W

E HAVE BEEN hearing the expression "Indus-
try 4.0" ever since the idea of "smart factory" was unveiled in Han-
over in April 2013. Many opine Agriculture 4.0 is akin to 4G of telecom. I believe Agriculture 4.0 is "going back to basics," but with technology as its underpinning to vegetables and cotton. Seed villages and usher in sustainability, in the wake of climate change and degradation of our agri-
cultural ecosystems. We need to re-look at agriculture with the farmer at the centre, and need to focus on 10 elements of strategy 4.0 'akin to 4G of telecom. I believe agriculture with the 'farmer at the centre', must aid in transforming such models into entrepreneurial activities in villages improving farmers' incomes.

First, 'soil health, crop health and fertility vary widely between soil scientists and indigenous knowledge experts. Science is shy to research how fertilisers and pesticides is polluting surface and subsurface aquifers and our food chains have chemical residues. 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 the policy now, 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 and pesticides.

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Third, 'sustainable agriculture', and we have many varieties. 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 forward is to developing area- and crop-spe-
cific 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 geographic areas. Codifying and transforming appropriate technologies into entrepreneurial activities at farmers' level would add to their incomes.

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 and transforming appropriate technologies into entrepreneurial activities at farmers' level would add to their incomes. Agro-forestry, dairy, Small ruminants, etc. Area- and crop-specific, soil-based self-friendly models have to be developed.

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 belong to long-term agri-
cultural credit that can promote capital formation in agriculture.

Eighth, 'agricultural extension'. The capacity of extension experts in terms of knowledge and skills and necessary finan-
cial budgets needs to improve. Extension needs to develop a crucial role in the Green Revolu-
tion, 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 successful sto-
ries into folklore is the next step. Communication experts from the advertisement world need to be co-opted to transform cultural extension protocols. In the euphoria of technology, 'human touch' must never be forgotten in agri-extension.

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

Tenth, should agriculture be a 'state subject'? Many imperatives are staring us at as meta level: climate change, water scarcity, drawdown of groundwater, food security, nutrition security, safe food. At farmers' level, a host of issues need attention—seed, 'farmers' needs, 'farmers' needs. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed. Relationships between farmers, civil society, research establishments, and the Centre are to be developed.

All these elements require unwa-

For the full text, please refer to the original document. This text is part of a broader discussion on the future of agriculture and the need for sustainable practices. The 10 elements of strategy the agricultural sector needs are highlighted, with a focus on improving soil health, crop health, and fertility, as well as the need for sustainable agriculture and marketing. The author, PVS Suryakumar, emphasizes the importance of participatory watershed development and the need for efficient agricultural credit. The text also discusses the role of extension experts and the importance of human touch in agricultural practices. The final section raises the question of whether agriculture should be a state subject, with a focus on climate change, water scarcity, and food security.