Fertiliser dependence now strategic national risk, not just agricultural issue

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Global geopolitics, climate risks, and supply chain disruptions are reshaping the agriculture sector. Food security and sustainable farming have therefore become critical for India. In an exclusive interview,Â Aashay Doshi, Chairman of the IMC Chamber of Commerce Agriculture & Food Processing Committee, speaks about Indiaâ??s fertiliser dependence, climate-tech innovation, regenerative farming, challenges faced by farmers, and the relevance of Atmanirbharta amid climate disruption.

Doshi is currently a director with Bloomfield Agro Products. He is working closely with over 400,000 farmers across India, promoting the use of biological fertilizers and micronutrients. Before joining Bloomfield, he studied and worked in the United States and returned to India to start a company focused on agricultural solutions. Under his leadership, the company has delivered an average of 3 times return on investment for farmers and over 35 per cent crop yield increases on crops like sugarcane, oil palm, cotton, tea, coffee, and grapes.

India speaks of Atmanirbharta in agriculture, yet remains exposed to imported fertilisers, edible oils, and pulses. At what point does self-reliance become structurally impossible without climate-tech transformation rather than incremental reform?

Probably, we are past the point where we can simply make minor adjustments to address this issue. Indian agriculture is still dependent on imported fertilizers, edible oils, and pulses, and the degree of risk increases tremendously in cases of geopolitical disruptions.

Fertilizer is no longer an agricultural issue. It needs to be taken as seriously as energy security. India continues to import substantial amounts of fertilizers such as DAP, potash, and urea. Recently, India imported up to 2.5 million tonnes of urea with substantially higher costs caused by growing supply issues due to the West Asia conflict. Reportedly, the cost of a tonne increased up to $935-$959 from $500 per tonne a few months ago. Additionally, the shipping routes through the Strait of Hormuz and the Red Sea cause higher costs related to transport and insurance. This means that it is no longer merely about supply chain efficiency but also strategic risks.

It is here that the importance of technologies dealing with climate becomes apparent. It doesnâ??t matter whether the technology is bio-fertilizers, regenerative farming, nanotechnologies, precision fertilization, or soil regeneration â?? all of them are urgently needed solutions for the future. The aim is not only to cut down chemical usage but also to ensure resilience from external shocks.

On the other hand, there is no room left for radical shifts. Economically, farmers should be capable of implementing the changes to the new system.

Climate technologies in agriculture are often celebrated as breakthroughs, yet adoption among marginal farmers remains limited. Is the real constraint technological, or is it the absence of viable economic architecture for diffusion at scale?

The bigger challenge today is not the absence of technology. In many cases, the technology already exists. The real issue is whether farmers feel economically secure enough to adopt it.

Even today, nearly 43â??46 per cent of Indiaâ??s workforce depends on agriculture despite the sector contributing a much smaller share to GDP. That itself shows how socially and economically sensitive agriculture remains.

A farmer does not make decisions based on conference discussions around sustainability. He makes decisions based on risk, income stability, and whether the crop will ultimately sell. That is the practical reality on the ground.

Farmers who have used chemical fertilizers for many years naturally feel more at ease with methods that provide visible results in their activities. Methods of regeneration and use of biofertilizers are different as they take some time to enhance soil biologics, nutrient absorption, and soil health. This makes sense, but this takes time.

This is precisely why adoption is not a solitary activity. Farmers need financial assistance, advice, market certainty, and the assurance that the adoption of a new method will make things better. In organized ecosystems where there is a certain type of product like sugarcane and oil palms, there will be higher adoption since farmers have customers at the other end of the spectrum.

So, innovation is just one side of the coin; the next step will involve trust-building and alignment from an economic standpoint.

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If precision agriculture depends on data, satellites, and AI systems, who ultimately owns the intelligence layer of farmingâ??the farmer, the state, or the technology providerâ??and what does that imply for sovereignty?

It is going to be among the most significant policy issues concerning agriculture in the coming decade since agriculture is increasingly driven by data.

There are more and more decisions being made regarding irrigation, planning, fertilizers, insurance, and financing based on information provided by AI and satellites.

The farmer must remain at the centre of this framework. Technology companies will obviously build platforms and tools, while governments will create regulations and safeguards. But if farmers lose ownership or visibility over how farm-level data is being used, then we risk creating a new form of dependency.

Earlier, agriculture depended heavily on imported physical inputs. Tomorrow, there is a possibility of becoming dependent on imported intelligence systems and data ecosystems.

India therefore needs strong domestic capability in agricultural AI, climate analytics, digital infrastructure, and satellite-linked advisory systems. Agricultural sovereignty in the future will depend not only on who produces the inputs but also on who controls the intelligence layer of farming.

You have argued that collectivisation, not land consolidation, is key to agricultural reform. But can collective models realistically overcome entrenched issues of credit access, land tenure insecurity, and fragmented policy implementation?

Collectivisation is often misunderstood in the Indian context. It is not simply a social idea. It is an economic necessity for a country where landholdings are highly fragmented.

Large-scale land consolidation is difficult in India for social and political reasons. But farmers can still achieve operational scale through Farmer Producer Organisations, cooperatives, and cluster-based farming systems.

India has already promoted more than 10,000 Farmer Producer Organisations across the country, although many of them still face governance and scalability challenges. The direction, however, is correct because agriculture becomes far more viable when farmers can aggregate procurement, negotiate collectively, access finance more efficiently, and connect directly with organised buyers.

The confidence factor also matters significantly. Farmers become more willing to adopt new technologies when they know there is market visibility for the output. We have seen this ourselves in crops where organised value chains already exist. Once income visibility improves, willingness to experiment with better practices also improves.Â

Collectivisation alone will not solve every structural issue, but it remains one of the strongest available tools for reducing fragmentation within Indian agriculture.

Indiaâ??s fertiliser dependency is often framed as a supply-chain issue. But given geopolitical shocks and import concentration, should fertiliser itself now be treated as a strategic vulnerability comparable to energy security?

Absolutely. Fertiliser should now be viewed as part of Indiaâ??s strategic security architecture.

In recent years, it has been made clear that agriculture and geopolitics cannot be separated anymore. A dispute occurring thousands of kilometres away can suddenly impact the cost of fertilizers, shipping routes, insurance, and ultimately, food inflation in India.

The disruption caused by the Red Sea and the larger issues in West Asia brought out the vulnerability of the global supply chain system during times of instability. It is still going to take months before the shipping system and pricing structure normalizes even if there is an improvement in the geopolitical environment tomorrow.

India must increase its capacity within the country when it comes to fertilizer production, alternate sources of nutrients, bio-fertilizers, and regenerative agriculture. The government plays a major role here, but industry involvement, innovations, and awareness among farmers are equally important.

India cannot keep relying too much on external logistics for food production.

Bio-fertilisers and regenerative practices are widely promoted, yet chemical fertiliser consumption continues to rise. Does this reflect scientific limitations of alternatives, or policy inertia embedded in subsidy structures?

The issue is less about scientific limitation and more about long-established structural behaviour.

Indiaâ??s subsidy framework was originally designed during a period when the countryâ??s biggest challenge was food shortage. The immediate priority after Independence was increasing food production rapidly, and chemical fertilisers played a major role in helping India achieve food security.

But agriculture today is dealing with a very different set of problems â?? declining soil quality, water stress, lower organic carbon, and long-term sustainability concerns.

At the same time, farmers are practical decision-makers. If one system gives visible short-term results and remains heavily subsidised, farmers will naturally continue using it. Bio-fertilisers and regenerative systems work differently because they

focus on rebuilding soil biology gradually over time.

There is no realistic scenario where India suddenly becomes fully organic. But there is also no sustainable future where soil health continues deteriorating endlessly. The transition has to be balanced, phased, and economically practical for farmers.

Can climate-tech meaningfully address yield gaps without simultaneously reshaping market structures that determine price realisation for farmers, or will technology alone simply optimise an unequal system?

Technology alone cannot solve structural inequality within agriculture.

India remains one of the worldâ??s largest agricultural producers, yet productivity levels across several crops still remain below countries such as China and the United States. In many crops, Chinaâ??s per-hectare productivity remains significantly higher because of stronger mechanisation, input efficiency, irrigation systems, and integrated market structures.

Technology can definitely improve efficiency, optimise water usage, and improve nutrient management. But unless markets improve, farmers may still not receive enough economic benefit.

The majority of Indian farmers remain trapped in a low-power price regime with poor market connectivity. For farmers to practice climate-smart techniques requiring patience and investments, there must be some rewards in the market for this.

This responsibility lies on consumers, wholesalers, exporters, processors, and policy makers. Sustainable farming practices with minimal residue and traceable food production systems need to gain greater visibility in the market.

Else, the potential impact of technology would only be to improve efficiency in a skewed system.

Atmanirbharta is often defined as self-sufficiency, but in an interconnected climate-disrupted world, is resilience a more accurate metric than independenceâ??and should policy language evolve accordingly?

Perhaps resilience is the term that is more relevant in todayâ??s situation.

Absolute self-reliance is not practical or even necessary when speaking about globalization. What really matters is the ability of the country to absorb shocks without breaking down the food chains, as well as farmers and consumers who rely on them.

The world prices for food remain quite high compared to those before COVID, and it seems like climate and geopolitical risks will remain with us. This is precisely what makes resilience more pertinent than isolation today.

As far as agriculture is concerned, resilience translates into improved soil conditions, diversified supply chains, effective use of water resources, greater domestic capacity, income stability for farmers, and reduced vulnerability to external shocks.

Ultimately, Indiaâ??s agricultural future hinges not on disconnecting from the rest of the world but on the extent to which we improve our internal systems.

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