

SUPPORTING DOUBLING FARMERS' INCOME – SCIENCE OF DELIVERY



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The National Agricultural Research System (NARS) of India, broadly comprising the Indian Council of Agricultural Research (ICAR) and Central/ State Agricultural Universities (CAUs/ SAUs), stands out among all developing countries, as also at the global level. It is the output of NARS, that has enabled India to leapfrog from one of food deficiency to one of sufficiency, and surpluses in certain segments.

There is no gain saying, that science and technology (S&T) constitute the fulcrum of advancement. However, a nation can only rest on its laurels at its own peril. For, the context does not remain stagnant. It is always dynamic, throwing up new challenges that warrant a new response. The new paradigm in the agricultural situation of India emanates from the farmers' perspective. Notwithstanding an impressive growth in productivity and production across the agricultural sub-sectors, it has failed to generate required incomes for the farmers. This can be well deduced from the data-points, that 48 per cent of

the country's population holds a share of just 14.50 per cent in the nation's overall Gross Value Added (GVA). Knowing that welfare of the farmers is largely predicated upon the average incomes they earn, the logical conclusion is that much is desired to be improved upon. Hence the need for a mindset change of science community engaged with agriculture. This transition can be encapsulated as one from 'Science of Discovery' to 'Science of Delivery'.

SCIENCE OF DELIVERY

This is a disruptive approach to research & development (R&D), as it aims to focus on 'How' to realise large and sustained impact drawing from knowledge management & diverse methods of sharing. These include large scale demonstrations to communicate decisions, adapt new approaches and change mindsets that accelerate the pace of innovation cycle. It also includes consideration of local conditions, context and culture while developing and delivering products and services. Further, the new approach has to enable the squeezing of transit time from discovery to delivery.



A better understanding among all the stakeholders, of the challenges relating to delivery, will significantly improve the ability of the system to achieve consistent and transformational impacts on farmers' fields and consumers' plates.

SCIENCE OF DELIVERY IS CHALLENGING

Being relatively a new concept among most scientists, development practitioners and extension agencies, there will be several challenges in popularising the same. While innovations are happening at break-neck pace, not all of them are being translated into practical tools. It is assessed, that optimally deploying various of these interventions could increase grain yield by at least 50 per cent and resource use efficiency by 5-7 per cent; besides reduction in cost of cultivation by 20 per cent (Wani et al., 2017).

SCIENCE OF DELIVERY- COMPLEXITIES OF AGRICULTURAL SYSTEMS

Farming is a highly complex and risky business, arising from unpredictability of monsoons and fluctuations of markets. The problems are seen to be exacerbating on account of increasing water scarcity, land degradation and climate change. Variables that impact the outcome are the attributes of land, weather, markets, knowledge, access to inputs, support services, capital and infrastructure etc. This suggests the need for finding solutions that are designed to sync with the local needs and production situations. Science of delivery vis-à-vis agricultural development demands an ecosystem approach consisting of strengthened farmer organisations, efficient service providers and an enabling institutional framework.

In the context of income approach to agriculture, that warrants efficiency of monetisation of produce, market actors will demand high-quality agricultural advisory services. The expected demand will be for compressing supply chains to increase safe & secure delivery, integrate traceability and ensure steady & timely supply, while also being competitive in market place. The demand on R&D will be to keep these last mile obligations in mind.

ISSUES THAT SCIENCE OF DELIVERY SHOULD ADDRESS

- Accelerating the innovation cycle will require agricultural research to compress the long 'research-into-use pathway' into a 'shorter & more impactful pathway' that leverages participatory research framework. Apropos the last mile along the value system, ICT can help by providing real-time feedback on appropriateness by both producers and consumers. The researchers can then respond as needed quickly.
- Modernisation of agriculture can take advantage of the fast paced evolution of molecular biology and information technology, and facilitate development of new varieties that integrate all required production and market traits.
- Convergence of data (agriculture, nutrition, environment, hydrology, soil health, weather, farm diversification, markets, socio-economic status of target group, government schemes/ programmes etc.) is critical in implementation. Spatial Data Integration (SDI) offered through commercial cloud services will be a key component, as Artificial Intelligence can be deployed to distil complex and disparate data sets to aid actionable recommendations at farmers' level.
- Partnership with private sectors and agri-entrepreneurs will enable efficient value addition, delivery of inputs & extension services in double speed of time.
- Backward integration of supply chains will ensure greater market opportunities for surpluses of farmers.
- A consortium of government research organisations, private sector research bodies, government ministries, as also non-government organisations need to work concertedly and in coordination, for cost effective and speedy delivery of solutions.

TO SUM UP

All the previously published articles of this author by Agriculture Today have laboured to highlight the need for adopting demand-pull approach in preference to supply-push mode of agricultural production. The doubling farmers' income strategy also demands market-centric outcomes from research. In reference to this, the R&D apparatus has to remember that an agricultural value system is rooted in research farms and laboratories, and should always design their research project accordingly, keeping the final delivery in focus.