

AGRICULTURE

In collaboration with



Sharayu L

**CO-FOUNDER AND CEO, BHARAT
KRUSHI SEVA**
MBA IN PROJECT MANAGEMENT,
WESCHOOL'17



MESSAGE FROM THE DIRECTOR

Dear Readers,

It gives me great pride to introduce SAMVAD's edition every month. Our SAMVAD team's efforts seem to be paying off, and our readers seem to be hooked onto our magazine. At WeSchool, we try to acquire as much knowledge as possible and share it with everyone.



Prof. Dr. Uday Salunkhe
Group Director

As we begin a new journey with 2022, I sincerely hope that SAMVAD will reach new heights with the unmatched enthusiasm and talent of the entire team.

Here at WeSchool, we believe in the concept of AAA: Acquire Apply and Assimilate. The knowledge you have acquired over the last couple of months will be applied somewhere down the line. When you carry out a process repeatedly, it becomes ingrained in you and eventually tends to come out effortlessly. This is when you have assimilated all the knowledge that you have gathered.

At WeSchool, we aspire to be the best and unique, and we expect nothing but the extraordinary from all those who join our college. From the point of view of our magazine, we look forward to having more readers and having more contributions from our new readers.

SAMVAD is a platform to share and acquire knowledge and develop ourselves into integrative managers. Our earnest desire is to disseminate our knowledge and experience with not only WeSchool students but also the society at large.

Prof. Dr. Uday Salunkhe,
Group Director

ABOUT US



OUR VISION

“To nurture thought leaders and practitioners through inventive education.”

CORE VALUES

Breakthrough Thinking and Breakthrough Execution

Result Oriented, Process Driven Work Ethic

We Link and Care

Passion

“The illiterate of this century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.” -Alvin Toffler.

At WeSchool, we are deeply inspired by the words of this great American writer and futurist. Undoubtedly, being convinced of the need for a radical change in management education, we decided to tread the path that led to the corporate revolution.

Emerging unarticulated needs and realities require a new approach in both thought and action. Cross-disciplinary learning, discovering, scrutinizing, prototyping, learning to create and destroy the mind's eye needs to be nurtured differently.

WeSchool has chosen the ‘design thinking’ approach towards management education. All our efforts and manifestations, as a result, stem from the integration of design thinking into management education. We dream of creating an environment conducive to experiential learning.

FROM THE EDITOR'S DESK

Dear Readers,
Welcome to the **125th** Issue of **SAMVAD**!

SAMVAD is a platform for "Inspiring Futuristic Ideas," we constantly strive to provide thought-provoking articles that add value to your management education.

We have an audacious goal of becoming one of the most coveted business magazines for B-school students. We invite articles from all management domains, giving a holistic view and bridging the gap between industry veterans and students through our **WeChat** section.

In this issue of **SAMVAD**, we bring to you half a dozen articles focusing on '**Agriculture**' with a section called '**Weachievers**,' sharing the success story of our colleague.

We worked together on this edition with **Bharat Krushi Seva**, our official sponsor, who helps farmers to increase their productivity by offering services like Soil Testing, Personalized crop monitoring & alerting system, and many more other services based on using data analytics & remote sensing technology.

The agricultural sector is India's backbone, accounting for 15% of the country's GDP (GDP). More importantly, agriculture and related industries support more than half of the Indian population. The purpose of this essay is to assist the agricultural sector in achieving long-term economic growth as well as human development. As a result, agrarian progress is critical, which can be ensured through the convergence of Agri and technology.

Agriculture and technology undeniably change how food is produced and distributed in the country. Climate change, dwindling water availability, insect tolerance, deteriorating soil quality, and labor shortages are all compelling factors driving technological progress.

New technology can aid in the integration of various verticals such as data analytics, artificial intelligence, digital e-commerce working inputs, and so on.

As a result, the nation's strong economy building block, agriculture, is shifting toward technology, bringing fortunes to the country.

FROM THE EDITOR'S DESK

We hope you have a great time reading SAMVAD!

Let's read, share and grow with us!

Best Wishes,
Team SAMVAD.



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Sharayu L

CO-FOUNDER AND CEO, BHARAT KRUSHI SEVA

MBA IN PROJECT MANAGEMENT, WESCHOOL'17



1. Could you take us through your journey from being a Welingkarite to date?

My name is Sharayu Lande, and I'm a co-founder of Bharat Krushi Seva. In India nearly 65% of our population belongs to agriculture. In order to achieve our goal of widespread adoption of digital agriculture, Bharat Krushi Seva will use technology and data analytics.

My co-founder and I both come from farming backgrounds & we have seen what challenges farmers are facing & both of us have good technical exposure, we have always dreamt of a platform where all the dots are connected under one roof & Major of our farmers are adopting the technology. Moreover, we

believe that Bharat Krushi Seva can make this happen.

We began working on a proof of concept based on data analytics in January 2019 with more than 1000 farmers.

We prepared a list of the services we would provide to farmers in early 2021, and by June 2022, we were live on the Play Store. Now we are a family of more than 1,50,000 farmers who are contently using our total package of services.

2. Could you tell us more about your Smart Farming Application, 'Bharat Krushi Seva'? And how do you plan to make this available to the farmers in the remote parts of rural India?

At BKS, we are creating a technology-led physical business model that will give Indian farmers direct access to services throughout the agri value chain. Data analytics and remote sensing technology will act as a strong enabler.

With a family of more than 100K farmers, we are on a mission to promote the widespread use of digital agriculture to aid farmers in increasing their productivity by using our cumulative set of services, which range from customised weather monitoring and alerting systems for specific crops -to soil testing. Personalized crop consulting for early pest and disease detection, as well as connections with Bulk suppliers and buyers for agri input sales and market linkages. Our strategy is to acquire a deep farmer base, where we can cater to remote places. BKS Smart Farming Application that enables precision farming.

Some of the benefits in agriculture include:

1. High crop productivity-
2. Reduced usage of pesticides, fertilizers, and water.
3. Reduce environmental impact
4. Improved safety for farmers and workers
5. Low chemical deposition into groundwater and rivers.

Because it introduces them to technology and instruments that enable them to improve the quality and quantity of their goods while reducing agricultural costs, BKS Smart farming has thus been beneficial to all farmers, large and small, throughout time.

Rural farmers in India's distant regions can access the Smart Farming App.

Through the physical farm mapping done by BKS Field Executive using a phygital model, it would be possible to communicate with farmers on the ground.



3. What do you think the future holds for Indian agriculture? How can we inspire young people to become agropreneurs?

Future holds for Indian agriculture-

1. Farming is mainly subsistence and small size landholding. In India, more than 57.8% of farmers' land holdings size is less than 1ha.

2. In India, however, several horticultural crops with high profits have a significant potential for smart farming.

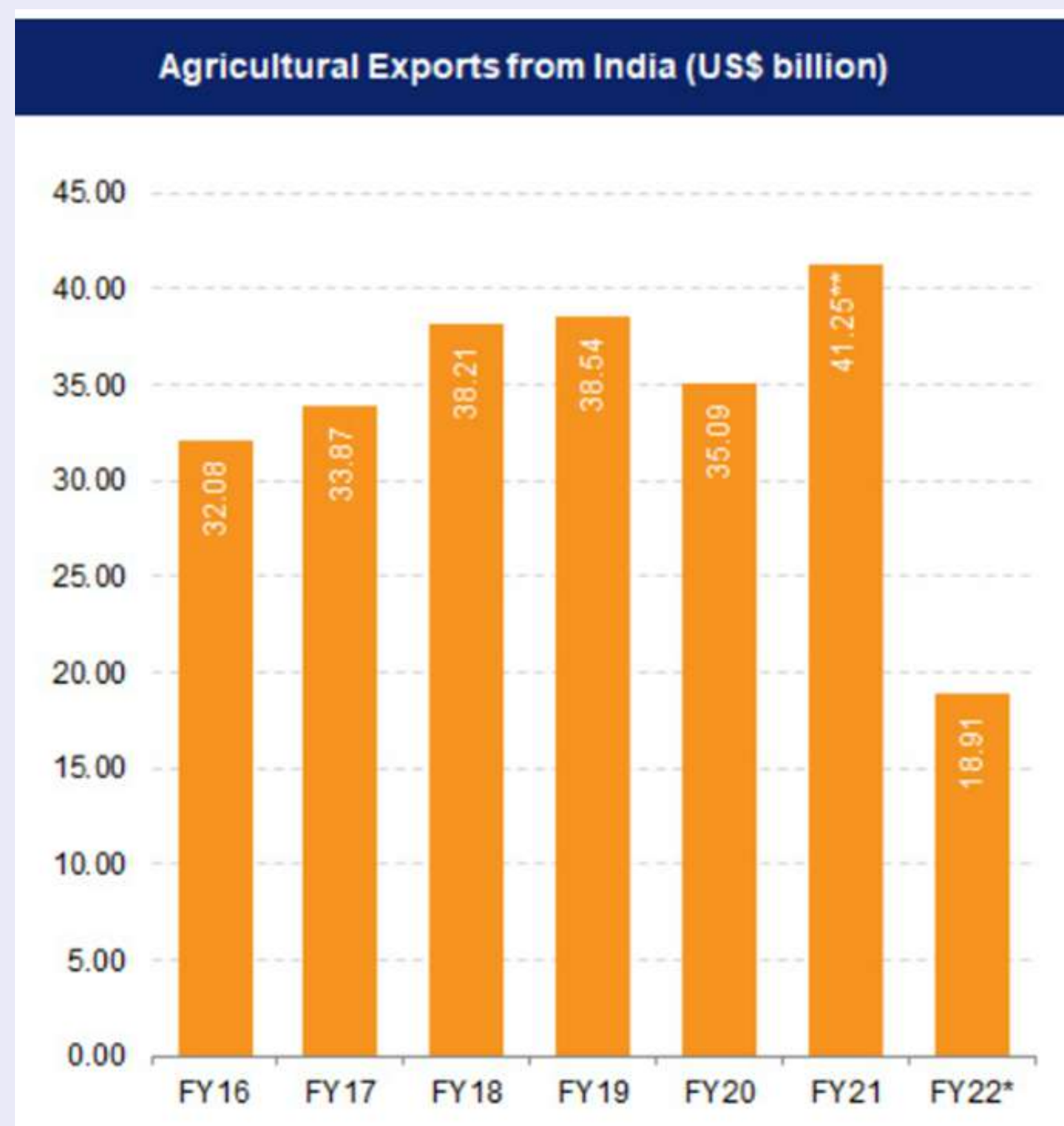
3. The use of modern technology in Indian agriculture is unavoidable to fulfil the massive food grain demand of 480 million tonnes (Mt) by 2050. Like other industries, agriculture has made entered a knowledge-based era rather than resource-based and future agriculture become more competitive and market-driven.

4. Increasing the productivity of small-scale farms is an integral part of addressing the problem of food insecurity. To meet all of these new problems, a pollution-free, high-productivity solution is required.

5. It can be possible through the implementation of modern, environmentally friendly technologies that can effectively handle and distribute all resources for sustainable agricultural production.

6. Smart farming, however, offers a better future with the introduction of modern technologies that seek to reduce prices, increase productivity and produce high-quality products.

7. Advances in space technology and the IT revolution in India have changed the climate and made wide room for farms in the agricultural sector.



Rural farmers to become Smart agropreneurs-

1. The young farmers will make more investments in automation with much interest than the elder farmers.

2. Private sectors have set up 'e-choupals,' which are village internet kiosks providing weather information, disease forecasting, modern farming practices, market prices, and expert crop advice systems.

3. ICT and data management allow for new ways of growing a profitable, widely acceptable agriculture that supports the diversity of farming.

4. This can only be achievable if proactive policy development supports the appropriate legal and market structure for smart farming.

4. How is a technology contributing to the growth of agriculture in India? What technological advances can we expect soon that will disrupt current agricultural practices?

1. One of the important technology

i.e. obtainable for present-day farmers-Data analytics that accounts for the decision-making and forecasting process.

2. Using better and improved farming technologies after smart farming ensures increased efficiency, as the emphasis is on optimizing inputs productivity and reducing waste.

3. To explore the potential of the application of IT in the agro sector, Tata Chemicals Ltd., a private sector, provided extension services about the use of remote-sensing technology to analyse soil and inform about crop health, and pest attacks, etc.

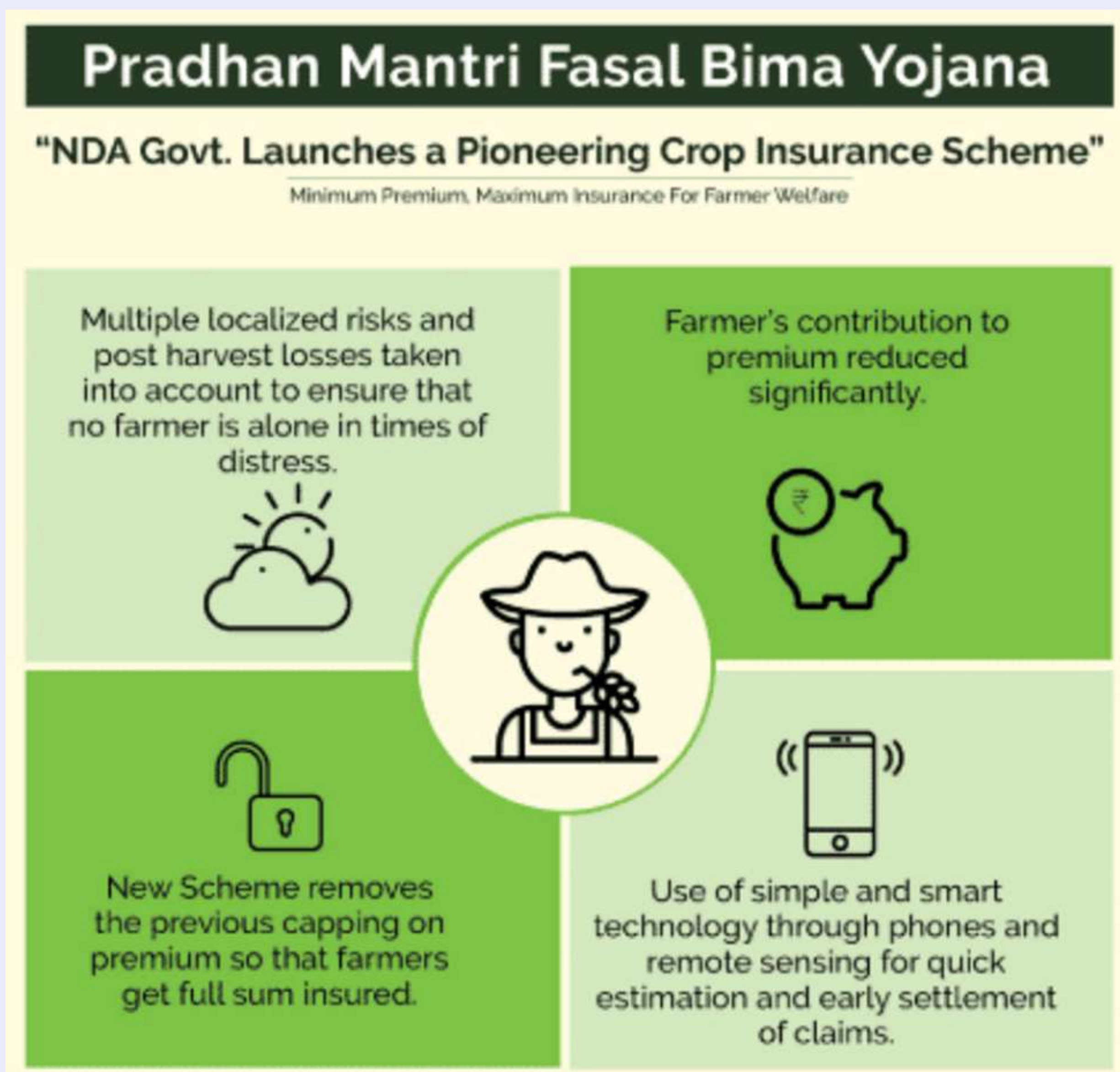




Cultural Farming practices result in...

1. High production costs,
2. Low productivity
3. Environmental Pollution.
4. Farmers and Farm Labourer's Health Problems.
5. Food Insecurity.

Technological advances could be helpful to farmers to tackle the above drawbacks of Cultural Farming.



5. What is the scope for agriculture-allied businesses in India? What actions is the government taking to ensure the expansion of this sector?

The contribution of agri- allied sectors viz.

- 1.livestock (including dairy, sheep, goat, poultry, and piggery),
- 2.fisheries (marine, inland, and aqua farming),
- 3.Horticulture (including fruits, vegetables, flowers, spices, aromatic and medicinal plants), and sericulture sector.
- 4.Agriculture and allied businesses sector share 20.19% GDP of India.
- 5.Measures Taken by Government:-

- a. Regulation of markets to create orderly and transparent marketing conditions which benefitted both farmers and consumers.
- b. Improving and developing infrastructure facilities like roads, railways, transport, warehousing, cold storage, and processing units.

Improvement in Govt. Policies ensuring the expansion of agriculture and allied sector-

- 1.Proactive policy development supports the appropriate legal and market structure for smart farming.- Could achieve
 - a. Improvement in productivity
 - b. Resource use efficiency or saving in cost of production
 - c. Increase in cropping intensity
 - d. Diversification toward high-value crop



- 1.Agriculture Price Policy- Minimum Support prices.
- 2.Crop Insurance Schemes.
- 3.Mechanization.
- 4.The mega food park scheme.
- 5.Cold Storage
- 6.Model Land Leasing Law.
- 7.Food processing and Safety.
- 8.Irrigation: Per Drop More Crop.
- 9.R & D based on Climate Change and Cropping Pattern.

What advice will you give to students looking forward to establishing their careers in this sector? What skill set should they have for the same?

- 1.Smart Farming Tech. lays out a road to sustainable agriculture that includes technological diversity, crop and livestock production systems, and networks including all agri-food stakeholders.
- 2.ICTs facilitate to exchange of information, cooperation, and peer review among farmers.
- 3.ICT and data management allow for new ways of growing a profitable, widely acceptable agriculture that supports the diversity of Farming.

Defining the role of the supply chain from the farmer's perspective



National Winner

Girish Kurkure, Shivangi Ramani

PGDM 2021-23

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What is Agriculture Supply Chain?

The "Agriculture supply chain" stage refers to the processes involved in getting food from the farmer to the consumer. These items, once transformed into sellable goods, can be processed, packed, and stored before being shipped to market. Post-harvest food loss is an especially serious problem in underdeveloped countries, where infrastructure, energy grids, and transportation systems are frequently inadequate or non-existent. Farmers need the

supply chain improvement in these factors to minimize that food losses occur post-harvest and during processing. Innovative supply chain programs are seeking to reduce these losses while also adding value to agricultural goods and farmers' expectations. This supply chain is determined by various key factors such as the dominance of small/marginal farmers, fragmented supply chains, the absence of scale economies, a low level of processing/value addition, the inadequacy of marketing infrastructure, and so on.

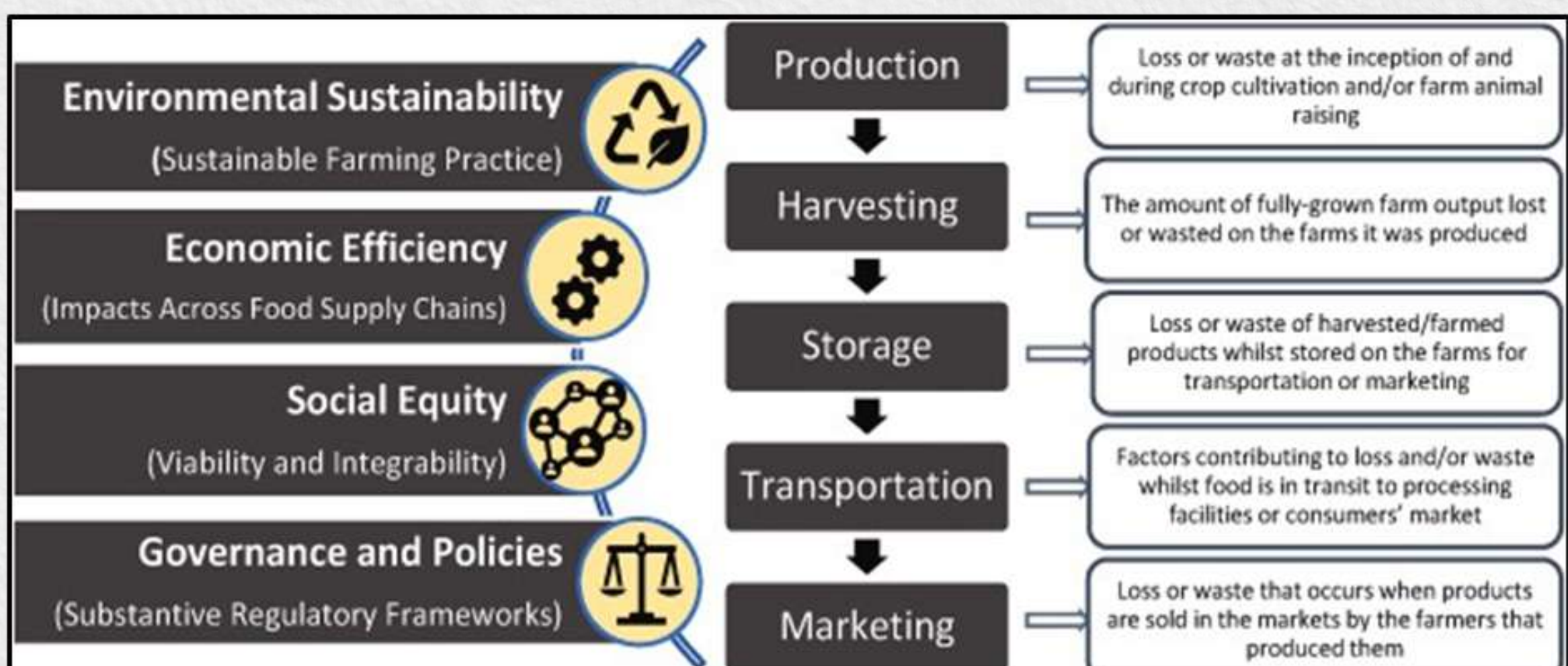


Figure 1: Stages and Waste Agriculture in Supply Chain

The above figure reveals information about losses and waste. The proper implementation of the supply chain will reduce food loss and waste. The dynamics of the supply chain, food loss, and waste prevention require careful examination to support practical policy options that revitalize sustainable food systems. Supply chains typically promote market competition at both the production and consumer ends of the chain. Chains compete primarily on pricing, distinct goods and services, and varied conditions of sale at the consumer end.

Stakeholders in the agriculture Supply Chain:

1)Supplier for Farmers

- a. Seed Retailers
- b. Fertilisers and Seeds Retailers
- 2) Financial Component in Supply Chain:
 - a. Inspection Agencies
 - b. Insurance Firms
 - c. Banks
- 3) Quality Assurance in Supply Chain:
 - a. Standardisation Organisation
 - b. Government Bodies
- 4) Transportation in Supply Chain:
 - a. Ground
 - b. Air
 - c. Ship
 - d. Railways
- 5) Warehouse
- 6) Market Yards
- 7) Manufacturing Companies
- 8) Consumer
- 9) Exporter
- 10) Consumers

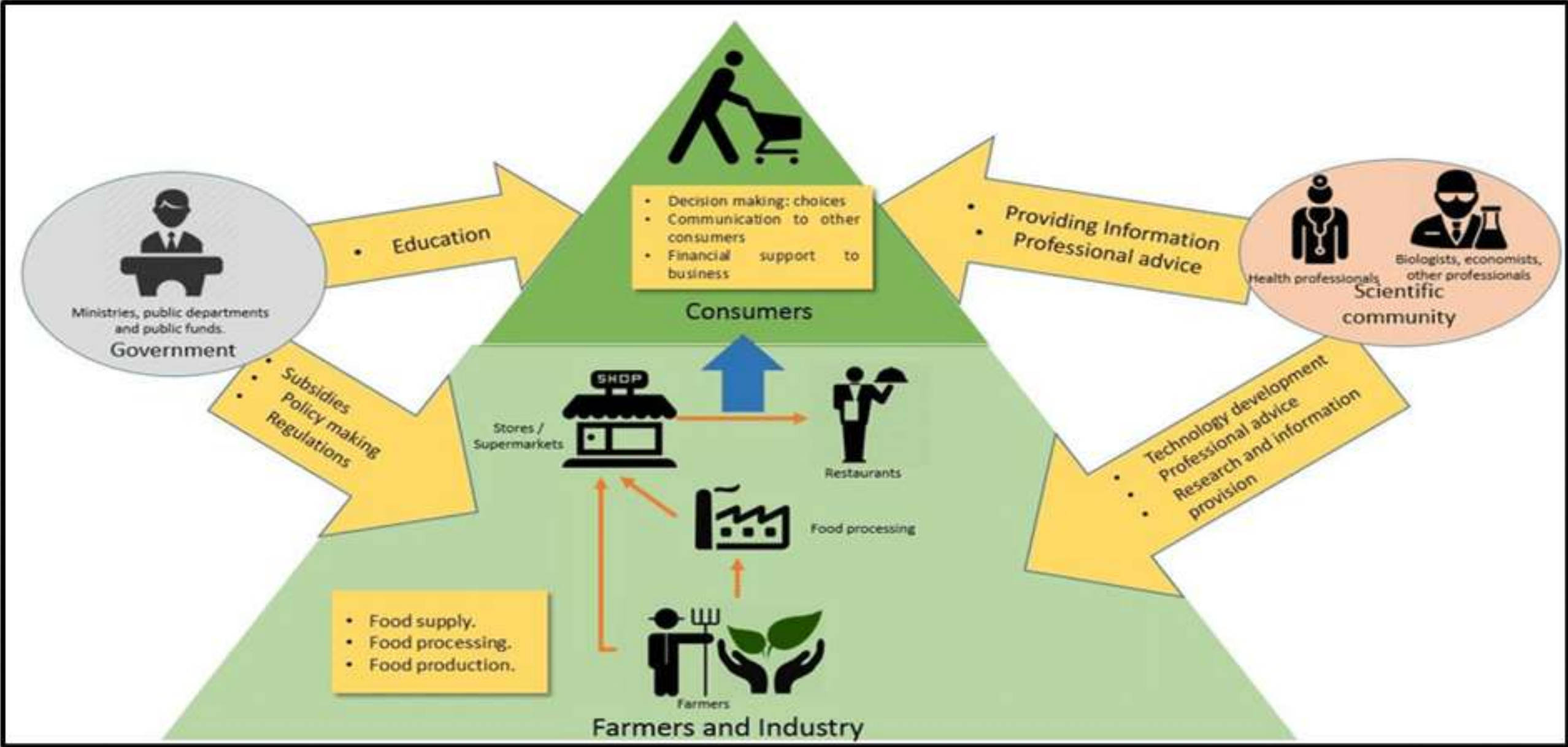


Figure 2: Stakeholders of the supply chain and their roles and influences. (Veronica Gallardo)

Actual Agriculture Supply Chain from the Farmer’s Perspective:

Farmers' perspectives fluctuate depending on their convenience.

The diagram depicts the fundamental supply chain required for farmers to sell their crops in the market. This supply chain begins with seed stores, which are a vital

requirement for farming. Rather than this, most farmers work by taking out bank loans, therefore this is also one of the farmer's essential needs. Following farming and harvesting, the product should be checked with a standard organization that checks the quality of the generated product and based on the quality, recommends insurance and the price of the product. Insurance firms are automatically involved in making farmers safe for carrying food and from the threat of climate change. These insurance firms can greatly assist farmers in risk management. Following proper insurance permission, the farmer is one of the farmer's essential needs. Following farming and harvesting, the product should be checked with a standard organization that checks the quality of the generated product and based on the quality, recommends insurance and the price of the product. Insurance firms are automatically involved

in making farmers safe for carrying food and from the threat of climate change. These insurance firms can greatly assist farmers in risk management. Following proper insurance permission, the farmer engages with market yards or directly with manufacturing enterprises. Some farmers store their products in a warehouse before selling them in market yards or manufacturing enterprises. The agricultural supply chain extends from manufacturing firms to the consumer journey of the product, and it can help anticipate the cost of the farm produce based on the final product cost during inflation. The transportation mode used for transporting the product is based on the location of the destination, it may be by road, airways, railways, or by ship. Farmers can sell their products and increase their expenses by eliminating any stakeholder in the supply chain that they choose.

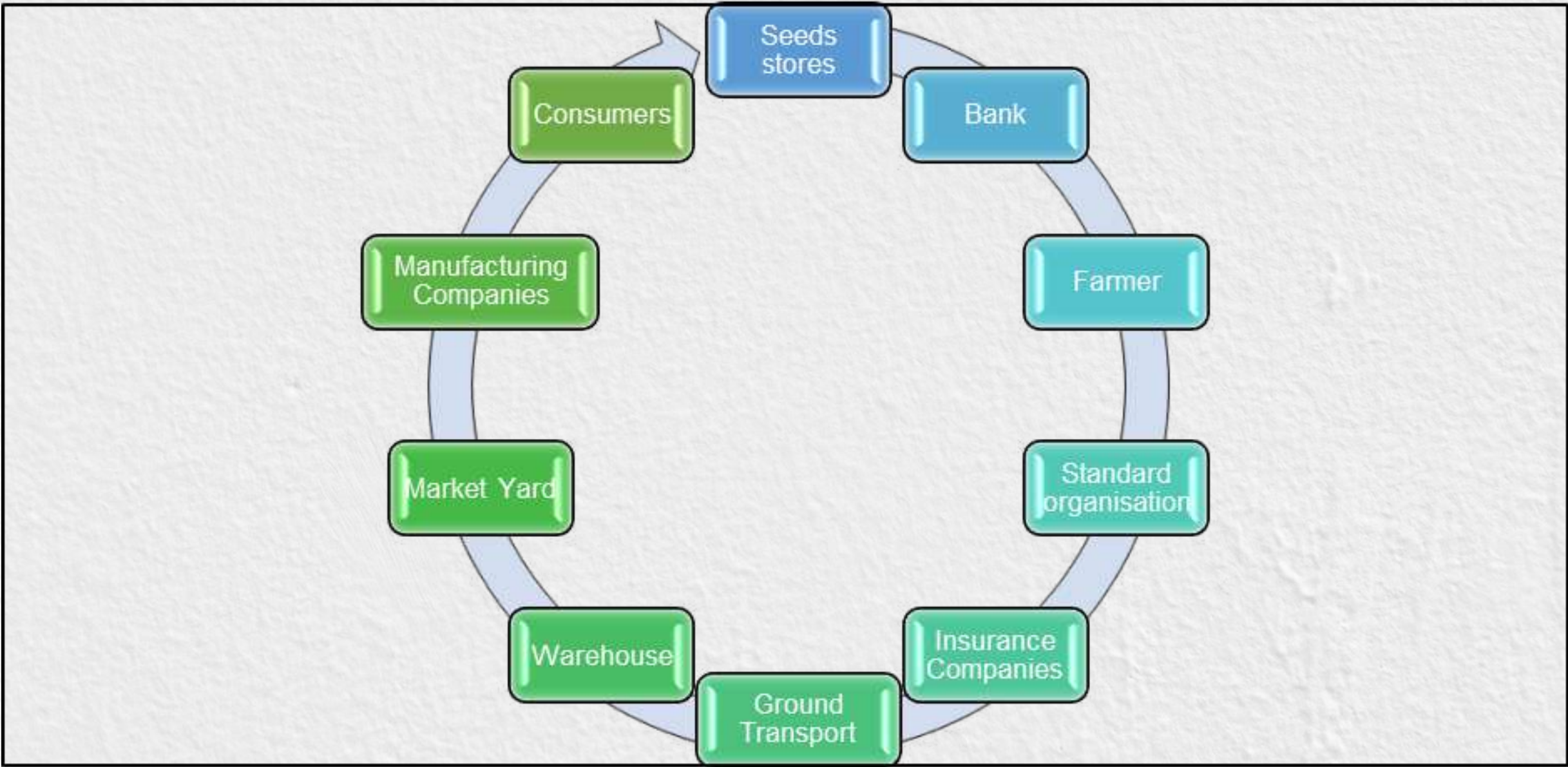


Figure 3: Agriculture Supply Chain from the Farmer's Perspective

Evolution of digitalized Agriculture Supply Chain in Covid-19 Pandemic:



Figure 4: Digitalised Agri Supply Chain Traceability System (SourceTrace)

The COVID-19 pandemic has only complicated matters. With retail outlets, supermarkets, and fresh food markets closed for indefinite periods, farmers and poultry dealers have had to abandon traditional selling methods and rethink business models to reach their consumers while maintaining cost efficiency and fast last-mile delivery. A lot of farmers have adopted digital selling possibilities, such as

Visible Supply Chain:

Several kinds of uncertainty in the supply chain, such as demand, quality, larger variety, time, and product customization, are tied to the decision-maker. Management of uncertainty through information sharing increases visibility among supply chain partners and farmers.

putting their businesses on online marketplaces and building their web stores for customers. Direct-to-consumer selling is gaining popularity in the agricultural foods supply chain, as it has in various other industries such as retail and consumer products. The direct-to-consumer strategy allows farmers to bypass intermediaries such as processors, wholesalers, and retailers and sell their fresh products straight to customers.

Implementing supply chain visibility is made easier simply by-passing information about products on the market, which is more a matter of priorities and investment. This may alter when social technologies become more prevalent. As a result, supply chain visibility benefits supply chain stakeholders.

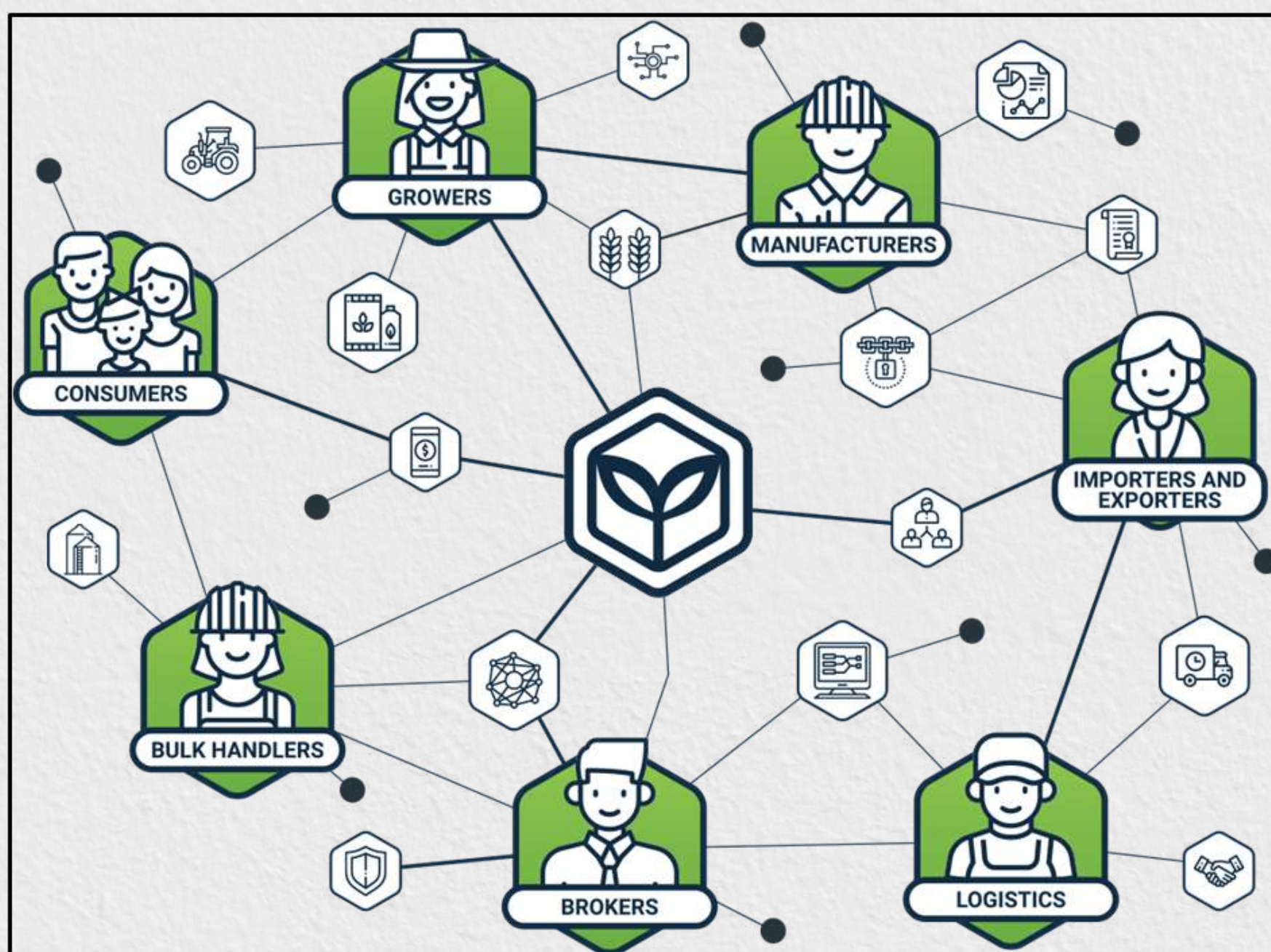


Figure 5: Visibility network in Agri Supply Chain (AgriChain)

Challenges:

Participants in agriculture supply chains, such as farmers, dealers, manufacturers, marketers, and so on, realize that original high-quality items can degrade due to an inadequate action by another participant. For example, if a farm leaves a can of milk for pick-up on a roadside in the sun with no cover, the quality will deteriorate, and the raw material may become unfit for processing. Similarly, if processors utilize packaging items and/or technology that do not preserve the freshness and nutritional qualities of their products as much as feasible, retailers are likely to receive customer complaints. This is one of the reasons that retailers ask for low prices even though standard

Advantages of a Stable supply chain from a farmers' perspective:

- Provide access to information on technology, financing, and market requirements for qualities and quantities.
- Tracking, tracing, and certification can help you keep a tighter rein on the quality and safety of your products.
- Distribute the risks of major investments among chain partners.
- Reduce the time it takes to produce and the number of perishable goods that are wasted through supply chain coordination.

Conclusions:

Farmers and other participants in the supply chain will benefit from increased profits and reduced risks if timely and accurate information on weather, price, demand, and the market is shared. If necessary,

businesses and farmers can share their resources and take up the same risks. This industry will experience fewer setbacks if producers and food processors work together better to coordinate production, the value chain in the industry is expanded, and products are given longer shelf lives through the use of processes such as irradiation and improved logistics infrastructure and glass box transparency throughout the entire chain.

Agri-tech startups in India are transforming the country's agriculture



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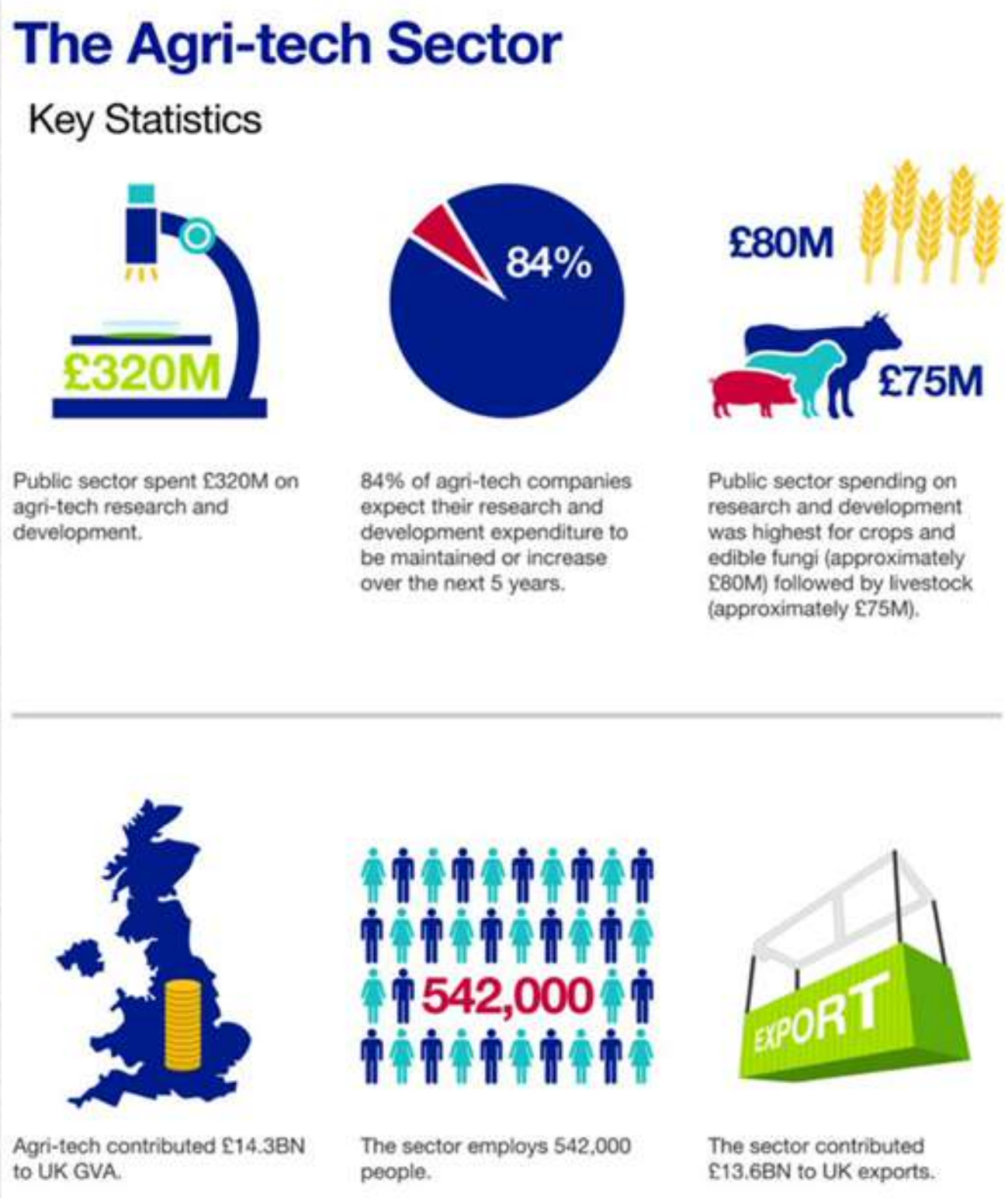
With almost 60% of rural Indian households relying on agriculture for their livelihood, India has the second-largest agricultural acreage in the world, which offers enormous opportunity for agritech firms in the nation.

India's central and state governments are aggressively pursuing programmes to enhance the quality of life for farmers. In fact, by 2022, the administration of PM Modi wants to treble the income of the typical farmer. But is there enough being done to eliminate waste in the agricultural supply chain to make investing in Indian agritech profitable?

India's Agriculture Situation

Fisheries, forestry, and agriculture all make up a significant portion of India's gross domestic product (GDP). In FY 2016, India's GDP for the agricultural and related sectors was \$244.74 billion. India has the second-largest agricultural land area in the world, measuring 157.35 million hectares.

An increasing emphasis has been placed on investments in agricultural infrastructure, including cold storage, warehousing, and irrigation systems.



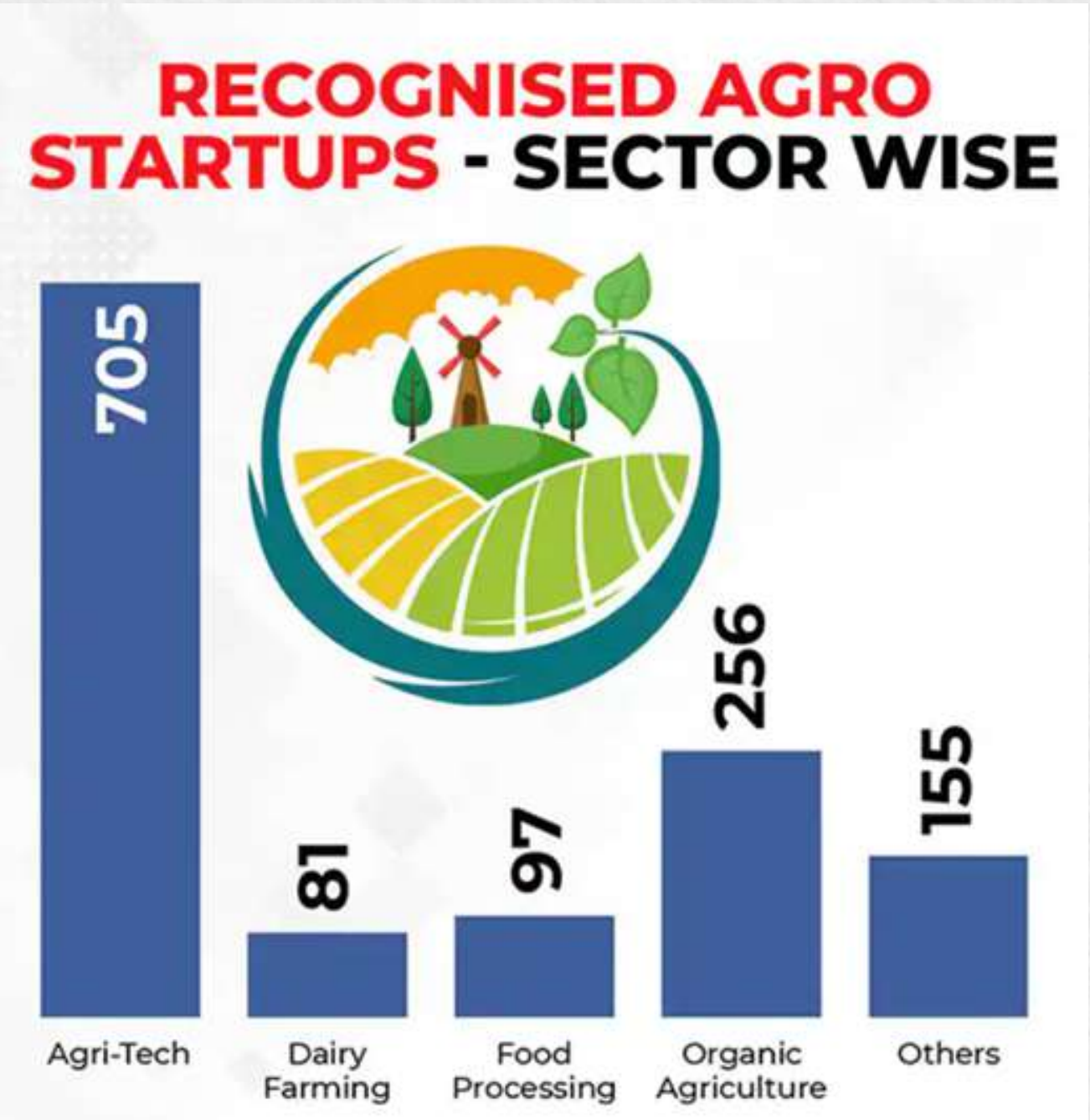
To better the lives of farmers and provide other amenities that might increase agriculture in India, several programmes have been developed, including Paramparagat Krishi Vikas Yojana, Pradhanmantri Gram Sinchai Yojana, and Sansad Adarsh Gram Yojana.

India's Agriculture: Challenges

Small and fragmented land holdings, a decline in agricultural land in comparison to a growing population, a decline in groundwater levels, poor seed quality, a lack of mechanisation, a low yield per unit crop, and a reliance on middlemen are some of the obstacles to the development of agriculture in India. The average landholding size in the country is 1.4 hectares.

Besides these issues, the Indian agricultural sector is also plagued by a lack of organised marketing structure for produce, fraud in the country's existing unorganised agricultural markets, poor transportation and storage infrastructure, credit shortages, and limited access to cutting-edge technology for timely information.

Startups In The Agritech Sector Can Benefit

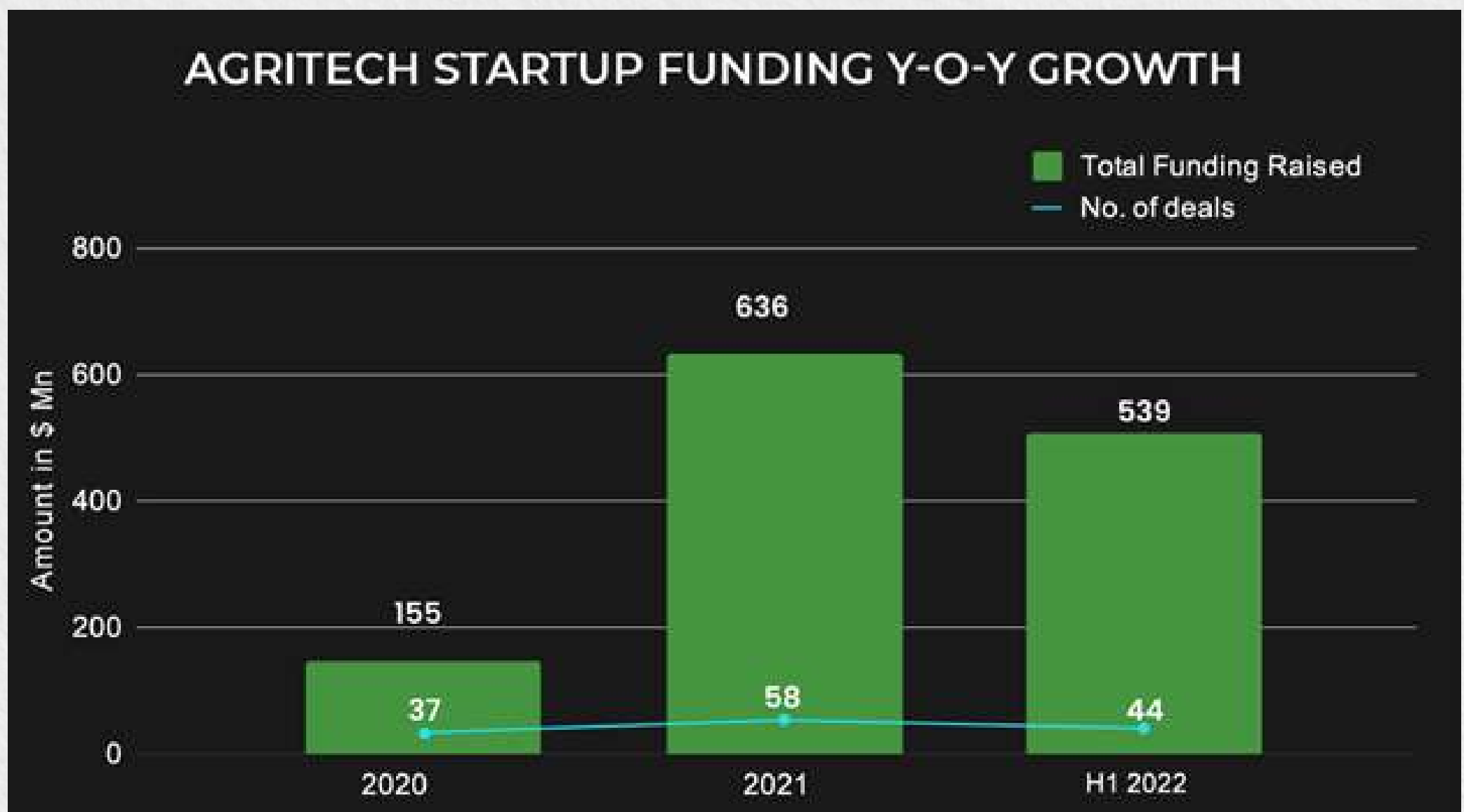


In all industries, 2021 was a prosperous year for startups, and agritech was no exception. Agritech startups received a staggering \$636 million in funding in the past year, a 300 percent increase from the \$155 million they received in 2020. 2022 is comparable to 2021 in terms of total fundraising, having invested close to \$539 million.

Data from Venture Intelligence shows that Indian agritech firms raised a total of \$222 million in 2019 and \$89 million in 2018, respectively.

Agritech firms earned nearly \$1 billion in funding between 2017 and 2020, according to a Bain & Co report, which further supports the sudden increase in investment activity in this sector. It's interesting to note that the fundraising for the years 2021 and 2022 (up until June) totaled around \$1.17 billion, with Waycool, Ninjacart, DeHaat, Absolute, AgroStar, and Arya.ag emerging as the leading contributors.

Here is an example of the growth in agritech startups year after year: Opportunities exist in areas like how to increase crop production, enhance the nutritional value of the crops, lower input costs for farmers, improve the overall process-driven supply chain, lower distribution system waste, make farm mechanisation simple to access,



and facilitate connectivity between farmers and the general public by connecting the consumer and producer.

AgriTech startups are also utilising technology to connect to markets through platforms like digital agronomy, retail, and B2C and B2B marketplaces. AgriTech businesses can now solve the input issues facing Indian agriculture right now. They are able to give farmers the appropriate knowledge, skills, and efficiency for both pre-harvest and post-harvest use cases.

Finance For Agritech In India

The most recent study states that \$3.23 billion was invested globally in the agriculture sector in 2016. 53 Indian agritech businesses raised \$313 million of this total. Food marketplaces or food ecommerce received 40 percent of the overall capital globally (\$1.29 Bn), followed by biotechnology businesses, which received 22 percent of the funding (\$719 Mn).

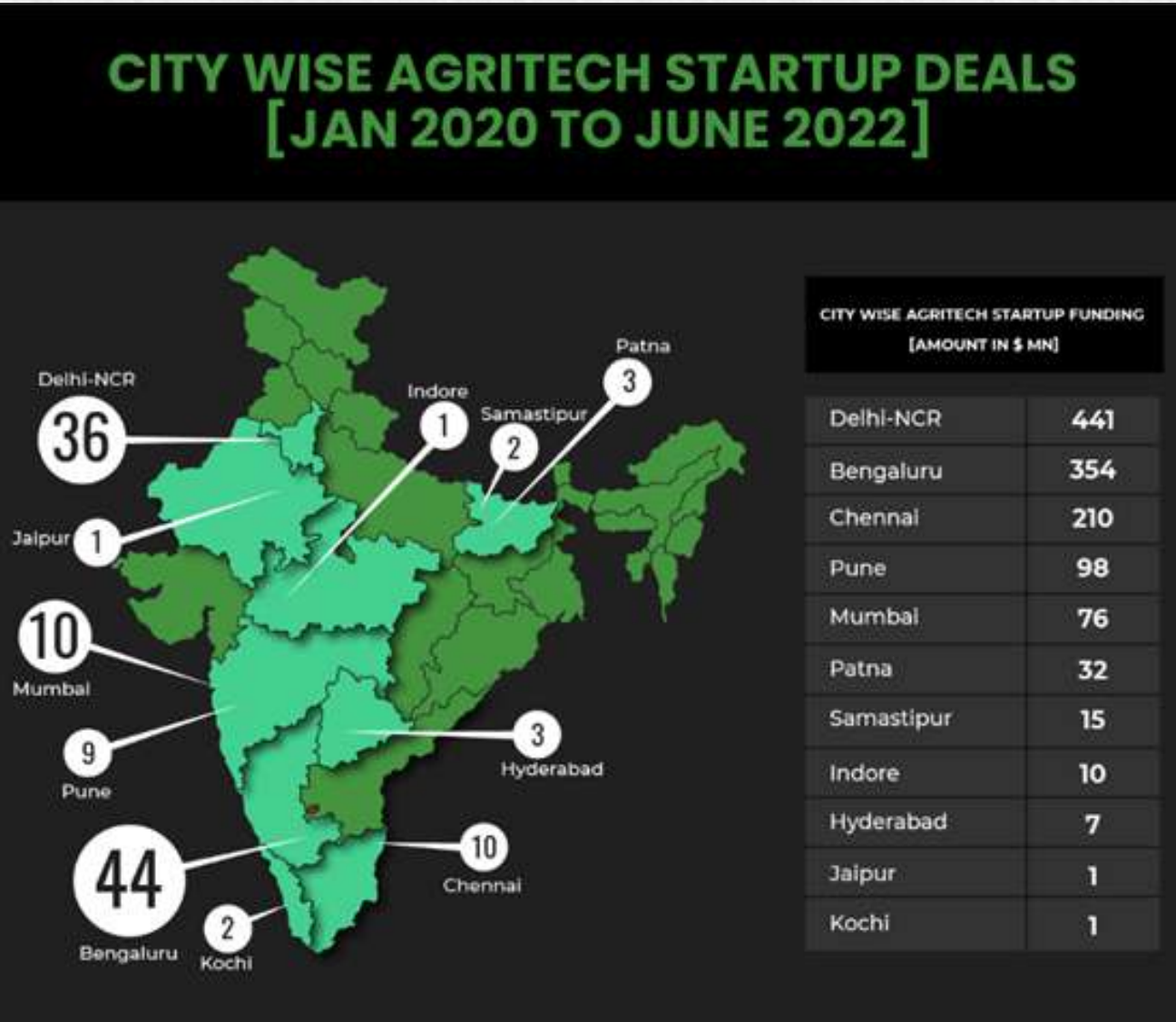
Investment in Novel Farming Systems, a group of startups using

TOP 10 FUNDED AGRITECH STARTUPS [JAN 2020 TO JUNE 2022]					
Startup	Biz model	Latest Funding (In \$Mn)	Latest Round	Valuation (In \$Mn)	Revenue (FY21)
Ninjacart	B2B supply chain	145	Series D	815	Rs 755 Cr
WayCool	B2B supply chain	117	Series D	460	Rs 382 Cr
DeHaat	Farm services & products marketplace	115	Series D	500	Rs 358 Cr
Absolute	Agri-bioscience	100	Series B	500	Rs 28.4 Cr
AgroStar	Farm advisory	70	Series D	240	not disclosed
Arya	Farmgate storage	60	Series C	285	Rs 196 Cr
Fraazo	D2C grocery delivery	50	Series B	120	Rs 20.95 Cr
FarMart	SaaS-food supply	32	Series B	135	Rs 0.99 Cr
Otipy	Farm to fork	32	Series B	120	Rs 26.16 Cr
ReshaMandi	B2B silk marketplace	30	Series A	186	Rs 20.5 Cr

innovative methods to produce agricultural and biological products, was the fourth area in which money flowed (\$247 Mn), followed by investment in Precision Agriculture Technologies (\$405 Mn), which includes data-gathering equipment and farm management software.

From January 2020 to June 2022, Maharashtra, Karnataka, Rajasthan, Haryana, and Uttar Pradesh were the most popular locations for agritech startups in India.

Below is a breakdown of city-wise deals:



Conclusion

Demand-side factors that support the expansion of agriculture in India include population growth, rising income levels that increase consumption, and increased exports. More specifically, government policy support such as raising MSPs, expanding crop insurance support, introducing different schemes to help farmers, and steps to provide easy lending to

farmers would all boost growth. All players must work together to seize the chance to alter this industry, including investors, governments, and agritech entrepreneurs. Government initiatives typically view agriculture as a means of reducing poverty, but the emphasis should be on boosting productivity and increasing incomes. The focus should be on utilising technology to reduce obstacles on the input side, starting with planting and ending with harvesting and selling.

Future Scope:

For many years, the Indian government has worked to advance the country's Agri-tech sector, but it still hasn't seen the same amount of growth as other nations.

Here are a few ideations to change the way we think about agriculture:

- Simpa Soil Management:** An agribusiness that would offer crop and farm management services, as well as soil testing kits and fertilizers.
- AgroStar:** A mobile app that would connect Indian farmers with buyers from urban localities who want direct access to fresh produce; It could also be available on desktop browsers.
- Agriya:** An all-natural fertilizer that which would help in yield and quality increase.
- PlastiStraw:** A product that makes PLA bioplastics (filamentous-based plastics) for 3D printing; it is primarily used to feed animal.

·Zylofex: A startup that would help farmers make a profit by supplying produce directly to supermarkets in India and other countries.

·Sproutling: A startup with a planter that raises plants using LED lights; it also offers LED light fixtures and grow systems.

·Samara Capital: This VC funds startups that provide solutions for farmers and is backed by the Indian government.

·AgVenture: A venture capital firm that invests in startups that provide solutions for the agriculture industry.

·CropIn Technology Solutions: An AgriTech company that uses drones to detect soil deficiencies in farms, based in Gurgaon, India.

·Seer Systems: An agribusiness company that helps farmers

mitigate risks of drought and flood using weather sensors and satellite imagery.

·FarmBisnis: An agribusiness company that helps farmers and agribusinesses to connect with each other, based in Gurgaon, India.

·Agriliant: An agri-tech startup that builds printers and software that help farmers create quality labels for their produce and other agricultural products.

·Turai Solutions: An agri-tech startup that has built an open platform to automate farm operations, such as irrigation and pest control.

·GrowTalks: An app that informs users of tips and news about farming, including weather updates; it is available on Android and iOS.

Introducing Sustainability in agricultural operations: Need of the hour



National Finalist

Prithwjit Bandopadhyay

MBA-Sustainable Management

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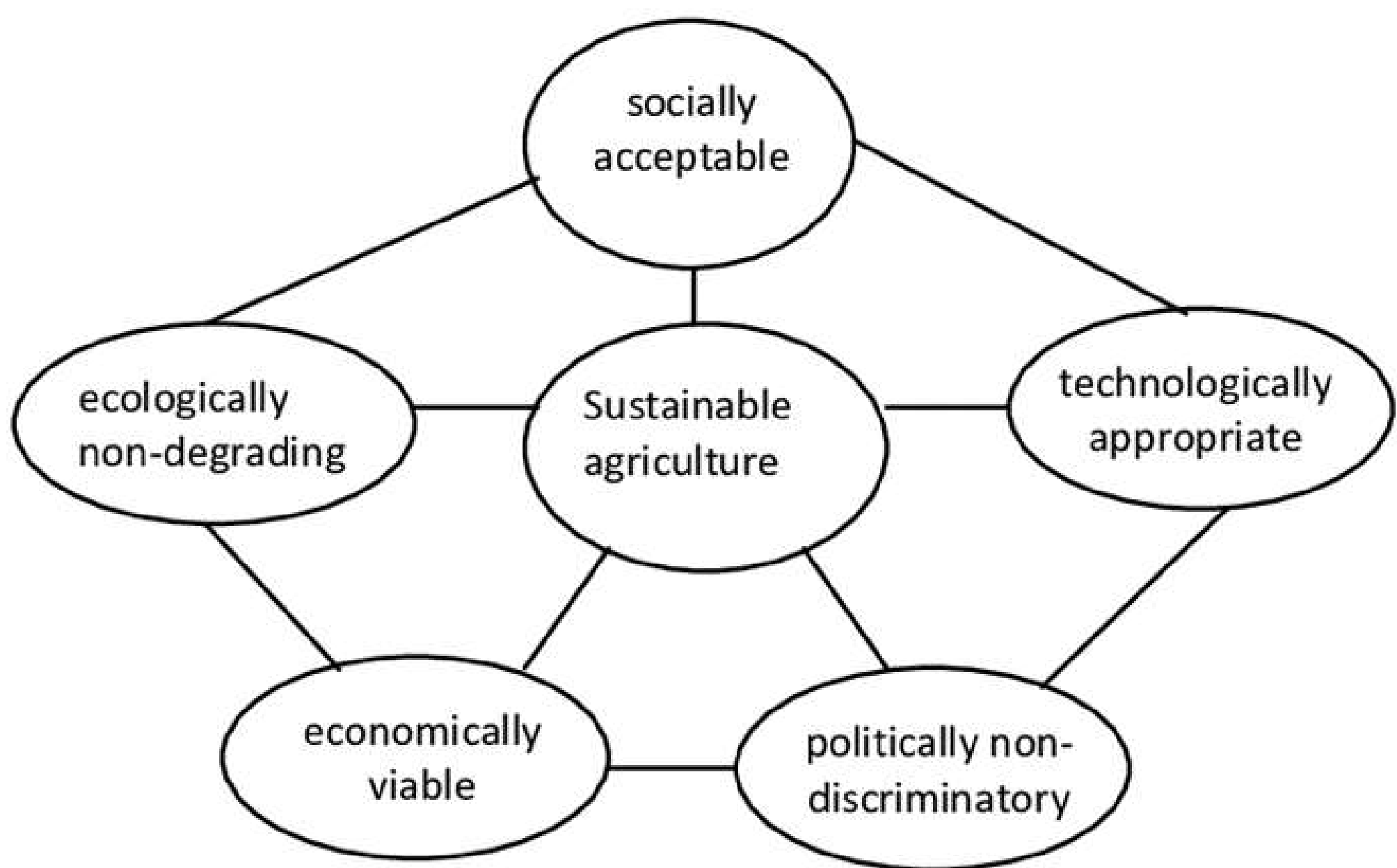
“Our biggest challenge in this new century is to take an idea that seems abstract – sustainable development – and turn it into a reality for all the world’s people”

-Kofi Annan

Agricultural practices have changed greatly as the human race has evolved over the period. Although nature is the primary driving force, with the advent of modern technologies, farmers are starting to have a control over the crops they produce and how they produce it. Productivity has soared due to new technologies, mechanization, increased chemical use, specialization and government policies that favoured maximizing production and reducing food prices. Minimising human efforts to get the highest yield is what defines modern agriculture. Improved irrigation, innovative breeding techniques, rise of smart and custom-made machines and precision or ‘smart agriculture’ are some of the key drivers.

But, let’s not forget the fact that at the end of the day- nature is the key driving force. In spite of bringing a boom in agriculture and reducing significant risks, they have some serious adverse effects. The most notable are topsoil depletion, groundwater contamination, air pollution, greenhouse gas emissions, the decline of family farms, neglect of the living and working conditions of farm labourers, new threats to human health and safety due to spread of new pathogens, economic concentration in food and agricultural industries and disintegration of rural communities.

Innovative alternatives are the need of the hour to tackle the dark side and move towards a sustainable future. A growing movement has evolved in the last few decades for sustainable agriculture which integrates three main goals- environmental health, economic profitability and social equity. The basic concept of sustainable agriculture is that we must meet



the needs of the present without compromising the needs of the future generations. There are many practices that can improve agriculture in a sustainable way. Farmers can look for methods to promote soil health, minimize water use and lower pollution levels on the farm. Consumers and retailers concerned with sustainability farming will look for ways that farmworker wellbeing, environmentally friendly and strengthen the local economy. Biology, economics, engineering, chemistry, community development, and many other concepts are often combined by researches to come up with sustainable solutions.

It is quite alarming that around 25% of the world's total greenhouse emissions come from agriculture. At the COP26 climate conference in Glasgow, 45 countries, including India have pledged to transition to sustainable farming. The countries have promised to combine more

that \$4 billion dollars in public sector investments to make agriculture more resilient to the climate crisis.

Let's look at sustainable agriculture from the three major perspectives viz. social, economic and environmental and how they can be improved.

Social and Economic aspect: One third of the food produced globally are either lost or wasted. On the other hand, millions of people suffer from malnutrition and poverty every year. A 2021 report found that more than 10% of the world's population went hungry in 2020. Millions of people are either not eating enough or eating the wrong types of food leading to malnutrition and related health risks. Accelerating climate change is a major hindrance to crop-yields especially in the world's most food-insecure regions. The lashes of Covid-19 coupled with several environmental calamities and conflicts are impacting food

systems, resulting in higher food prices and growing hunger. Sustainable, healthy and inclusive food systems are critical to achieve the world's development goals. Sustainable agricultural development is one of the key tools to end extreme poverty, improve supply-chains. It can feed an approximate 9.7 billion people by 2050. As per World Bank, 65% of poor working adults made a living through agriculture. For economic growth also, agriculture is key- it accounted for 4% of Global Domestic Product (GDP). The Indian agriculture is being plagued by several problems:

- I.Uncertainty in the water supply
- II.Lack of remunerative income
- III.Fragmentation of land holdings
- IV.Lack of access to formal credit and also insurance
- V.Shortage of allied infrastructure

The work in food and agriculture should be focused on some key areas as envisaged by the World Bank: to improve livelihoods and create better jobs including women and youth; to improve food security for all, including access to safe and nutritious food; to make agriculture and food more sustainable and climate-smart, to boost agribusiness by building inclusive and efficient food value chains.

Environmental aspects: Many critical environmental aspects are related to agriculture such as climate change, dead zones, genetic engineering, pollutants, deforestation, soil degradation,

waste, and many others. Deforestation is another big side effect of agriculture that impacts climate and environment. Irrigation can lead to depletion of underground water layers that are crucial for biodiversity. The contribution to green house gas emissions is 25%. These gases have a negative impact on climate change and mainly includes carbon dioxide and nitrous oxide. Fertilizers and pesticides release phosphorous and nitrate in the air. The pesticides that get washed off and mixes with the lakes, rivers and seas causes severe water pollution. Because deforestation, many animal species lose their habitat.

However, there is always a light at the end of the tunnel. Several environment friendly agricultural practices have evolved that helps us grow towards a sustainable future. Practices like polyculture, permaculture, urban agriculture, mulching, manual weed control, natural pest management, natural animal rearing, agroforestry, hydroponics, aquaponics, biodynamic farming can severely boost farming without harming mother Nature. The GreenWave Model is a sustainable, polyculture commercial farming system that regenerates ocean ecosystems by creating carbon and nitrogen sinks, helping to reduce the impacts of ocean acidification. Methane is one of the most harmful greenhouse gases that is generated as a by-product of agriculture. The global

livestock sector accounts for approximately 14.5% of all greenhouse gas emissions, of which 65% is emitted by cattle. Agencies like Symbrosia are focusing on reducing the methane impact of cows by introducing seaweed into their diets. Aero-farms uses indoor vertical farming to produce 800 different varieties of crops annually. Automated pest monitoring devices like Trapview have been developed that provide farmers with near real-time data about the conditions of their crops. Drone crop sprayers are also being used. Multi-layered waste water treatment solutions are being provided by agencies like BIDA.

All these are proof that there has been a view-shift in the current decade and people are moving toward sustainable means of agriculture. The human race has developed several technologies that can boost agricultural productivity in a sustainable fashion. The governments across the world need to be more vigilant and come with policies and regulations that will help to nullify the negative impacts of agriculture and help to develop society, economy and environment.

APMC or Farmers Market - A boon or a curse?



National Finalist

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We live in a country acknowledged as Incredible India. The Incredibility of India is reflected in the diverse culture. India is a kaleidoscope of multicultural encounters thanks to its rich heritage and numerous attractions. But the thing that really makes India a rich culture is its Traditions. And one of the traditions that significantly distinguishes itself. The agriculture sector of India.

Agriculture became India's largest economic contribution after independence. Agriculture, and its corresponding sectors are currently India's largest portion for Revenue. Agriculture today also provides employment to almost 70% of total population, 82% of which are small and marginal farmers

Food grain production is estimated to reach 400 million tonnes in 3 years. India is the greatest consumer (representing 27% of total global consumption), producer (representing 25% of total global output), and importer in the world (14 percent of total global account). India produced 165 MT of milk annually in 2017-18, making it the world's top producer of milk, jute, and pulses with 190 million cattle in 2012. It is the world's second-largest producer of groundnuts, cotton, sugarcane, wheat, and rice.

In this race of the agricultural sector promotion and since its being a majorly contributing sector it was necessary to form a committee to look after the price regulations of



the crop. Agricultural Produce Market Committee (APMC) was the marketing board formed by the government to avoid farmer exploitation by intermediaries. All food must be brought to market, and transactions are conducted through auction. Mandi, the marketplace, is put up in various locations around the states. These markets divide the state geographically. Traders are granted licenses to operate in a market. Mall owners, wholesale dealers, and retail traders are not permitted to acquire directly from farmers. But let us understand exactly why there was a need of APMC.

When we look back in time, the entire agricultural distribution system was dominated by moneylenders and traders in the countryside. Farmers had no way of selling their products directly in markets. They were reliant on moneylenders and dealers, who exploited the farmers. As a result, the farmers were continually in debt and faced several issues, which was not a good system. The government devised a solution to this dilemma. Creating an APMC. The government designated particular locations in the state as market areas. The market committees would have control over certain market sectors. No farmer or dealer would be able to freely sell or buy crops. If a merchant needs to buy produce from farmers in the market area, they must obtain a license.

The government-controlled these traders to some extent through this license system. The government also stated that farmers will receive MSP (Minimum Support Payment) in these marketplaces. That is the bare minimum at which the farmers can sell their produce. To protect them from exploitation. According to Devender Sharma, a food and agricultural expert, APMC played a significant role in India's green revolution in 1960.

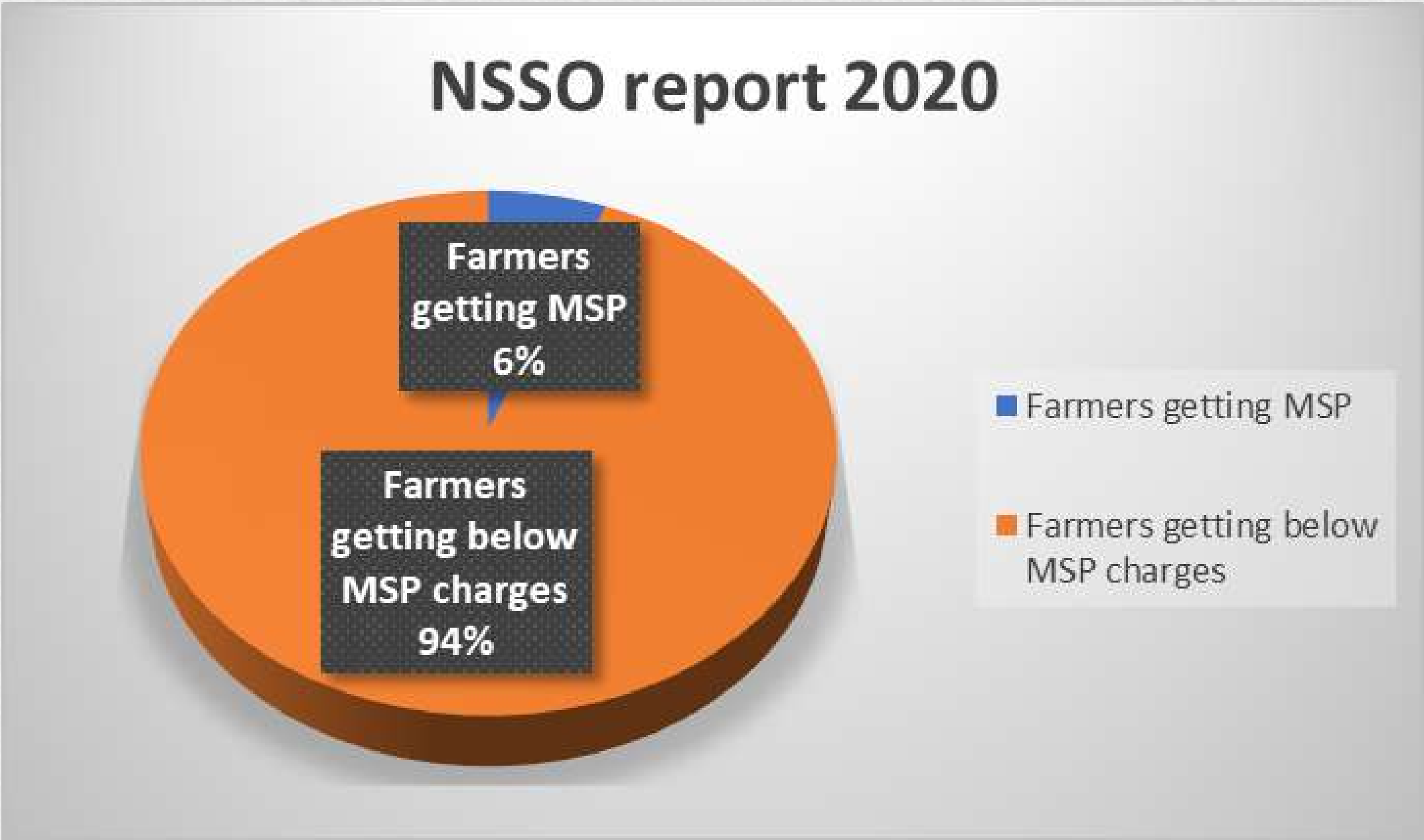


In addition, the government declared that if some production is left with farmers, the government will procure it if traders are not accessible. This will result in the reduction of the consumer surplus. This thing will definitely help the farmers to receive appropriate value for their production.

As a result, various weaknesses in APMC have been identified over time. The market committee has the extraordinary authority to award dealers' licenses. The second problem was that licensed commission agents who acquired crops from farmers began creating cartels and making bargains with one another in order to collectively

not buy products from farmers at the specified rate. Farmers would so be left with no choice. Despite the fact that a committee has been created. Until recently, only 6% of farmers in the entire country have received MSP. So, despite the fact that the APMC market regulates agricultural MSPs, cartels and mafias are forming and the regulatory body is dysfunctional. 94% of farmers are still willing to conduct business outside of mandis. So, even though farmers are not being charged at MSP outside, the majority of them are still taking risks and losing money. As a result, APMC has established a MONOPOLY structure in the

agriculture market. We still hear about farmer suicides from time to time. We can now see why farmers are not being compensated for the work they have done. The rigorous regulations and diverse network of APMC can undoubtedly provide benefits to farmers. The government should purchase the leftover crops from farmers using MSP. Outside of the APMC market region, it should be made mandatory to obey the pricing at MSP. Farmers will benefit if such regulations are obeyed. Farming will be recognized as a business sector. And when this happens, we will truly be able to call India incredible in a realistic manner.



Role of HR in agribusiness expansion



National Finalist

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CIMR



The role of human resources in expanding agribusiness focuses on the recruitment and management of a workforce consisting of highly specialized professionals and semi-skilled and unskilled workers. Agribusiness includes the technical and labour-intensive activities needed to optimize crop production and production from inputs invested in livestock. Therefore, expanding agribusiness requires good planning of human resources needs in all sectors of crop and livestock production from the human resources sector.

Forecasting human resources needs in agribusiness

The HR office works closely with the operations management team to determine the appropriate number of professional and agricultural workers needed to address increasing agricultural activity and product marketing. The task of HR is to adapt the personnel requirements to support the various agricultural processes and marketing activities of agribusiness to the additional activities related to expansion. The talent department undertakes multiple

e tasks for employees or hires professional employees to ensure that skills, agricultural machinery, and labour-intensive activities are provided to the right number of employees.

Retention and adoption

The human resources department not only works with the department or department manager to maintain and hire staff, but also acquires the skills needed for the agribusiness workforce. Due to the diversity of the business and the skills required for the workforce, HR needs to work with department heads. Managers in sectors such as horticulture, livestock, milk production, milk processing and marketing are ideal for setting minimum requirements and appropriate compensation packages for skilled agricultural workers in their respective departments.

Policy implementation

HR also serves to ensure that agribusiness grows within the established guidelines for rewarding, promoting and motivating employees in various

agricultural and production sectors. Human resources ensure that each employee's job description and responsibilities are aligned with the company's overall production and performance goals. The Human Resources Department works with top management to ensure that employees fully participate in and benefit from growth activities such as research and development of animal varieties and crop species.

Managing Specialized Agri-business Knowledge and Skills

The workforce planning requires department heads to interact with HR experts to maintain current staffing and plan future staffing needs, Management Study Guide.com explains. One of the goals of a company's workforce plan is to create a framework that allows the company to monitor for future growth.

Correct number of people

Personnel are subject to change based on business growth, loss due to layoffs, or temporary and seasonal employment needs. The goal of the workforce plan is to anticipate staffing needs and work with business leaders to ensure that each department is properly staffed. The staff group plans to increase employment seasonally so that production levels and quality of customer service are not compromised. This includes working with temporary employment agencies to provide

seasonal workers and to place job ads recruiting part-time workers.

Future Needs Analysis

The Society for Human Resource Management explains that successor development is the process of anticipating the company's future skills needs and initiating the process of finding qualified candidates to fill future positions. Human resources must be involved in every aspect of the business plan to prepare for the hiring of jobs that the company has never dealt with.

For example, a toy maker decides to enter the radio-controlled toy market and needs to hire technicians and engineers to design and manufacture toys that the company has never manufactured before.

Appropriate successor development plan

It's cheaper to use existing staff than to hire new staff to meet the work needs of your organization. Hiring new hires includes hiring costs, training costs, and the cost of low productivity when new hires settle down to work. The talent plan includes tracking the skills of each employee. This allows the company to move employees within the company without having to look outside the company. For example, an Accounts Payable employee with knowledge of Payroll can be promoted to a highly qualified Payroll.

Optimizing Productivity and Efficiency

Companies need to use their employees efficiently to stay productive and keep them morale high. Developing part-time positions, creating different work shifts, providing overtime to meet increasing production needs, and maintaining proper training programs, workforce planning maximizes workforce efficiency. The way. Shift options and provide the tools you need to get the job done. B. Training, helping to maintain employee morale.

Operational and strategic human resource management are two aspects of the same entity. Operational HR performs the day-to-day tasks that are essential to meeting the needs of employees. Strategic HR, on the other hand, deals with predicting long-term outcomes and ensuring that the organization has enough resources in its pipeline to reach its goals. Both aspects of human resources are the fundamental elements of a successful business.

Human resources

Human resources staff are top-level operations managers. The tasks they perform are generally very visible to employees because they focus on day-to-day issues that result from the team's ongoing needs. For example, operational HR staff may do some or all of the following:

Recruitment and Onboarding

- Managing employee compensation issues, medical benefits, and compensation reviews
- Dealing with employee complaints and disciplinary action
- Handling requests for vacations, childbirth, etc.
- Training program organization
- Ensuring employee health and safety
- Consulting and coaching
- Creating an employee bonus program
- Developing social programs and bonus systems that involve employees

Participating in operational meetings with line managers and developing and implementing training programs can be part of the operational HR manager's day. The primary responsibility of operational HR staff is to keep labour laws up-to-date and ensure they are consistently adhered to.

Strategic personnel operations

Strategic human resources management is the role of the big picture. HR professionals need to explore the company's potential growth paths and consider how many employees are needed and what role they play in achieving the organization's goals. Strategic HR is an integral part of an organization's future workforce plan.

From a strategic standpoint, HR professionals are committed to

anticipating future business needs and developing recruitment and training programs to meet those needs. Going forward, the Society for Human Resource Management reports that HR teams can consider many options to keep their business competitive and growing, including:

Creating Compensation and Benefits Package to Attract the Type of Employees the Company Wants to Hire

Outsource specific jobs that change labour practices and compensation to retain the best performing employees. Strategically functioning HR departments typically focus on improving employee productivity and improving the rate of return on investment to help companies move their businesses forward. To achieve these ambitions, HR professionals can assess the current state of the economy and, in connection with it, confirm the technical expertise of the current workforce.

Big difference

The main difference between operational HR and strategic HR is the time frame. Strategic HR is a future-oriented process of developing human resources to make people justice.

The main difference between operational HR and strategic HR is the time frame. Strategic HR is a future-oriented process of

developing human resources to make people justice.

Both skill sets are equally important. HR operation teams make sure the organization is a great place to work right now, so staff are happy and motivated to do their best work. The strategic director of people makes sure the businesses is ready for the future, so it can be everything to aspires to be. The importance of each function is reflected in the typical salary for this role, with HR managers earning \$116,720 per year in May 2019, according to the Bureau of Labour Statistics.

MetKonnnect (Emerging global Maharashtra) Startup funding event



Prince Chaudhary

1. Firstly, Congratulations on winning MetKonnnect (emerging global Maharashtra). How do you feel about it?

Thank you very much, and I'm thrilled to have raised the money and won this business competition. The main thing for me is actually this funding for the concept. The network and the gratitude I have received are also quite inspiring, in addition to the funding. After that, I felt a lot more assured and capable. And I'm eager to put this plan into action as soon as I can.

2. Could you brief us about this competition? What were the hurdles you faced and how did you overcome them?

The competition's name was Metkonnnect-Emerging Global Maharashtra: A startup-investor meet organized by The Lets Rise Up Foundation and MetKonnnect Startups and Investors at the Event. 14 startups from different industries presented themselves at the event, followed by the Networking Session and Award Ceremony.

Networking sessions played a vital role in creating valuable connections which I believe will lead to growth in the long term. It also consisted of the '5 Minutes to 5 Lacs' program, where students from Jamnalal Bajaj Institute of Management (JBIMS) and Welingkar Institute of Management presented exemplary pitches in five minutes, and investors present from Vodafone Idea Foundation offered to fund the most brilliant idea. After my 5-minute pitch, investors started asking me questions about things I didn't know, but I overcame it by using the information I had gathered for this project's market research.

3.What were your key learnings and takeaways?

We should also be ready for unusual circumstances, and an entrepreneur should be a thinker rather than a doer because brainstorming only accounts for 20% of the business model but drives the other 80% of it. We should be open to learning new things and expanding our networks since, as we all know, a network is worth its weight in gold. Do not be afraid of failure. You always move from failure to success

4. It's always difficult managing time between academics, personal life, and other opportunities. How did you manage your time?

Yes. The MBA programs are all about honing your managerial and time management skills by engaging in extracurricular activities. It is sufficient if we devote time to our interests on the weekends. I would advise one to develop a list of priorities and work.

5.What are your thoughts about your start-up idea at the current stage and what is your future plan regarding the execution and expansion of the same?

If I talk about my startup idea, it is called the Kisan app and it helps to connect farmers and farming service providers and it has great potential in terms of business. It is solving the biggest problem for farmers, the lack of high-tech farming services, and creating jobs in rural areas. I have already started working on the app and prepared the entire groundwork, gathering information about farmers and service providers. We will start working on this startup and deploy our app shortly, hopefully within a year. We will start by carrying this out in Uttar Pradesh before gradually attempting to scale it up. Our initial goal is to capture 1 lac farmers in the first year.

6. What guidance or recommendations would you offer to juniors to help them land such a fantastic platform?

My learnings post participation in the challenge were: It is quintessential to work towards sustainability and ESG compliance because it makes us a better individual for the future. The greatest discovery of our life can be attained by revamping our contributions to well-being which our team aimed to attain through this participation. Smart and judicious investing is all that we need in our lives which comes with hard work.



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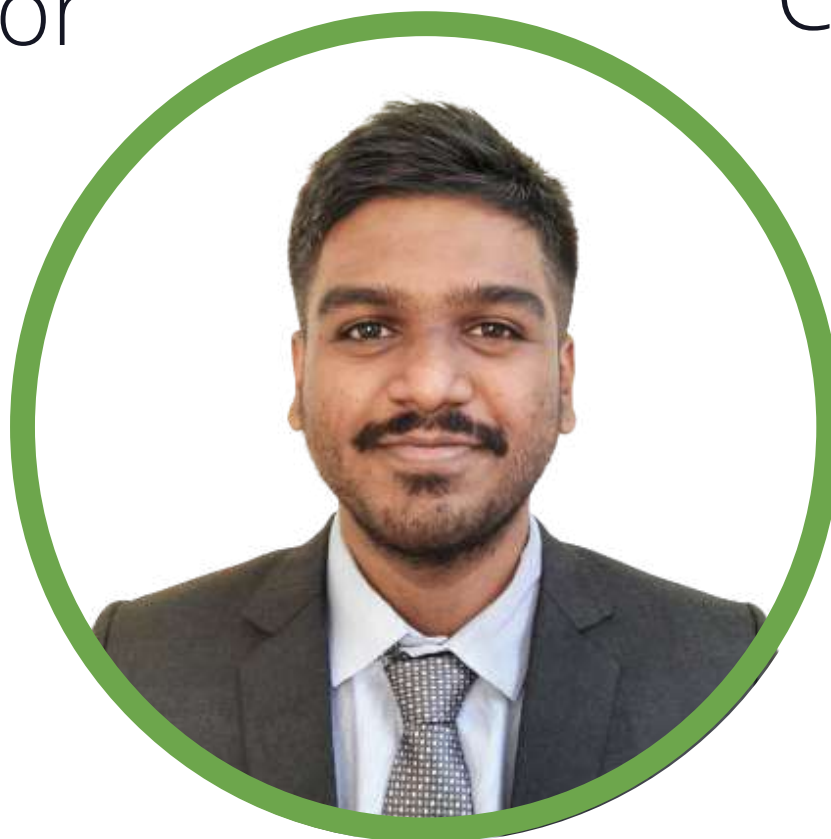
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