

Farmers not the principal culprits

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There's a continuous debate that burning of rice crop residue in Punjab is the primary contributor to smog. Every year people in the arena of policy making shift all the responsibility on farmers consequently farmers are considered as the primary culprits behind smog resultantly the blame of the whole nation falling sick due numerous sinus disorders falls on the farmers.

In addition to policymakers, urban residents also attribute the emergence of smog to the burning of rice stubbles in Punjab.

The case of Lahore is very serious as it retained its position as the world's most polluted city for three consecutive years. This makes us believe that there is a pressing need for counterfactual to be presented from farmers' perspective in this regard.

Before diving into specifics, let's review the existing evidence. Two documented pieces of evidence on smog are available to date. The first study was conducted by FAO (Food and Agriculture Organisation) in 2018-19 that analyzes entire Punjab.

This study confirms that crop residue burning contributes only 20 percent to smog, whereas the transport sector stands as the largest contributor, accounting for 43 percent of emissions, followed by industry at 25 percent and the power sector at 12 percent.

The second evidence with a special focus on Lahore is generated by The Urban Unit in 2022, indicates that rice crop burning contributes a minor share of just 4 percent to smog in the city while the transport sector emerges as the primary culprit, responsible for 83 percent of emissions.

These findings make it evident that the agriculture sector is not the primary contributor to smog in entire Punjab and not even in Lahore.

There is another prevailing misconception requiring rectification is that smog only occurs during the months of winter, especially during last two months of kharif season when rice is being harvested. While historical data by the IQAir reveals a consistent presence of particulate matter in country's atmosphere throughout the year.

So, how farmers alone can be held responsible for the presence of particulate matter in the atmosphere year-round? Air becomes a little more breathable in the months of July and August only due to monsoon.

Here another question arises, why farmers continue to burn this biomass? Apparently, they burn rice stubble due to its perceived cost-effectiveness and quick land clearance for next crop. It's a well-known fact that farmers face multiple issues due to price distortion in both input and output markets. In the output market they are forced to sell their crop even at lesser price announced by the government.

At this time, when they are dealing with the output market distortions, they have to prepare land for the next crop. At land preparation stage they deal with the input market issues for instance, fertilizer price always shoots up when they are needed the most.

The practice of black-marketing takes input prices at alarmingly high levels. This increases the cost of production of the next crop and while they earn less profit on the previous crop. In this scenario they opt for this quick and cost effective land clearance mechanism.

The social cost of this crop residue-burning includes environmental and health impacts, as well as a reduction in soil nutrients for subsequent crops, offsets the momentary benefits to the farmers.

The incineration of rice crop residue produces CO (carbon monoxide) having the biggest and direct share in emissions while on other hand SO₂ (sulphur dioxide) emits through fuel combustion, containing high sulphur content, used for the land management practices.

So, addressing crop residue burning is a multifaceted challenge that demands a holistic and continuous approach. By integrating technological advancements, policy reforms, financial incentives, and community engagement, there's potential to alleviate this issue and enhance air quality while promoting sustainable agricultural methods. Initially, prioritizing the importation or local refining of sulfur-free fuels, or those with minimal sulfur content, can significantly reduce emissions from mechanized agricultural practices. This step is crucial in curbing pollution generated through agricultural machinery.

To tackle the share of smog through agriculture sector provision of stable input and output market to the farmers can make them take better decisions.

There are some plans which remained undone. For example, the government announced to provide around 5000 machines like happy seeders at subsidized rates, but only about 500 machines have been distributed to date, resulting in minimal impact.

Financial resources allocated for constructing a single flyover in Lahore could have been directed to effectively tackle the practice of stubble burning across Punjab. Further, incorporating locally developed machines for uprooting rice crops into the incentive framework could amplify their impact.

Rice stubble shredders and happy seeders offer technical solutions by shredding stubble, incorporating it into the soil as mulch, and seeding wheat through this mulch using a seed drill. This

process not only reduces the expenses of cultivating the subsequent crop but also significantly diminishes greenhouse gas emissions, thereby mitigating their impact on climate change. Crop residues hold potential for diverse applications, including utilization as livestock feed or as a source for generating renewable energy.

Establishing power plants or industries that utilize biomass as raw material could effectively repurpose these residues. This presents an opportunity to create various markets for crop residues, supported by subsidies or incentive structures to encourage and facilitate their utilization in these different sectors.

To broaden the scale of efforts, public-private partnerships should be leveraged to mobilize more resources, investment and funding. However, despite their potential, administrative priorities have not reflected sufficient attention in this direction.

To gauge the effectiveness of strategies put in place, particularly in tracking the reduction of crop residue burning, establishing monitoring systems is essential, allowing for the refinement of approaches and policies using real-time data and observations.

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