



MONITORING PADDY RESIDUE BURNING IN NORTH INDIA USING SATELLITE REMOTE SENSING DURING 2020



Report on Success of the Central Sector Scheme in Adoption of Machinery for In-situ Rice Crop Residue Management

1. Targeting of Equipments under the Central Sector Scheme in Punjab

Punjab is the major state in which the farmers practice open burning of paddy residue after harvest to clear the fields for subsequent planting of next crops of potato/wheat in the *rabi* season. Under the Central Sector Scheme on “In-situ Management of Rice Residue”, subsidy has been extended to individual farmers and custom hiring centers in last three years for the purchase of equipments for in-situ management of rice residue so that farmers desist from the practice of its “on-farm” burning. One of the success of the Scheme can be determined analyzing if the targeting of districts for the supply of equipments under the scheme was appropriate or not. So, a correlation analysis was carried at district level between: (a) the “total number of all the equipments supplied in last three years” and the “district rice area planted” (Fig 1a), and (b) “Total number of all the equipments supplied in last three years” and “rice area burnt as detected by satellite analysis (Fig 1b).

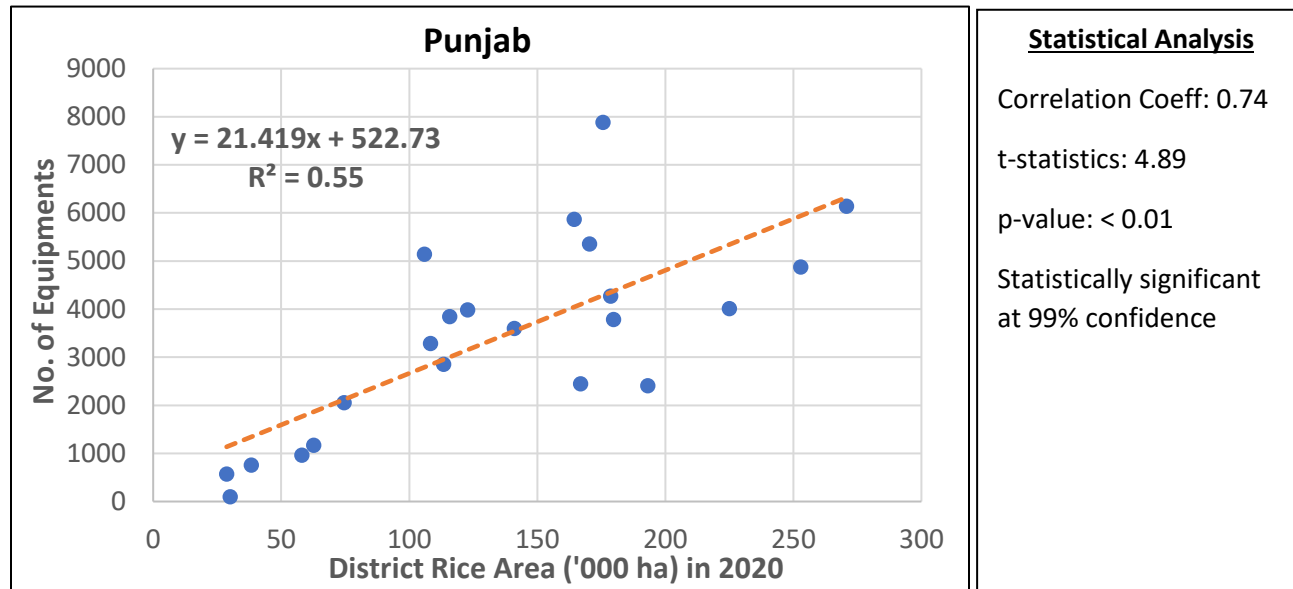


Figure 1a. Relation between “Equipments supplied” and “District Rice Area sown in 2020” in Punjab

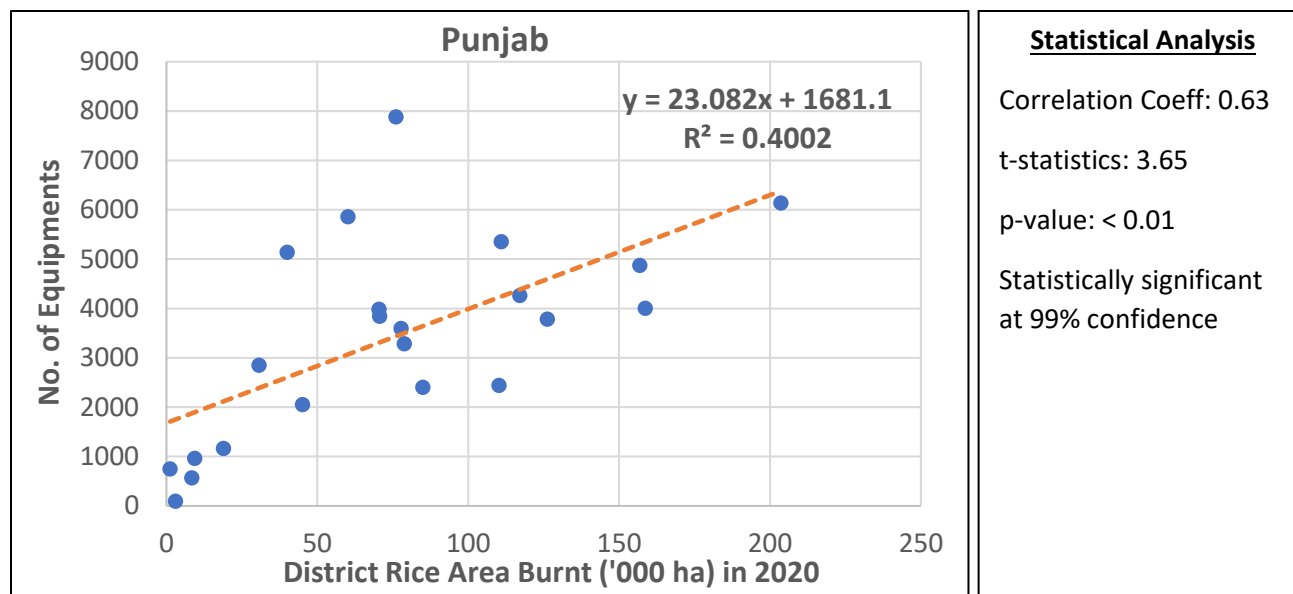


Fig 1b. Relation between “Equipments supplied” and “District Rice Area Burnt in 2020” in Punjab

The analysis clearly shows statistically significant relation (at 99% confidence) of “Equipments supplied” with both “Rice area sown” and “Rice area burnt” at district level in 2020, clearly suggesting that the scheme was well targeted i.e. a greater number of equipments were supplied in those districts which have either high rice sown area or rice burnt area. So, it can be concluded that the scheme was well targeted as more equipments were supplied in districts with higher rice area and higher rice burnt area.

2. Success of Scheme in Reducing the Rice Burning Events

In order to evaluate the success of scheme in terms reduction in rice residue burning events by supplying the equipments to farmers for in-situ management of residue, relation was analyzed between the “Total number of equipments supplied till 2020” and the “Rice area burnt in 2020” for Punjab. In order to normalize for variations in rice area sown among the districts, the “number of equipments supplied per 1000 ha of rice area” was correlated with “rice area burnt in 2020”. Initially no statistically significant relation was observed between the two. But when districts with rice sown area less than 20,000 ha were ignored a statistically significant relation was observed between the two parameters (Fig 2).

A negative relation was seen between “number of equipments supplied per 1000 rice ha” and “Rice area burnt” in 2020. The correlation coefficient between the two is 0.52. The relation is statistically significant at 95% confidence level. It implies that that we can conclude with confidence that the rice burning reduced in districts in which a greater number of equipments per 1000 area were supplied under the scheme.

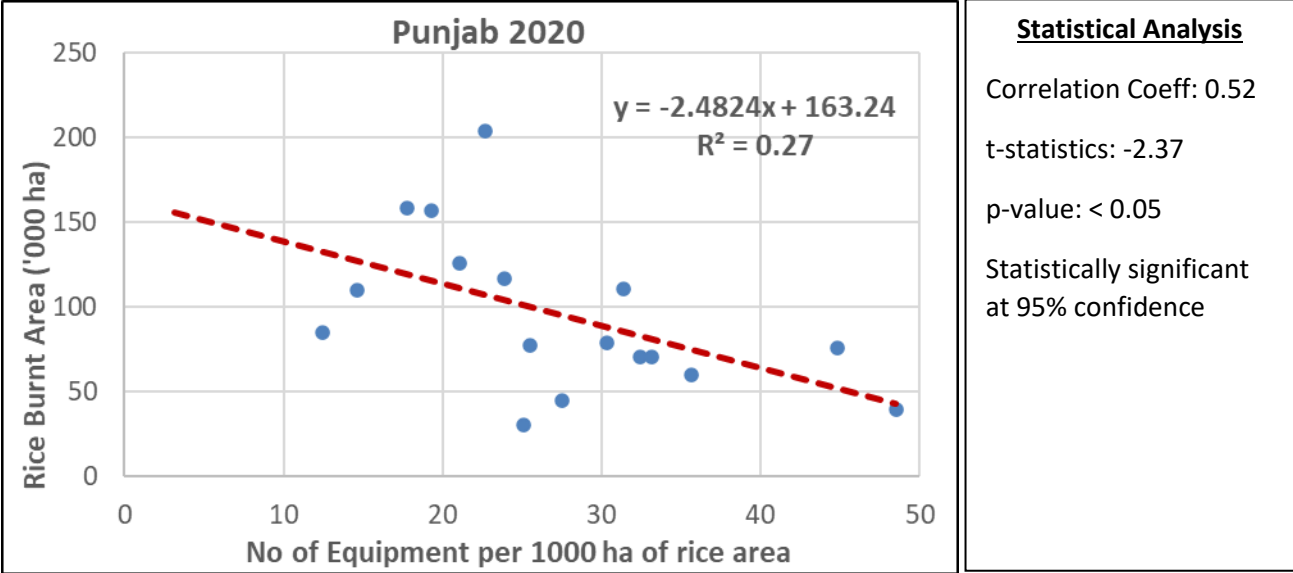


Fig 2 Relation between the “Rice burnt area in 2020” and “Number of equipments per 10000 ha of rice area sown supplied till 2020” for Punjab.