The arhar solution to pollution

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(Illustration: C R Sasikumar)

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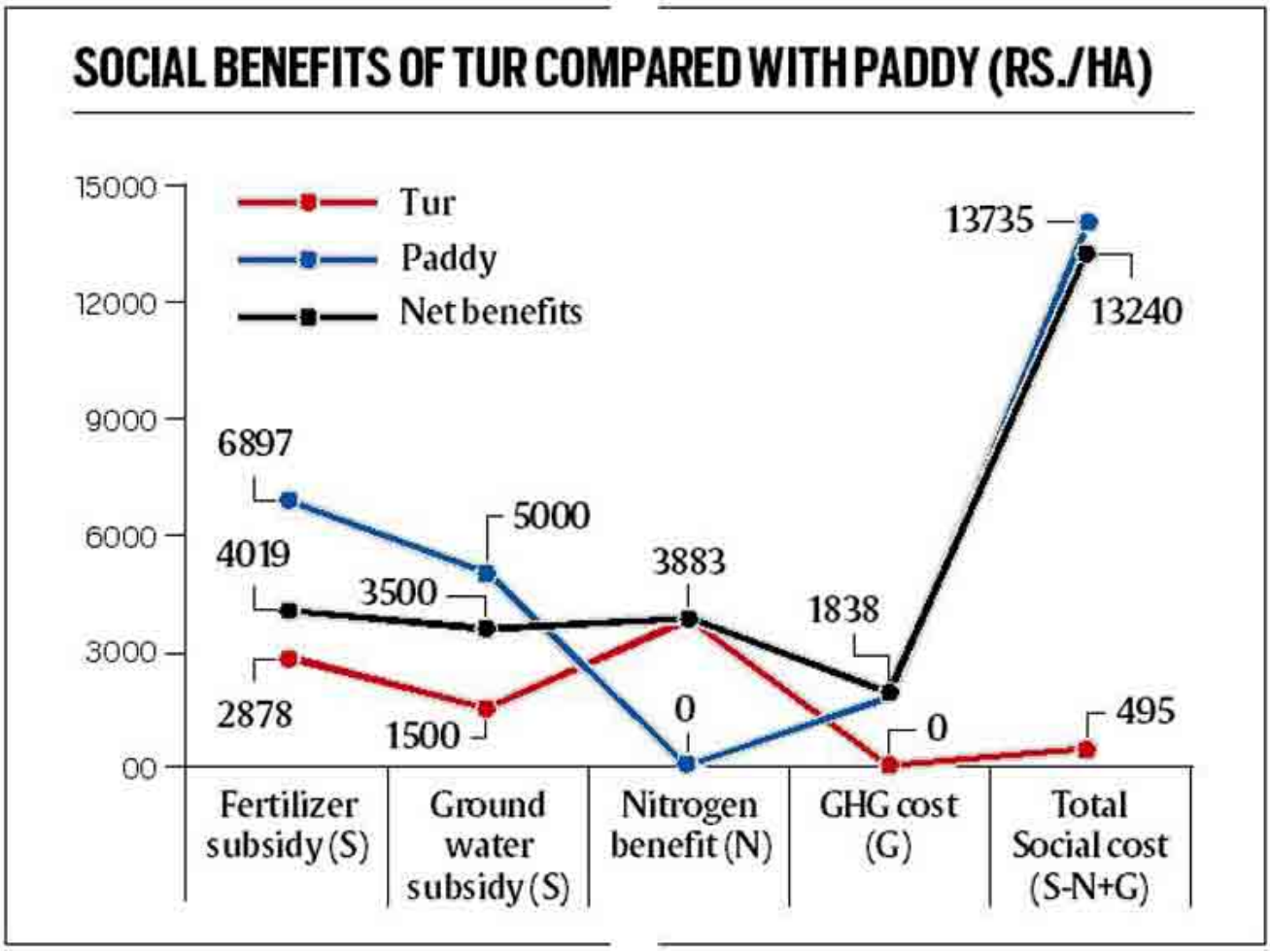
The inferno of environmental pollution that the nation's capital and its surroundings have been witnessing has many causes, including weather conditions (thermal inversion) that facilitate the settling of particulate matter and other pollution, dust on the streets generated in part from construction activity, and vehicle-related emissions. Particularly critical is the burning of paddy after the kharif harvest which happens every year.

Multiple causes will require a broad-based response but one of the permanent solutions to the pollution problem must address paddy burning. This is where pulses come in. In the Subramanian Committee report on pulses that was submitted last month to the ministers of finance, agriculture and consumer affairs, the possibilities created by a new variety of arhar (pigeon pea) developed by K.V. Prabhu and his colleagues at the Indian Agricultural Research Institute (IARI) were discussed.

This variety (Pusa Arhar16) has the potential to be grown in the paddy-growing regions of Punjab, Haryana and Uttar Pradesh and eventually in all of India. Its yield (about 2000 kg/hectare) will be significantly greater than those of the existing varieties and because its size will be uniform, it will be amenable to mechanical harvesting, an attractive feature for farmers in northern India who currently use this technology for paddy.



Most important, arhar straw, unlike paddy straw, is green and can be ploughed back into the soil. In paddy straw, the problem is the high silica content, which does not allow for easy decomposition. In the case of arhar, the farmer, even after combine harvesting, just needs to run a rotovator to cut the left-over straw into pieces, which can be ploughed back and will decompose very fast. All this is difficult with left-over paddy stalks that cannot be easily salvaged or ploughed back (it is very firm). Farmers, therefore, choose the easiest option of simply burning it.

But replacing paddy with pulses (in over half million hectares or more eventually) will have other social benefits. Our calculations suggest that pulses will use less fertiliser, less water, and fewer emissions, and in addition will replenish the soil with nitrogen unlike paddy which depletes the soil (see table). Together, pulses production would provide social benefits that we estimated at Rs 13,240 per hectare. On this basis, we had suggested an MSP for pulses over the medium term of close to Rs 9,000 per quintal so that it could become competitive with paddy. This would also preserve the incomes of farmers.

But, of course, we had understated the social benefits of growing pulses. In the report, we had highlighted that there would be additional benefits: Specifically, the reduced environmental pollution because less paddy would be burnt. But we were unable to quantify these benefits for lack of data. This needs to be rectified immediately to make public and transparent the consequences of current policies.

The broader policy lessons outlined in the pulses report have acquired new salience in the light of the pollution problem. These lessons bear emphasis.

First, the future of sustainable agriculture must be based on encouraging agricultural science and research especially where India's scientists have done the hard and creative work. Agricultural research institutions must be free from political interference, must be accorded autonomy, and must reward proven talent.

Second, making the fruits of science commercially viable will require price incentives to be re-evaluated. In the case of pulses and paddy, a complicating factor that determines the relative incentives is risk. Because of guaranteed MSPs in paddy, it is less risky to grow than pulses. The Subramanian Committee estimated that

pulses production was about six times riskier than paddy production. To compensate this, the required MSP for pulses would have to be about Rs1100 per ton greater than otherwise.

Third, pricing in India must increasingly take account of externalities, positive and negative. In the case of agriculture, that means adapting the current methodology of setting MSPs used by the Commission for Agricultural Costs and Prices (CACP) that focuses exclusively on private costs and benefits. This tends to encourage socially wasteful production and specialisation such as excessive paddy production in north India with all the attendant consequences to which we are grim witnesses. As argued by Professor Ramesh Chand of Niti Aayog and recommended by the Subramanian Committee report, MSP setting must incorporate social costs and benefits.

The burning of rice stalks affords an opportunity to implement a major shift in policy that can reduce pollution while also promoting indigenous research and science, incentivising pulses production, and rationalising pricing more broadly. Converting crises into opportunities is the hallmark of good public policy.