MONITORING RICE RESIDUE BURNING IN NORTH INDIA USING SATELLITE REMOTE SENSING DURING

Special Report on High Incidences in Amritsar and Tarn Taran Districts of Punjab (1-Oct to 10-Oct 2020)

ITEM / District	Amritsar		Tarn Taran	
	2020	2019	2020	2019
Rice Sown Area ('000 ha)	194.5	198.1	175.1	188.5
Rice Area Harvested by 10th Oct ('000 ha)	96.2	60.7	63.6	24.3
Rice Area Harvested by 10th Oct as %age of Sown Area	49.4%	30.6%	36.3%	12.9%
Rice Burnt Area by 10th Oct ('000 ha)	71.8	45.1	38.8	15.4
Rice area Burnt by 10th Oct as %age of Sown Area	36.9%	11.6%	22.2%	4.0%
Rice Burnt Area by 10th Oct as %age of Harvested Area	74.6%	38.0%	60.9%	30.9%
Fire Incidents recorded 1 – 10 Oct	515	180	341	92

*Data used: Area by Sentinel-2 MSI images 20m resolution for 2020 and 2019; Fire incidents by MODIS (Terra/Aqua), VIIRS (S-NPP), AVHRR (NOAA-18/19, Metop-1/2)

- The practice of paddy residue burning in Punjab has been reported every year first from the districts of Amritsar and Tarn Taran. The farmers here plant potato and vegetables like peas after paddy harvesting, the sowing which needs to be completed by mid October.
- The paddy residue burning incidents recorded by satellites during 1 – 10th October in Amritsar increased from 180 in 2019 to 515 in 2020 – an increase of about 2.9 times. In Tarn Taran the burning incidents increased from 92 in 2019 to 341 in 2020 – an increase of about 3.7 times.
- Using remote sensing images, it is estimated that by 10th October the paddy area harvested in Amritsar district has increased by 35,500 ha and in Tarn Taran by 39,300 ha in 2020 as compared to 2019. So it indicates an significant early harvesting of paddy in these two districts in 2020 than in 2019, which may be on account of (a) early planting of paddy by about 7 – 10 days in 2020 than in 2019, (b) increase in proportion of area under short duration varieties, and (c) clear weather during 2020 as compared to cloudy weather in 2019 during the same period.
- By 10th October, the burnt area estimated by remote sensing in Amritsar has increased by 26,700 ha and in Tarn Taran by 23,400 ha in 2020 than in 2019.

- The proportion of burnt area to harvested area in Amritsar has increased from 38% in 2019 to 74.6% in 2020 - an increase of 36.6%. In Tarn Taran the proportion of burnt area to harvested area has increased from 30.9% in 2019 to 60.9% in 2020 – an increase of 30.0%.
- It is estimated that increase in burning in 2020 due to early harvesting is about 9800 ha and increase in burning due to increase in burning practice is about 16,900 ha area in Amritsar.
- It is estimated that increase in burning in 2020 due to early harvesting is about 7,020 ha and increase in burning due to increase in burning practice is about 16,380 ha area in Tarn Taran.
- It may be concluded that in both these districts, the higher incidents of burning in 2020 in comparison to 2019 are on account of (a) increase in area harvested, as well as (b) increase in practice of residue burning this year. As both these districts have sizeable area under Basmati varieties, it also implies that some farmers are also practicing residue burning of Basamti paddy also. Further, the increase in burning incidents is more due to increasing practice of burning adopted by farmers than by early harvesting in these districts.