

Making farmers and farming smart

The 10 elements of strategy the agricultural sector needs

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WE HAVE BEEN hearing the expression 'Industry 4.0' ever since the idea of 'smart factory' was unveiled in Hannover in April 2013. Many opine 'Agriculture 4.0' akin to 4G of telecom. I believe Agriculture 4.0 is "going back to basics, but with technology as its underpinning" to usher in sustainability, in the wake of climate change and degradation of our agricultural ecosystems. We need to re-look at agriculture with the 'farmer at the centre', and need to focus on 10 'elements of strategy'. These elements also supplement the recommendations of the High Powered Committee of Chief Ministers that is primarily examining agri-market reforms.

First, 'seeds'. Most of our staples are self-pollinated crops and managing seed multiplication is easy. Hybrids predominate cross-pollinated and high-value crops like vegetables and cotton. Seed villages and community-managed seed systems have delivered results in many places. Our policy must aid in transforming such models into entrepreneurial activities in villages improving farmers' incomes.

Second, 'soil health, crop health and public health' are inextricably interconnected. It is felt that inappropriate usage of fertilisers and pesticides is polluting surface and subsurface aquifers and our food chains have chemical residues. The rising incidence of cancer is considered one such manifestation. The increase in the demand for organic food captures these feelings. But views on managing soil

health and fertility vary widely between soil scientists and indigenous knowledge experts. Science is shy to research how indigenous knowledge systems work on farmers' fields. The National Innovation Foundation has codified several such ideas. The National Institute of Nutrition, Hyderabad, has noted that the food we eat is low on many nutrients. Improving soil health is thus *sine qua non*, as it reflects on public health through the food we eat. The PM rightly requested farmers on August 15, 2019, to reduce the usage of chemical fertilisers. Our policy must bring soil health into sharp focus, research indigenous models that work, and also educate farmers on scientific approaches. Codify-

ing and transforming appropriate technologies into entrepreneurial activities at farmers' level would add to their incomes.

Third, 'sustainable agriculture', and we have many versions. These are integrated crop-management systems that help in restoring ecosystems by predominantly using organic inputs. Zero-budget natural farming is one such system; the system of rice intensification is another. The way forward is to developing area- and crop-specific sustainable agricultural practices and taking them to farmers.

Fourth, 'principles of crop geography', or growing crops suitable to a geography. We have examples of unsuitable crops in geographies, sugar cane in rain-fed areas

and cotton on red soils are the examples.

Fifth, 'catch the rain where it falls' must be the national mission. Participatory watershed development is ideal. Rainwater, when harvested appropriately, will reduce the pace of water-flow, enabling it to seep through and charge aquifers. MGNREGA and Jal Shakti Abhiyan should become synonymous.

Sixth, 'agricultural marketing'. Volatility in agricultural product prices is not good for farmers and consumers. Planning crop production and matching it with domestic and foreign demand must begin. Import policies need to interface this planning process. Instruments like PDS, MDM, ICDS must use local crops as far as possi-

ble. Celebrating local crops is a must. Electronic marketing has a long way to go and be embraced with missionary zeal.

Seventh, 'agricultural credit'. India has mastered all systems for crop production including loans for growing crops. Now, the focus must shift to credit for post-harvest, which can stop distress sale by farmers. Another focus must be long-term agricultural credit that can promote capital formation in agriculture.

Eighth, 'agricultural extension'. The capacity of extension experts in terms of knowledge and skills and necessary financial budgets needs to improve. Extension played a crucial role in the Green Revolution, and agri-input dealers who provide

agri-inputs on credit are *de facto* advisers at many places. Successful examples of agricultural extension need to be 'lionised and celebrated'. Transforming success stories into folklore is the next step. Communication experts from the advertisement world need to be co-opted to retool agricultural extension protocols. In the euphoria of technology, 'human touch' must never be forgotten in agri-extension.

Ninth, the PM's clarion call of doubling of farmers' income is a paradigm shift in our thinking process. Farmers' income can be improved through reducing the cost of cultivation, improving productivity, efficient marketing, adding complementary components like fruit trees, farm forestry, agro-forestry, dairy, small ruminants, etc. Area- and crop-specific, soil- and farmer-friendly models have to be developed.

Tenth, should agriculture be a 'state subject'? Many imponderables are staring at us at meta level: climate change, water scarcity, drawdown of groundwater, food security, nutrition security, safe food. At farmers' level, a host of issues need attention—shouldn't farmers' needs primarily drive agricultural research? Relationships between farmers, civil society, research establishments, states and the Centre are a must to deliver policy for sustainable agriculture. All these elements require unwavering focus and enlightened leadership. Agriculture and farmers cannot wait.

'*Jal, jameen, janwar, jungle and jan*' captures the essence that human existence and sustenance are inextricably twined to nature. This tenet must guide our policy.