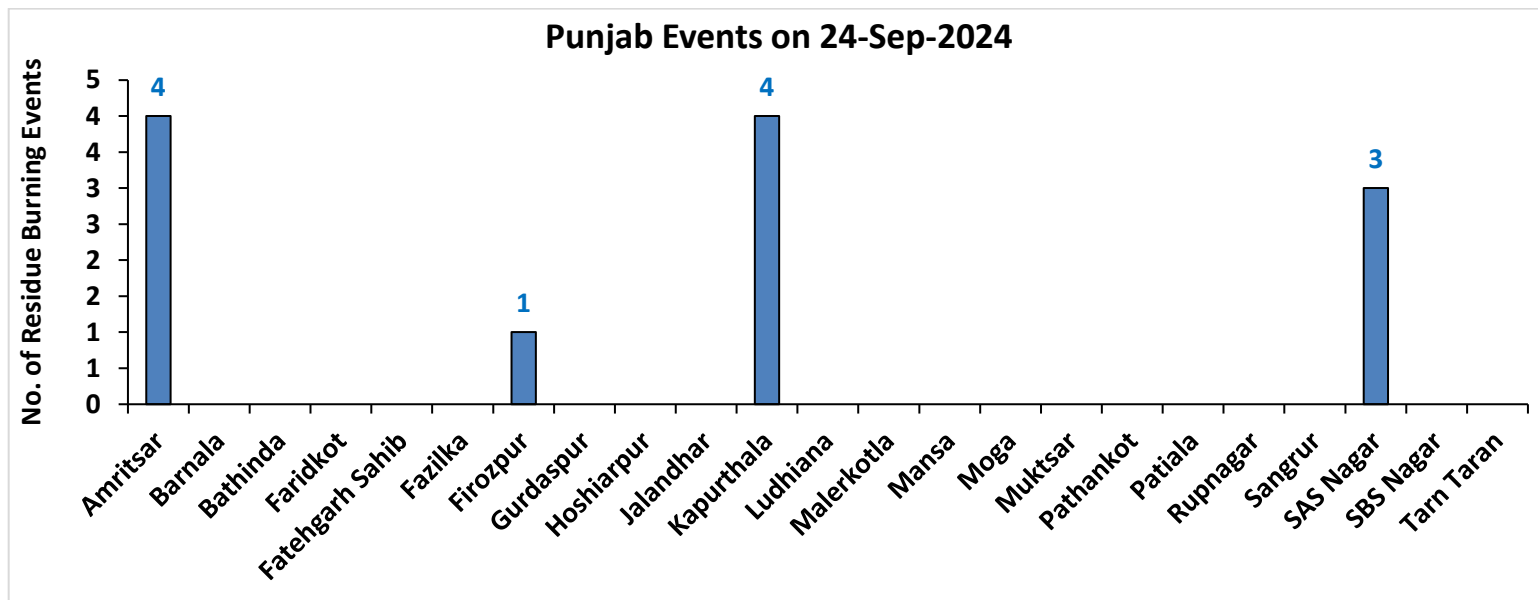


Comparison of residue burning fire power in current year (2024) with previous years (2020,2021,2022 and 2023) for the study States



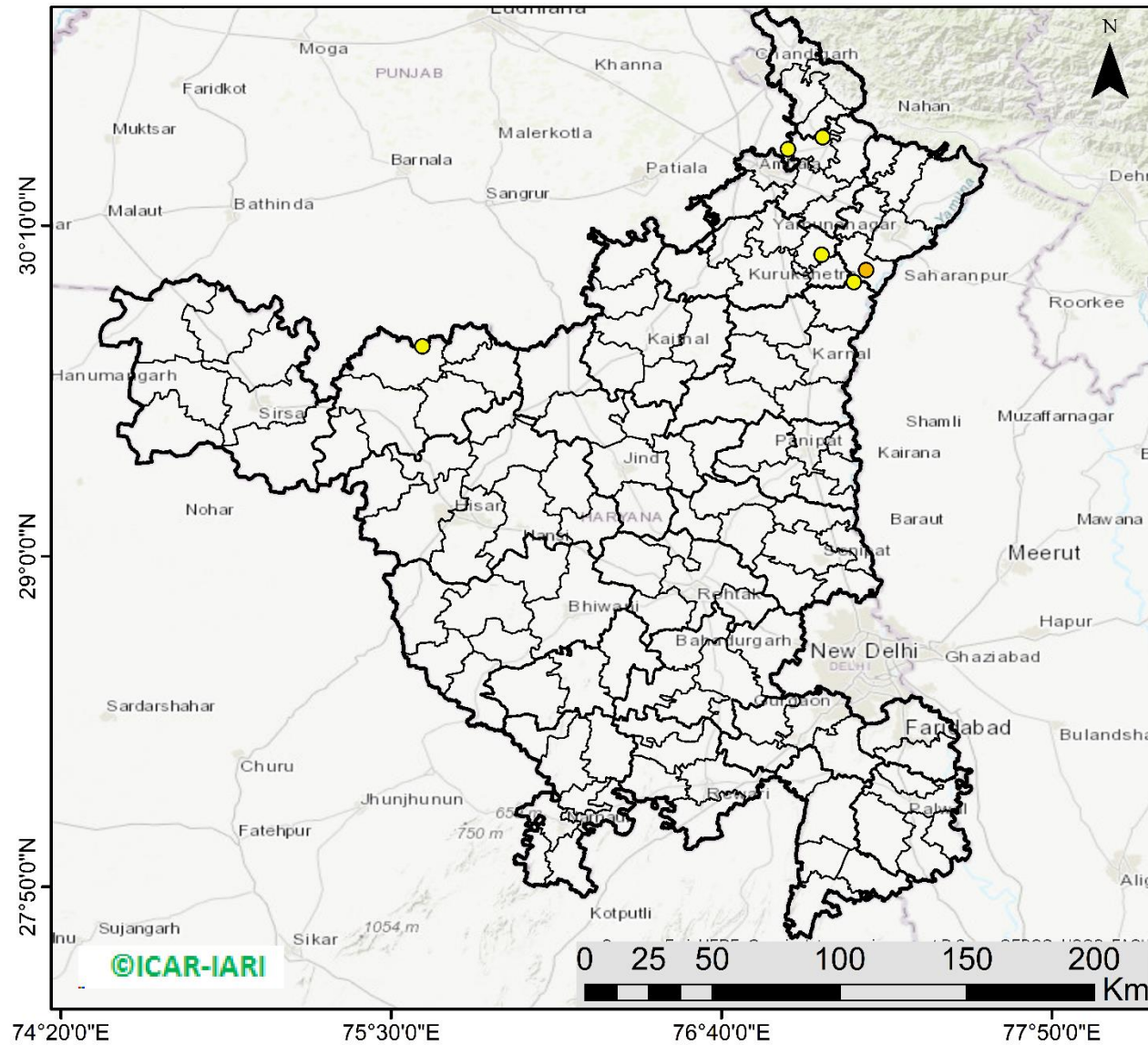


District-wise cumulative number of residues burning events in Punjab (15Sep-24Sep-2024)



Haryana

RICE RESIDUE BURNING IN HARYANA



06 burning events detected in Haryana on (24th Sep 2024)

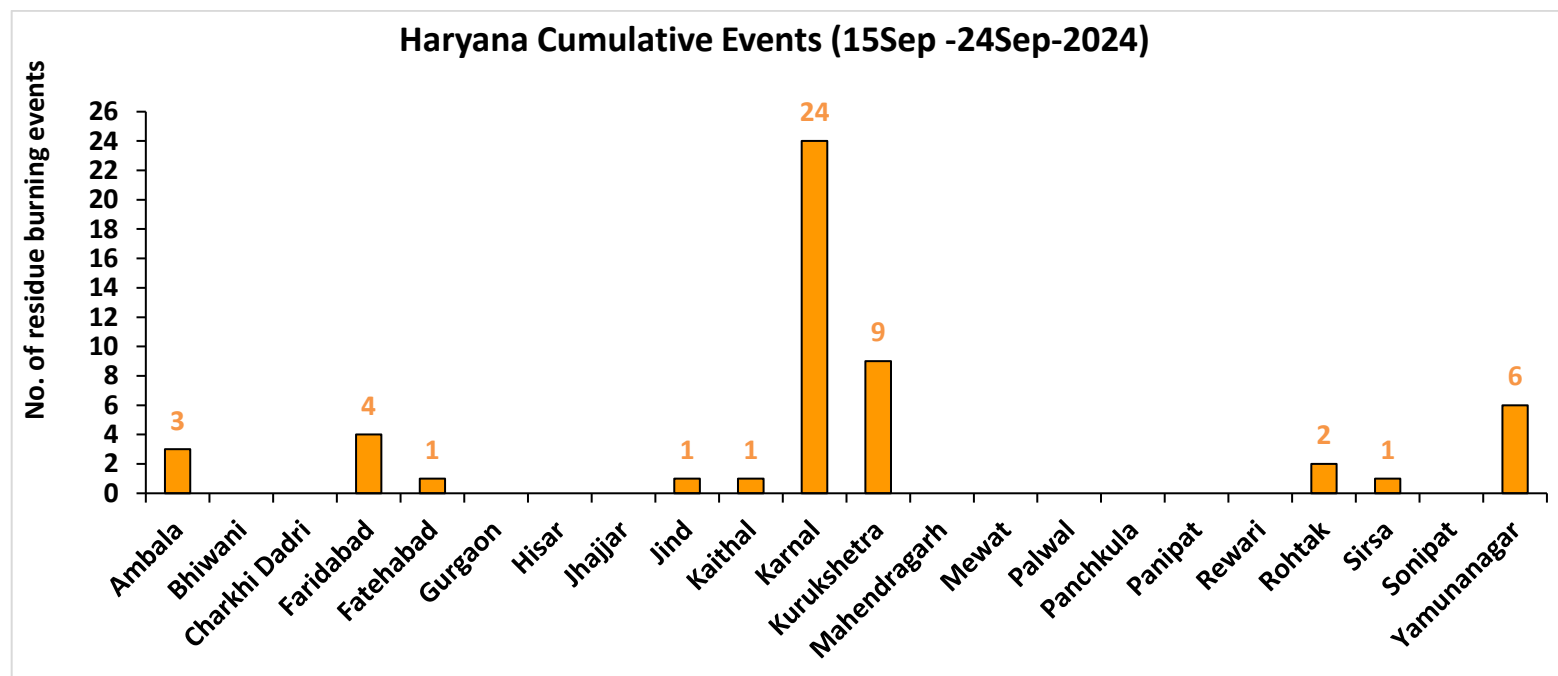
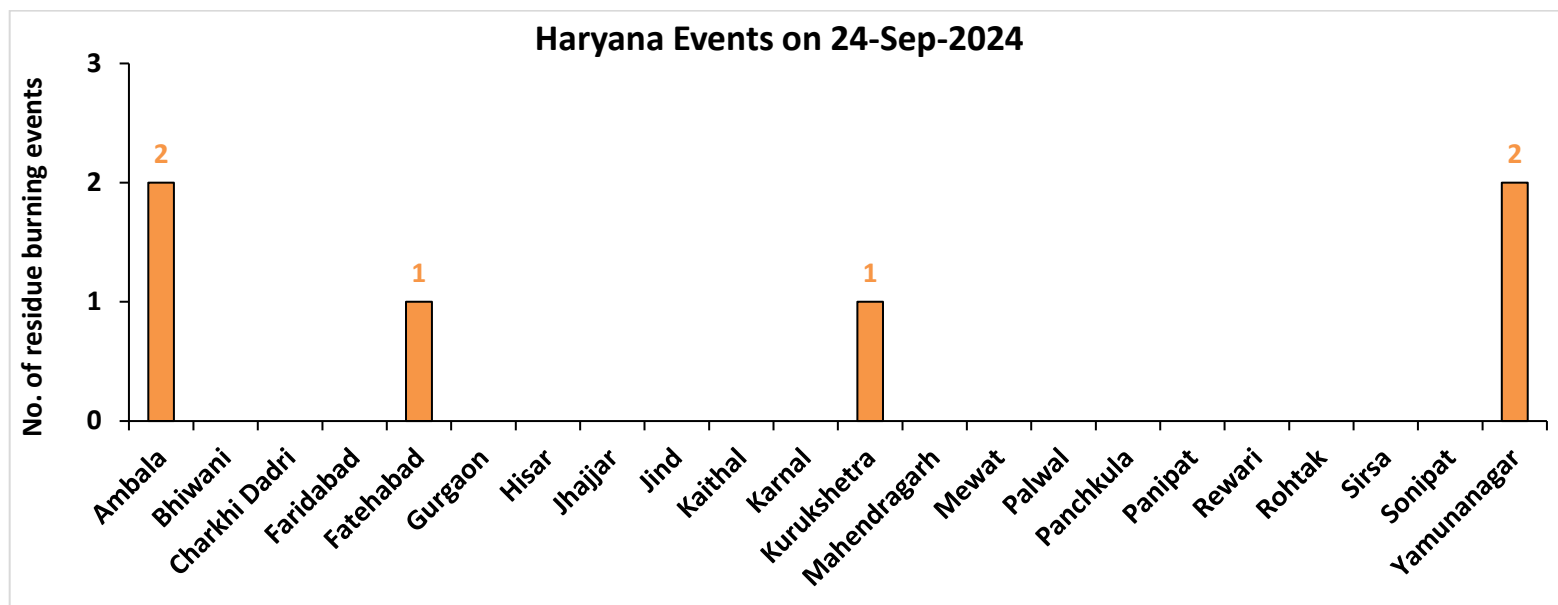
Fire Intensity (W/m²)

- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep-24Sep-2024)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022, 2023 and 2024
(Period: 15 September-24 September)

(a) Punjab

District	15 Sep-24 Sep				
	2020	2021	2022	2023	2024
Amritsar	299	23	121	6	55
Barnala	1	0	0	0	0
Bathinda	0	0	0	0	0
Faridkot	0	1	0	0	0
Fatehgarh Sahib	0	0	0	0	0
Fazilka	0	0	0	0	0
Firozpur	0	0	0	1	3
Gurdaspur	1	0	1	0	6
Hoshiarpur	0	0	0	1	0
Jalandhar	0	0	0	0	2
Kapurthala	2	0	0	0	4
Ludhiana	3	1	0	0	0
Malerkotla	0	0	0	0	0
Mansa	1	0	0	0	0
Moga	2	0	0	0	0
Muktsar	1	0	0	0	0
Pathankot	0	0	0	0	0
Patiala	1	3	1	0	1
Rupnagar	0	0	0	0	0
Sangrur	0	0	0	0	1
SAS NAGAR (Mohali)	3	0	1	0	3
SBS Nagar	0	0	1	0	1
Tarn Taran	25	1	14	0	5
Total	339	29	139	8	81

(b) Haryana

District	15 Sep-24 Sep				
	2020	2021	2022	2023	2024
AMBALA	3	0	0	0	3
BHIWANI	0	0	0	0	0
CHARKHI DADRI	0	0	0	0	0
FARIDABAD	0	0	0	0	4
FATEHABAD	1	0	0	1	1
GURGAON	0	0	0	0	0
HISAR	0	0	0	0	0
JHAJJAR	0	0	0	0	0
JIND	0	0	1	1	1
KAITHAL	0	0	0	0	1
KARNAL	9	0	0	5	24
KURUKSHETRA	2	0	0	1	9
MAHENDRAGARH	0	0	0	0	0
MEWAT	0	0	0	0	0
PALWAL	0	0	0	0	0
PANCHKULA	0	0	0	0	0
PANIPAT	1	0	0	0	0
REWARI	0	0	0	0	0
ROHTAK	0	0	0	1	2
SIRSA	1	0	0	0	1
SONIPAT	0	0	0	2	0
YAMUNANAGAR	0	0	0	1	6
Total	17	0	1	12	52

(c) Uttar Pradesh

District	15 Sep-24 Sep																
	2020	2021	2022	2023	2024	GAUTAMBUDHNAGAR	0	0	0	0	1	MUZAFARNAGAR	0	0	0	0	0
AGRA	0	0	0	0	0	GAZIPUR	0	0	0	0	0	PILHIBHIT	0	0	0	1	0
ALIGARH	0	0	0	0	0	GHAZIABAD	0	0	0	0	1	PRATAPGARH	0	0	0	0	0
ALLAHABAD	0	0	0	0	0	GONDA	0	0	0	0	0	RAIBEARELI	1	0	0	0	0
AMBEDKARNAGAR	0	0	0	0	0	GORAKHPUR	0	0	0	0	0	RAMPUR	0	1	0	0	0
AMETHI	0	0	0	0	0	HAMIRPUR	0	0	0	0	0	SAMBHAL	1	0	0	0	0
AMROHA	0	0	0	0	0	HAPUR	1	0	0	0	0	SANTKABIRNAGAR	0	0	0	0	0
AURAIYA	1	0	0	0	0	HARDOI	0	0	0	0	0	SANTRAVIDASNAGAR	0	0	0	0	0
AZAMGARH	0	0	0	0	0	HATHRAS	0	0	0	0	0	SHAHJAHANPUR	0	0	0	1	1
BADAUN	0	0	0	0	0	JALAUN	0	0	0	0	0	SHAMLI	1	0	0	0	0
BAGHPAT	1	0	0	0	0	JAUNPUR	0	0	0	0	0	SHARANPUR	0	0	0	0	0
BAHRAICH	0	0	0	0	0	JHANSI	0	0	0	0	0	SHRAWASTI	0	0	0	0	0
BALLIA	0	0	0	0	0	KANNAUJ	0	0	0	0	0	SIDDHARTHNAGAR	0	0	0	0	0
BALRAMPUR	0	0	0	0	0	KANPUR	0	1	0	0	0	SITAPUR	0	0	0	0	0
BANDA	0	0	0	0	0	KANPUR DEHAT	0	0	0	0	0	SONBHADRA	0	0	0	0	0
BARABANKI	0	0	0	0	0	KASGANJ	0	0	0	0	0	SULTANPUR	0	0	0	0	0
BAREILLY	0	0	0	0	0	KAUSHAMBI	0	0	0	0	0	UNNAO	0	0	0	0	0
BASTI	0	0	0	0	0	KHERI	0	0	0	0	0	VARANASI	0	0	0	0	0
BIJNOR	1	0	0	0	0	KUSHINAGAR	0	0	0	0	0	Total	7	3	0	4	3
BULANDSAHAR	0	0	0	0	0	LALITPUR	0	0	0	0	0						
CHANDAULI	0	0	0	0	0	LUCKNOW	0	0	0	0	0						
CHITRAKOOT	0	0	0	0	0	MAHARAJGANJ	0	0	0	0	0						
DEORIA	0	0	0	2	0	MAHOBA	0	0	0	0	0						
ETAH	0	0	0	0	0	MAINPURI	0	0	0	0	0						
ETAWAH	0	0	0	0	0	MATHURA	0	1	0	0	0						
FAIZABAD	0	0	0	0	0	MAU	0	0	0	0	0						
FARRUKHABAD	0	0	0	0	0	MEERUT	0	0	0	0	0						
FATEHPUR	0	0	0	0	0	MIRZAPUR	0	0	0	0	0						
FIROZABAD	0	0	0	0	0	MORADABAD	0	0	0	0	0						

(d) Delhi

District	15 Sep-24 Sep				
	2020	2021	2022	2023	2024
CENTRAL	0	0	0	0	0
EAST	0	0	0	0	0
NEW DELHI	0	0	0	0	0
NORTH	0	0	0	0	0
NORTH EAST	0	0	0	0	0
NORTH WEST DELHI	0	0	0	0	0
SHAHADRA	0	0	0	0	0
SOUTH	0	0	0	0	0
SOUTH EAST	0	0	0	0	0
SOUTH WEST DELHI	0	0	0	0	0
WEST DELHI	0	0	0	0	0
Total	0	0	0	0	0

(e) Rajasthan

District	15 Sep-24 Sep				
	2020	2021	2022	2023	2024
AJMER	0	0	0	0	0
ALWAR	0	0	0	0	0
BANSWARA	0	0	0	0	0
BARAN	0	0	0	0	0
BARMER	1	0	0	0	0
BHARATPUR	0	0	0	0	0
BHILWARA	1	0	0	0	0
BIKANER	0	0	0	0	0
BUNDI	0	0	1	0	0
CHITTAURGARH	0	0	0	0	0
CHURU	0	0	0	0	0
DAUSA	0	0	0	0	0
DHOLPUR	0	0	0	0	0
DUNGARPUR	0	0	0	0	0
GANGANAGAR	0	0	0	0	0
HANUMANGARH	0	0	0	0	0
JAIPUR	0	0	0	0	0
JAISELMER	1	0	0	0	0
JALOR	0	0	0	0	0
JHALAWAR	0	0	0	0	0
JHUNJHUNUN	0	0	0	0	0
JODHPUR	0	0	0	0	0
KARAULI	0	0	0	0	0
KOTA	0	0	0	0	0
NAGOUR	0	0	0	0	0
PALI	0	0	0	0	0
PRATAPGARH	0	0	0	0	0
RAJSMAND	0	0	0	0	0
SIKAR	0	0	0	0	0
SIROHI	0	0	0	0	0
SWAIMADHOPUR	0	0	0	0	0
TONK	0	0	0	0	0
UDAIPUR	0	0	0	0	0
Total	3	0	1	0	0

(f) Madhya Pradesh

District	15 Sep-24 Sep										
	2020	2021	2022	2023	2024	PANNA	0	0	0	0	0
ALIRAJPUR	0	0	0	0	0	RAISEN	0	0	0	0	0
ANUPPUR	0	0	0	0	0	RAJGARH	0	0	0	0	0
ASHOKNAGAR	0	0	0	0	0	RATLAM	0	0	0	0	0
BALAGHAT	0	0	0	0	0	REWA	0	0	0	0	0
BARWANI	0	0	0	0	0	SAGAR	2	0	0	0	0
BETUL	0	0	0	0	0	SATNA	0	0	0	0	0
BHIND	0	0	0	0	0	SEHORE	0	0	0	0	0
BHOPAL	0	0	0	0	0	SEONI	0	0	0	0	0
BURHANPUR	0	0	0	0	0	SHAHDOL	0	0	0	0	0
CHHATARPUR	0	0	0	0	0	SHAJAPUR	0	0	0	0	0
CHHINDWARA	0	0	0	0	0	SHEOPUR	0	0	0	0	0
DAMOH	0	0	0	1	0	SHIVPURI	0	0	0	0	0
DATIA	0	0	0	0	0	SIDHI	0	0	0	0	0
DEWAS	0	0	0	0	0	SINGRAULI	0	0	0	0	2
DHAR	0	0	0	0	1	TIKAMGARH	0	0	0	0	0
DINDORI	0	0	0	0	0	UJJAIN	0	0	0	0	0
EAST NIMAR	0	0	0	0	0	UMARIA	0	0	0	0	0
GUNA	0	0	0	0	0	VIDESHA	0	0	0	0	0
GWALIOR	0	0	0	0	0	WEST NIMAR	0	0	0	0	0
HARDA	2	0	0	0	0	Total	4	0	0	2	6
HOSHANGABAD	0	0	0	1	0						
INDORE	0	0	0	0	3						
JABALPUR	0	0	0	0	0						
JHABUA	0	0	0	0	0						
KATNI	0	0	0	0	0						
MANDLA	0	0	0	0	0						
MANDSAUR	0	0	0	0	0						
MORENA	0	0	0	0	0						
NARSHIMAPURA	0	0	0	0	0						
NIMACH	0	0	0	0	0						

Total	0	0	0	0	0	3	0	1	0	0	4	0	0	2	6
--------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

Details of residue burning events in Punjab on 24-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	ATTARI	S-NPP	31.60943	74.56708	14:05:54	D	5.70
2	AMRITSAR	ATTARI	S-NPP	31.61146	74.56851	14:05:54	D	3.00
3	AMRITSAR	ATTARI	S-NPP	31.63799	74.59084	14:05:54	D	3.30
4	AMRITSAR	RAYYA	S-NPP	31.58293	75.26483	14:05:54	D	1.60
5	FIROZPUR	MAKHU	S-NPP	31.06248	74.97528	14:05:54	D	3.80
6	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.25153	75.13725	14:05:54	D	16.90
7	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.25190	75.13851	14:05:54	D	15.30
8	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.25707	75.14337	14:05:54	D	18.10
9	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.25748	75.14465	14:05:54	D	11.70
10	SAS NAGAR	DERABASSI	S-NPP	30.44152	76.89713	14:05:54	D	5.40
11	SAS NAGAR	DERABASSI	S-NPP	30.44232	76.89774	14:05:54	D	4.30
12	SAS NAGAR	DERABASSI	S-NPP	30.45116	76.87550	14:05:54	D	2.70

Details of residue burning events in Haryana on 24-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMBALA	SHAHZADPUR	S-NPP	30.43628	76.90177	14:05:54	D	3.10
2	AMBALA	SHAHZADPUR	S-NPP	30.47811	77.02396	14:05:54	D	2.40
3	FATEHABAD	RATIA	S-NPP	29.74031	75.61028	14:05:54	D	1.80
4	KURUKSHETRA	BABAIN	S-NPP	30.06354	77.02049	14:05:54	D	3.70
5	YAMUNANAGAR	RADAUR	S-NPP	29.96689	77.13427	14:05:54	D	2.90
6	YAMUNANAGAR	RADAUR	S-NPP	30.00931	77.17739	14:05:54	D	6.40

The study used data received from following Satellites at NRSC Ground Station

S. No.	Satellite Name	Sensor	Resolution (meter)	Day / Night Passes
1.	Suomi NPP	VIIRS	375 / 750	Both
2.	Terra	MODIS	1000	Both
3.	Aqua	MODIS	1000	Both

**The rice mask for the Punjab and Haryana were provided by MNCFC, MoA&FW, Govt of India
The kharif crop mask for Delhi, Uttar Pradesh, Rajasthan and Madhya Pradesh were provided by NRSC**

Study Team

ICAR - HQ	Dr Rajbir Singh	ADG-NRM (AAF&CC)	adgagroandaf@gmail.com
ICAR - IARI	Dr V.K. Sehgal	Principal & Nodal Scientist	iaricreams@gmail.com
	Dr Rajkumar Dhakar	Senior Scientist	raidhakar.iari@gmail.com
	Mr Mohd Jahangir	Lab Assistant (KRISHI)	mjahangir198@gmail.com
ICAR - ATARI	Dr Parvender Sheoran	Director ATARI (Zone-I) Ludhiana	zcu1ldh@gmail.com
	Dr. J.P. Mishra	Director ATARI (Zone-II) Jodhpur	jp.mishra67@gov.in
	Dr S.K. Dubey	Director ATARI (Zone-III) Kanpur	zpdicarkanpur@gmail.com
ICAR - IASRI	Dr Rajender Parsad	Director	rajender.parsad@icar.gov.in

GIS Maps of fire events can be visualized online on ICAR KRISHI Geoportal website: <http://geoportal.icar.gov.in:8080/geoexplorer/composer/>
(Part of KRISHI Portal: <https://krishi.icar.gov.in> initiative)

The DASHBOARD for paddy residue burning events is available at weblink: [CREAMS Fire Dashboard](#)
