



GLOBAL AGRI CONNECT 2018
**CLIMATE SMART AGRICULTURAL
TECHNOLOGIES AND INNOVATIONS:
IMPACT & WAY FORWARD**
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AUTHORS	Food and Agribusiness Strategic Advisory & Research (FASAR), YES BANK & National Skills foundation of India (NSFI)	
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CONTACTS	<p>YES BANK Ltd. Registered and Head Office</p> <p>9th Floor, Nehru Centre, Dr. Annie Besant Road, Worli, Mumbai - 400 018 Tel : +91 22 6669 9000 Fax : +91 22 2497 4088</p> <p>Northern Regional Office 48, Nyaya Marg, Chanakyapuri New Delhi – 110 021 Tel : +91 11 6656 9000/0124-4619008 Email : fasarybl@yesbank.in Website : www.yesbank.in</p>	<p>National Skills Foundation of India (NSFI)</p> <p>K-59, South City 1 Gurgaon 122018 Haryana , India Tel : +91 124 4058848; +91 124 4058849 Fax : +91 124 4048840 Email : info@nsfindia.org agritechforgac@nsfindia.org</p>



Message

The agriculture sector is facing numerous challenges, the newest of which is climate change- a direct outgrowth of unbridled & unsustainable development in the long term, aimed at meeting the demands of an ever-increasing population in the short term. It has an adverse impact on various sectors such as agriculture, water resources, forestry, biodiversity, human health, energy and infrastructure. Such impact necessitates deployment of a range of strategies to mitigate the adversities created therein.

Climate change threatens agricultural production and the food security of developing countries in particular, in complex ways. This warrants a strong need for developing, deploying & scaling up environmentally friendly technologies.

Concomitant with the above, India's Food and Agri ecosystem has witnessed a massive wave of entrepreneurship and innovations. The transition is being seen across the agri value chain being driven by technology and disruptive ideas. Innovations are being rolled out for farm management, data analytics, supply chain management, e-commerce models, processing technologies & equipment, packaging, market access, financing and retail, amongst others, which in one way or the other combat the challenges put forth by climate change. Young and budding innovators with novel ideas have been developing solutions that are feasible, implementable, scalable and future ready. Many of such innovations have changed the dynamics of farm risk management & incomes for countless farmers including numerous smallholders.

I am glad to present the fourth edition of YES BANK- NSFI Knowledge Report –'Climate Smart Agricultural Technologies and Innovations: Impact & Way Forward' which highlights key innovations and best practices in Indian Food and Agriculture space. I am confident that the contents of the Report will provide insightful knowledge on the current scenario of entrepreneurship and innovations. The report highlights the work of 30 specific bright startups who have come up with unique climate smart innovations. I am sure that this report shall strengthen the case for building a stronger and more congenial ecosystem for Startups and shall also encourage industry players, policy makers and other ecosystem stakeholders to work together towards leveraging innovations for building a climate smart agriculture economy.

Sanjeev Asthana

Chairman  **NSFI**
Driving Change. Delivering Impact



Message

The agriculture sector globally has been plagued by a plethora of challenges, the newest of which is that of climate change. Climate change has emerged as a substantial challenge as it is a direct outgrowth of development and progress which is essential to meet the demands of an ever-increasing population. It has an impact at the national level through adverse effect on various sectors such as agriculture, water resources, forestry and biodiversity, human health, energy and infrastructure. Such diverse impact requires a range of strategies to be deployed for an effective response and for better preparedness. Climate change threatens agricultural production and the food security of developing countries in complex ways that demand environmentally friendly technologies and innovations.

With the emergence of such a challenge, India's Food and Agri ecosystem has also witnessed a massive wave of entrepreneurship and innovations. The transition is being seen across the agri value chain being driven by technology and disruptive ideas. Innovations are being carried out for farm management, data analytics, supply chain management, e-commerce based B2B & B2C models, processing technologies and equipment, finance, packaging, market access and linkages and retail amongst others, which in one way or the other combat the challenges put forth by climate change. Young and budding innovators with novel ideas have been developing solutions that are feasible, implementable, scalable and future ready and are marking their success stories in the food and agri domain. Many of such innovations have changed the dynamics of farming for countless farmers including smallholders.

I am glad to present the fourth edition of YES BANK-NSFI Knowledge Report –'Climate Smart Agricultural Technologies and Innovations: Impact & Way Forward' which highlights key innovations and best practices in Indian Food and Agriculture space. I am confident that the content of the Knowledge Report will provide insightful knowledge into the current scenario of entrepreneurship and innovations. The report highlights the work of 30 startups who have come up with innovations that are trying to resolve one or many of the challenges that currently mar the agri value chain in India. I am sure that this report shall strengthen the case for working towards building a stronger and more congenial ecosystem for the Startups and encourage industry players, policy makers and other stakeholders to work in a channelized manner to implement innovative technologies in the food and agri sector.

Nitin Puri

Senior President

Food and Agribusiness Strategic Advisory & Research (FASAR)

YES BANK Ltd.

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Innovation/ Startup Name AgSmartic Technologies

Founder/CEO Abhishek Sinha and Rashi Verma

Brief about the Startup AgSmartic Technologies Pvt. Ltd. was founded with the mission to help farmers increase their farm yield using a data driven approach. The startup has developed a Croplytics ecosystem, where on one side of the spectrum they have a soil sensor based autonomous irrigation, while on the other side an image based pest detection system.

Uniqueness In the past decade, volume of data has grown at an exponential rate, so is the use of technology in agriculture domain. Globally, farmers are using drones, machines, data analytics to improve yield of their farm lands. India, in particular has not maintained the same pace in using technology. Farmers at large still use traditional methods of farming in irrigation and pest management.

Keeping all these factors in mind, the company aims to help farmers in increasing their yield by data collection and interpretation.

AgSmartic's Internet of Things (IoT) sensors capture soil data and use the information to control when and how much to irrigate without any human intervention. The pest detection system uses advance Deep Learning Models to identify pests & diseases and provide farmers with necessary recommendations.

Beneficiaries Farmers, FPOs and Pesticide & Fertilizer Companies

Impact Generation The company's AI based system, Croplytics uses data collected from field using low-powered sensors to help farmers in improving the yield of the crop.

Right quantity of water and fertilizer is supplied to the crop in timely manner is one of the key areas where the AgSmartic system helps farmer.

Contact Details Address: B1/B1, Indigram Building (Basement), Mohan Cooperative Industrial Estate, Mathura Road, New Delhi – 110044
Contact No. 8800770111

Atom Solar



Innovation/ Startup Name Atom Solar

Founder/CEO Vivek Mundkur

Brief about the Startup Atom Solar is driven by simple philosophy of making affordable, solar powered water pumping solutions for rural and urban areas.

Atom Solar's water pumping systems are compact, easily transportable & can be used for multiple purpose like water pumping in remote areas, domestic water supply, agriculture drip & flood irrigation & in rural/urban community water supply schemes. Their water systems will help you save substantially on your diesel and electricity bills.

Uniqueness All water systems are designed so as to consume minimum energy, easy maintenance and affordable. Atom Solar offers innovative power saving solutions with zero emission green energy generated by solar panels. Atom Solar initially focused on products which are desperately needed in pumping of drinking water and drip system for farm irrigation.

Beneficiaries Urban & rural beneficiaries

Impact Generation Solar energy can be used for various applications such as :

- Supply of domestic water
- Drip irrigation
- Flood irrigation
- Urban and Rural drinking water supply

The Greenpeace Award winning solar water pumping systems are used in areas where there is little or no electricity and farmers are forced to use diesel irrigation pumps.

Contact Details Email: sales@atom-solar.com, nitin.burde@atom-solar.com
Phone no: 7743810351
Address: Flat No 6, 2nd floor, Anupam Apts,
Vigyan Nagar Road, Bavdhan, Pune - 411 021



Innovation/ Startup Name	AVATAR™ Small Wind Turbine
Founder/CEO	Arun George and Anoop George
Brief about the Startup	<ul style="list-style-type: none"> Indigenously developed innovative multi purpose turbine that can be used as a wind turbine, hydel turbine or a tidal turbine. It has brought down the cost of small wind power by three quarters, thus making them affordable and sustainable for households, agriculturists, and commercial users and has near maintenance-free service for years.
Uniqueness	<ul style="list-style-type: none"> The AVATAR™ Small Wind Turbine, at the cost of an smartPhone, is capable of generating power even at very low wind speeds. The 1 kW-capacity equipment can provide about 5 kWh units of clean energy every day at the annual average wind speed of 5.5 m/s — deemed enough for meeting the energy needs of a middle-income household every day. Create energy self sufficiency through Distributed, localised and Affordable Renewable Energy. This innovative technology can be deployed as Off-Grid or On-Grid and also scalable to provide higher capacity small wind turbines of 3kW, 5kW, 10kW, 20kW and more.
Beneficiaries	Households, Farmers, MSME firms, Commercial Offices, Industries, NGO's, Real Estate Apartments, Telecom Towers, Educational Institutes, Hospitals and more.
Impact Generation	Avant Garde Innovations™ today has received product orders for their Make in India AVATAR™ wind turbines from all the States across India and export orders from all the continents across the world.
Contact Details	<p>avantgardeinnovations@gmail.com</p> <p>www.avantgardeinnovations.com, Phone no: +91-99950 99488, Address : No.20, D-Lane, M.E.R.A, Anayara, Trivandrum Kerala. 695029 INDIA</p>

Black Box



Innovation/ Startup Name Black Box

Founder/CEO Sahil Peerzada and Sachin Adhikari

Brief about the Startup Black Box is a unique technology developed by scientists in Spain. It can be easily set up in any factory or plant. Regular cold storage utilises nitrogen. However, in the Black Box system, neither nitrogen nor any preservative is used. The stored commodities will have their natural content and nutrition value intact for 1,000 days.

Uniqueness Ensures the preservation of any agricultural commodity for 1,000 days. Black Box is a unique technology developed by scientists in Spain. It can be easily set up in any factory or plant.

Beneficiaries Farmers

Impact Generation Partnered with Hindustan LNG to set up two such storage plants in Hyderabad. Subsequently, similar plants will be set up for mangoes in Maharashtra and Uttar Pradesh.

Contact Details info@blackbox.vc

Innovation/ Startup Name	Dhwani Rural Information Systems Pvt Ltd
Founder/CEO	Sunandan Madan & Swapnil Agarwal
Brief about the Startup	<p>Dhwani Rural Information Systems is building innovative ICT solutions for Indian agriculture sector. They have developed a Digital Library for farmers with Sehgal Foundation (NGO). Digital Library is a mobile app based & offline desktop app based repository of agronomy information, shared with farmers through GPS tracked mobile information vans which travel from village to village. Farmers can get their soil samples tested at the van itself. Based on their location, soil & crop details, necessary information is shared using the Digital Library.</p> <p>Digital Library provides a single point agronomy information access to farmers in multiple regional languages on <i>Disease management, Insect management, Pest management and Nutrition deficiency</i></p> <p>Digital Library also provides information related to <i>Government schemes, Agricultural technology, Crop insurance services and Soil testing services</i></p>
Uniqueness	<p>Currently most of the farmers are not fully aware of the best farming practices as per their soil and local conditions, thus leading to lower farm productivity & farm incomes. The information available to them is not crop specific, and they need to run from pillar to post for information related to soil testing, insurance, government schemes, relevant farming technologies. Since Digital Library provides all these information and services at a single point, it saves the time, cost & effort of farmers at the same time improving their farm productivity & income.</p>
Beneficiaries	Farmers
Impact Generation	<p>The Digital Library can provide the required information to farmers at right time & right place thus saving their time, cost & effort. This support also reduces the risk of crop failure significantly due to timely availability of a relevant information. Due to improved farming practices and support provided through Digital Library, net productivity of the farm increases.</p>
Contact Details	<p>Shobhit Mathur Phone: 9654058088 Email: shobhit.mathur@dhwaniris Address: D57, Startup Tunnel, 100 Feet Road Chhatarpur</p>

Eco Friendly Water Retention Polymer



Innovation/ Startup Name Eco Friendly Water Retention Polymer

Founder/CEO Narayan Lal Gurjar

Brief about the Startup

- It helps to tackle water scarcity and is designed to absorb water in the soil
- It works on the properties of Superabsorbent Polymer (SAP).
- It absorbs 400 times of water than its own weight, retains this water for a long time and supply the water to crops when required
- The product is natural, and is made to preserve the integrity of the soil

Uniqueness

- The Eco-Friendly Water Retention Polymer is made from natural bio-waste extracts that have water-absorption properties, making it ideal for use in such water-scarce areas
- It ensures a crop receives regular supply of water, despite the insufficient rainfall in the desert region
- It not only prevents soil and water pollution but also give high nutrition to the plants after slowly disintegrating in the soil
- Maximum production with minimum use of water and fertilizers

Beneficiaries Farmers

Impact Generation This technology is rather uncommon to local farmers due to various reasons, such as market availability and high retail cost. Most commercially found SAPs used in agriculture are prepared from acrylic acid and cross-linked by solution or suspension polymerization. However, post consequences of commercial SAP absorbed by the root of the plant, ultimately penetrate the roots of crops and may cause noxious effects on the consumers. Thus, this tool prevents any danger to the consumers as it does not use any chemical substance.

Contact Details narayanlalgurjar98@gmail.com
Phone no: 8742073714
9, Varinda Vihar Law College Gate , Near Deepu ki Thadi,
New RTO Office Road ,Rishabh Colony ,University Campus
Udaipur Rajasthan -313001

Innovation/ Startup Name	Ecociate Consultants Pvt. Ltd
Founder/CEO	Saroj Kumar Mohanta, Kirti Prasanna Mishra
Brief about the Startup	<ul style="list-style-type: none"> • Ecociate works with private sector – that includes Corporate, MSMEs and social enterprises to support them to move towards creating sustainable business models (SBMs) • It offers knowledge and strategic support through appropriate research and consulting skills that ensure creation of such models • Ecociate, in addition brings adequate expertise to build inclusive sustainable models by addressing the needs of the poor who are many a times left out at illegitimate stakeholders of the industry they cater to • It has brought in sustainability principles and actions into the sectors it serves like agribusiness, sanitation, health etc
Uniqueness	<ul style="list-style-type: none"> • Ecociate has designed a commercial viable model for farmer’s collectives and social organizations (like FPOs, Cooperatives or SHGs, NGOs) to address the issue of crop residual burning in a sustainable and equitable way • The team has a cumulative experience of more than 80+ years in the service areas of Research, Consulting and Capacity building • Commitment to work towards creating innovative and sustainable business solutions for Bottom of Pyramid communities in emerging markets
Beneficiaries	FPO and individual farmers
Impact Generation	The Community owned Social enterprises are promoted and nurtured by various development initiatives including Farmer Producer Organizations, Cooperatives, Primary Producers’ Companies, etc. which struggle to attain stability in Business. It impacts funders and funding organizations engaged in funding and supporting social enterprises which require detailed assessments of risks, opportunities and capabilities of their beneficiaries.
Contact Details	Ecociate Consultants Pvt. Ltd. B – 160, Sector 51, Noida, Uttar Pradesh, India – 201301 email: admin@ecociate.com, Santosh@ecociate.com, Mobile-8128685155, saroj@ecociate.com, 09313328231, kirti@ecociate.com, 09312344747

Edible Routes Private Limited



Innovation/ Startup Name	Edible Routes Private Limited
Founder/CEO	Kapil Mandawewala
Brief about the Startup	<ul style="list-style-type: none">• The Startup helps finding ways for people to grow food and eat seasonally• They are an earth and people friendly business that provides step-by-step guidance on how to efficiently design, plan, build and manage organic edible landscapes, home gardens, and create products to nurture the earth
Uniqueness	<ul style="list-style-type: none">• All the food is grown within walking distance where people live and most of their food is homegrown• It is a place with a strong sense of community and deliciously fresh food• They conduct workshops and provide ongoing support for kitchen gardeners• For small-scale kitchen gardens in the city, they provide turnkey services, helps in designing, building, and managing the home vegetable garden, and provides everything people need to do so like containers, weed mats, drain trays, potting mix, seeds, khaad, and organic pest-control solutions• They design and build urban food gardens in confined spaces like terraces, backyards and balconies. And we help set up and run organic farms in & around cities• Their aim is to create regenerative and diverse ecosystems that also provide food for the body and soul
Beneficiaries	Farmers and general household
Impact Generation	This start up applies organic, biodynamic, permaculture principles to create kitchen gardens for individuals and organisations, and is driven by a need to impact people's health positively. Working on anything from one-acre to 200-acre plots, it encourages people to grow their own fruits, vegetables and even crops.
Contact Details	info@edibleroutes.com Phone no: 9811871751 Address : Farm 8, Phase V, Main Entrance Rd, Aya Nagar Extension, Aya Nagar, New Delhi 110047



Innovation/ Startup Name	ERGOS
Founder/CEO	Kishor Jha
About the startup	Ergos is a Bengaluru-based agri-supply chain firm that is solving the warehousing problem of farmers in Bihar.
Uniqueness	<ul style="list-style-type: none"> • Onboarding and servicing farmers through ERGOS Digital platform and offline backed by a grid of rural medium and micro warehouses at farm-gate across the geography for storage, credit access, and forward linkages • Bring in transparency and ease of execution in agriculture supply chain for farmers through leveraging technology at farm gate optimally • Fully integrated forward linkages and Credit access platform for farmers, and end buyers-food processing companies • Building an institution to convert farmer commodities into financial assets and thus bring low income and marginal farmers into main stream and access institutional facilities, and national market to sell their produce irrespective of quantum of grain volume and geography to optimise the agriculture income • On ground infrastructure backed by a comprehensive IT platform which assists in monitoring all aspects of operations • It is completely self sustainable model so that farmer can start downloading Mobile app, registrations through eKYC, creating land data and validations, book warehouse space, bring stock to nearby geo tagged warehouses and operate on app for advances, sale request etc
Beneficiaries	Farmers
Impact Generation	The model provides small farmers access to professional warehousing services in their geographical vicinity as well as market linkages in a scalable and cost-effective manner. It is an institution that assists farmers to convert their farm commodities into financial assets and thus bring low income and marginal farmers into main stream, access institutional facilities, and national market to sell their produce irrespective of quantum of grain volume and geography to optimise the agriculture income. Thus, it helps the farmers to earn a higher income for their produce.
Contact Details	B-701, Western Edge II Cooperative Society, Off Western Express Highway, Behind Metro Cash And Carry, Borivali East, Mumbai 400066 Contact no : Tel:+912228707744, +912228707755 Email ID: info@ergoslif.com, hrd@ergoslif.com

FarmerUncle



Innovation/ Startup Name FarmerUncle

Founder/CEO Saazid Singha

Brief about the Startup

- An online tech based platform which allows fruit farmers from across the country to sell directly to end consumers in the city
- The platform offers maximum transparency to both consumers and the farmers

Uniqueness

- It is a platform which enables consumers to buy directly from growers of their produce
- The presence of handpicked and curated farmers ensures that the consumers get only the best quality produce
- It provides maximum freshness, traceability, transparency and aims to revolutionize the way consumers buy produce in the city

Beneficiaries Farmers and Consumers

Impact Generation FarmerUncle is conceptualized to provide a two-fold benefit to farmers and consumers. By uploading details of organic and non organic fruits and vegetables, dry fruits and assorted farm produce, farmers can connect with their buyers, share details about expected harvest date and farming practices and, most importantly, set a price for their produce {as well as retain 70-80% of that price}.

Contact Details

Email ID: cc@farmeruncle.com
vipin@farmeruncle.com, saazid@farmeruncle.com

Phone no: +91 9711 100 075, +91 9711 100 908,
+91 9711 100 604 134

Address: First Floor, Paras Trade Center, Faridabad Road,
Bandhwari, Haryana 122005

Innovation/ Startup Name	FarmGuide
Founder/CEO	Nikhil Toshniwal
Brief about the Startup	<ul style="list-style-type: none"> • FarmGuide aims to solve information asymmetry in the agriculture sector through digitization, crop advisory, image processing, and data analytics • FarmGuide's end-to-end crop insurance solution ensures quick & error-free application of insurance policies and timely disbursement of claims in situation of crop loss • Through its digitised system of automated web and mobile platforms, it is capturing real-time data for reliable agri-stacks (Farm Profile, Soil Profile, Land usage, Infrastructure mapping, weather layer) that can be analysed and used at the field level for risk analysis, efficient market distribution, and effective agricultural policy formulation • They use Information Communication Technology to offer customised advisory about crops, weather, market prices etc. to individual farmers through an in-house developed IVRS in regional languages
Uniqueness	<ul style="list-style-type: none"> • The challenges plaguing the agriculture sector are many. Besides issues like information asymmetry, there's the absence of integrated dataset, unreliable & duplicate data, problems with crop yield estimation, land usage patterns, lack of credit disbursement channels, timely settlement of insurance claims, and lack of internet penetration • FarmGuide's rural loan & crop insurance system is used by the Ministry of Agriculture & Farmer's Welfare, 28 states, 150 banks, and more than 1.5 lakh CSCs • FarmGuide, through its information services and satellite image-processing vertical, is creating a central integrated repository for different agri-stakeholders including input providers, harvest buyers, financial institutions etc, which can be used for effective decision making and business expansion • They establish last mile connectivity of the agri-business with the farmer by leveraging technology
Beneficiaries	Farmers are the primary beneficiaries
Impact Generation	<p>FarmGuide's scalable solutions aim to benefit a farmer base of 15 Crore farmers by partnerships with various industries impacting agriculture directly or indirectly.</p> <p>This includes ensuring that all farmers have access to crop insurance and credit, access to high quality seeds, fertilizers, machinery etc and are able to sell their crops at higher price for increased income.</p>
Contact Details	<p>Email: info@farmguide.in</p> <p>Address: Unit no. 1146-48, JMD Megapolis, Sector-48, Sohna Road, Gurgaon-122018</p>

Farms2Families

sustainable
farming
association



Innovation/ Startup Name	Farms2Families
Founder/CEO	Vishwas Gupta
Brief about the Startup	Give a piece of farm on rent; in which we grow chemical free organic veggies according to customer choice and test, then we deliver it at your door-step every 5th day. Also provide Customer to monitor their farm through our mobile app. coz now days many farmers use pesticides during harvesting, which is coz of cancer and many more deadly diseases.
Uniqueness	They offer a unique blend of hygienic, fresh and organic vegetables that too of your choice at a fixed price all year around. They basically allot you a piece of land in our farm and will grow all those vegetables that you choose to. In the spirit of giving our consumers the freshest produce possible, we are committed to delivering our produce - from our farm to you - on the same day as harvest. All these produce are organically grown and are handpicked by our experts.
Beneficiaries	Farmers
Impact Generation	It enhances the nutrients of the soil which is passed on to the plants and animals, avoids toxins because of no use of chemicals, resulting in enhanced taste and longer shelf life.
Contact Details	contact@farms2families.in Phone no: +91 965 077 7670 Address: Plot Number 5, NCR, Knowledge Park II, Greater Noida, Uttar Pradesh 201306



Innovation/ Startup Name	Fasal
Founder/CEO	Ananda Verma and Shailendra Tiwari
Brief about the Startup	<ul style="list-style-type: none"> • Fasal, an Artificial Intelligence (AI) powered IoT platform, removes the guesswork and manual methods of most farmers today who are working in isolation • It helps in taking critical crop related decisions by providing them with data and analytics to grow more and grow better using advanced technology in IoT and Machine Learning (ML)
Uniqueness	<ul style="list-style-type: none"> • Farmers save money in reactive sprays and improve the quality and quantity of their crop significantly with Fasal's technology • It uses IoT and AI technologies to provide actionable recommendations to farmers • It monitors real-time condition on the farm and provides microclimate weather prediction, disease, and pest prediction • Farmer gets notified on his device and actions can be taken directly from it, like switching to drip irrigation etc
Beneficiaries	Farmers, Agri Institutions
Impact Generation	Fasal is currently operational in multiple states in India - Karnataka, Madhya Pradesh, Chhattisgarh, Maharashtra to name a few and expanding to international market. BIS Research estimates the global market size for precision agriculture to grow over \$6.34 billion by 2022 at an estimated CAGR of 13.09 percent from 2015 to 2022.
Contact Details	<p>Email: connect@wolkus.com Address: Wolkus Technology Solutions Pvt. Ltd., No.1678, 23rd Cross, 27th Main Sector 1, HSR Layout Bengaluru, Karnataka 560102</p>

Innovation/ Startup Name	Freshokartz (Mandi price at doorstep)
Founder/CEO	Rajendra Lora and Nagendra Yadav
Brief about the Startup	<ul style="list-style-type: none"> • Geographies covered - Jaipur • No of clients served - 20 (ITC, Radison) • Connects farmers and consumers directly through this tech-enabled online platform • It has a mobile application and website through which orders can be placed • The startups have been selected for incubation in iStart, a programme run by Rajasthan Government to support startups
Uniqueness	<ul style="list-style-type: none"> • Freshokartz's vision is to minimize the wastage in supply chain in fruits and vegetables sector which is currently around 35 percent post-harvest in India • Currently focusing on bringing technology to manage this complicated supply chain to reduce this waste and bring it below 5 percent across the country • Maintaining 30% margins on on purchase rate and the net profit is six to seven percent, which is better than their competitors
Beneficiaries	Farmers, Customers, Hotels, Restaurants, Cafe, Retailers and other Commercial Kitchens.
Impact Generation	Freshokartz have connected with over 1000 farmers and served over 100 customers in the B2B sector including big names like ITC Hotels, Hilton Jaipur, Kanha Sweets, among others. First Year revenue was of INR 2 cr. Monthly revenue is INR 25 lakh. The government also awarded Freshokartz the Bhamasaha techno fund worth INR 20 lakh and a marking assistance fund of INR 10 lakhs.
Contact Details	<p>info@freshokartz.com Phone No: 9950527743, 8290134315 Address: 72, Kalwar Road, Shyam Vihar Jaipur, 302012 Rajasthan, India</p>



Innovation/ Startup Name	Intello Labs
Founder/CEO	Milan Sharma, Nishant Mishra
Brief about the Startup	<ul style="list-style-type: none"> • The company has developed an AI-based deep-tech solution for agricultural products grading • On the other hand, the app identifies the commodity, the different types of defects in the commodity sample, their count and approximate weight (using deep learning models) • In this process it gives an overall quality report.
Uniqueness	<ul style="list-style-type: none"> • Reducing the time taken for quality testing from 15 minutes to 2 minutes. • Real time sharing of data across multiple locations and screens. • An accuracy of 95 % and more beating the human eye. • Removal of subjectivity in quality assessment. • Promoting a shared understanding of the visual quality parameters. • Eliminating disputes thereby saving managerial time and legal fees leading to increased productivity.
Beneficiaries	Farmers, Traders, Agri businesses
Impact Generation	<ul style="list-style-type: none"> • Using the deep learning and image processing models, identify any diseases within the crops • Along with the parameters, get specific symptoms and causes for the disease detected in the Image • Gives various recommendations on how that disease can be cured and prevented from increasing further <p>Case study –</p> <p>In a cardamom trading scenario, it was observed that 30% of the samples were graded at a higher quality level, and hence priced higher, owing to use of Intello Labs mobile application (rather than being manually assessed for quality) ; annualized impact ~INR 90 Cr incremental income for Farmers</p>
Contact Details	<p>contact@intellolabs.com</p> <p>C-801, Nirvana Courtyard, Nirvana Country, Sector 50, Gurugram, Haryana 122018</p>

Innovation/ Startup Name	Papaya Ring Spot Virus Detection Kit
Founder/CEO	Krishgen Bioscience
Brief about the Startup	The virus is a non-enveloped, flexuous rod-shaped particle that is between 760–800 nm long and 12 nm in diameter. It is transmitted between plants by mechanical activities like pruning and by numerous aphid species such as <i>Myzus persicae</i> .
Uniqueness	It helps in detection of Papaya Ring Spot Virus so that such problem could be detected at the earliest. It would have led to papaya being infected with virus & it would have been unfit for consumption.
Beneficiaries	Papaya Farmers
Impact Generation	Papaya ringspot disease (caused by Papaya ringspot virus - type P; PRSV-P) is a devastating pest of papaya. The virus poses a serious threat to papaya industry.
Contact Details	Email: info@krishgen.com Unit Nos#318/319, Shah & Nahar, Off Dr E Moses Road, Worli 400018. Mumbai, India.



Innovation/ Startup Name	Living Greens Organics Pvt Ltd
Founder/CEO	Prateek Tiwari
Brief about the Startup	<ul style="list-style-type: none"> • Living Greens Organics Pvt Ltd is India's first Rooftop Organic Farming company and it specializes in making Portable Farming Systems (containing a unique soil-less organic medium) and Organic Spray Kit (for organic pest and disease management of vegetable plants) • These Portable Farming Systems can be installed on any un-used space in the city, like rooftops, empty plots, kitchen gardens, farmhouses to not only grow fresh organic vegetables but to also reduce the Urban Heat Island effect of a city, by making it go "EDIBLE GREEN" • The PFS can also be used by national and international organizations for rehabilitating famers in areas affected by floods, earthquakes, salinity etc
Uniqueness	<ul style="list-style-type: none"> • The Portable Farming System uses a unique (and extremely lightweight) soil-less organic medium, which not only offers a much wider range of nutrients to the plants but also becomes more fertile with time • Since the organic medium is nutrient-rich, a much higher plant density can be achieved, leading to much higher production of organic vegetables • Living Greens has also created a unique ONLINE SUPPORT SYSTEM to support any organic vegetables growers anywhere in the country
Beneficiaries	<ul style="list-style-type: none"> • People with open rooftops who would like to grow their own fresh organic vegetables • Institutional consumers like hotels, hospitals, schools, universities, corporate offices, malls etc • Organic Entrepreneurs who would like to commercially grow and sell fresh organic vegetables
Impact Generation	It has covered more than 50,000 sqr ft of rooftop space under organic farming, spread over 15 cities in the country.
Contact Details	<p>Email: thelivinggreens@gmail.com</p> <p>Phone no: 070234 44484, (900) 109-3440 , 8890600999</p> <p>Address: 583/584, Nirman Nagar-AB, King's Road, Jaipur, Rajasthan 302019</p> <p>www.thelivinggreens.com</p>

Miklens Bio



Innovation/ Startup Name	Miklens Bio
Founder/CEO	Santosh Nair
Brief about the Startup	<ul style="list-style-type: none">• Founded in 2016• Its technology portrays the idea of “Farming with naturally driven microbes” with a goal to reduce the dependence on toxic chemical pesticides• The company is using Agri-Microbial Technology (AMT)
Uniqueness	<ul style="list-style-type: none">• The technology reduces the dependency of farmers on chemical/synthetic inputs• Miklens Bio’s products contain microbial/plant extracts which kill the target pathogen in unique ways and do not harm beneficial micro-organisms in the soil”• The product categories include plant growth regulators, plant protection, bio-fertilizers and bio-pesticides
Beneficiaries	Farmers
Impact Generation	Miklens Bio’s products help increase the productivity of farmers by increasing their yields by 12 to 15 percent as well as per acreage cost of production is also less. Generated revenue of INR 2.5 crores in the first year. The agritech startup has also established global partnerships with key associates in Canada, the US and Mauritius.
Contact Details	Email Id: Santosh@miklensbio.com Contact no : +91 877554332 www.miklensbio.com



Innovation/ Startup Name	Oxen Farm Solutions
Founder/CEO	Viswajeet Sinha
Brief about the Startup	<ul style="list-style-type: none"> • The startup brings innovation and advanced technology to farmers in a tech enabled and pay per use 'Farming as a Service' (FaaS) model, similar to the Ola and Uber services • It facilitates Proprietary Market Intelligence and their market intelligence tool analyses satellite and weather data to determine the best markets • It provides innovative IOT solutions by leveraging existing solutions and creating new ones and brings transparency for all the concerned parties • It has worked with 10,000 farmers over 15,000 acres of land across 8 states and is rapidly expanding its presence
Uniqueness	Oxen leverages on technology such as satellite imagery analysis, machinery IoT and mobile enabled solutions for a highly efficient demand prediction, tech enabled operations efficiency improvement and easy to use user interface for rural user.
Beneficiaries	Farmers, machinery owners and village level entrepreneurs
Impact Generation	Farmers are able to reduce labour costs by up to 50 percent, machinery owners are able to get 35% higher utilization of their machinery and Village Level Entrepreneurs are able to earn extra revenue contributing to their livelihood. The tribal communities in Chhattisgarh who have benefitted from Oxen's services are their most satisfied customers.
Contact Details	ceo@oxenindia.com Phone no: 9717578111

Plantix



Innovation/ Startup Name	Plantix App
Founder/CEO	PEAT (Progressive Environmental & Agricultural Technologies)
Brief about the Startup	<ul style="list-style-type: none">• Founded in 2015• PEAT is a startup from Germany, that developed Plantix to provide farmers a smart mobile decision tool• Based on image recognition (AI), Plantix is able to identify the plant type and the appearance of a disease, pest or nutrient deficiency• The App takes advantage of deep learning technology which involves neural networks. It provides information on treatments and preventive measures in 12 languages
Uniqueness	<ul style="list-style-type: none">• Saves farmers money• Provides real time solutions and disease alerts• In the Community farmers from all over the world exchange information on local and global issues related to crops• A Crop Guide feature supports farmers throughout their whole growing season with customized advisories
Beneficiaries	Farmers, gardeners and extension workers worldwide
Impact Generation	<p>Plantix is free of charge for our users. With over 500 million monthly active users and an average of around 15,000 uploaded images per day, Plantix is not only able to detect over 300 plant diseases for 20 different crops, but also generates a complex dataset, that allows it to extract extraordinarily valuable information. What interests the user, what problems does he have? With the GPS and the time stamp from each individual image, it is known where diseases occur and how they spread. This gives us completely new insights into the spatial distribution of plant damages, which keeps users informed on potential threats in their area.</p> <p>Currently Plantix is available in 12 languages, more will follow.</p>
Contact Details	PEAT GmbH Kastanienallee 4 10435 Berlin / Germany contact@peat.ai / +49 (0)176 43537145

Robotic Harvesting



Innovation/ Startup Name	Robotic harvesting
Founder/CEO	Harvest Croo Robotics
Brief about the Startup	<ul style="list-style-type: none">• Harvest CROO Robotics was established in 2013 as a technology company focused on revolutionizing the agriculture industry with automation. They are developing a fully autonomous robotic harvester for fresh strawberries.• The global population is expected to reach 9 billion by 2050, agricultural production must double if it is to meet the increasing demands for food. Also with limited land, water, labor resources and changing the climate, it is estimated that the efficiency of agricultural productivity must increase by 25% to meet that goal while limiting the growing pressure that agriculture puts on the environment.
Impact Generation	Applying the automation to the agriculture help create the several advancements to the industry while helping the farmers save the money and the time. The robots do not get sick or tired and they do not need the time off. They can operate with closer tolerances (so, every round is at full field capacity), They offer fewer errors and at higher speeds, and the higher quality products can be sensed by the machines accurately.
Uniqueness	<ul style="list-style-type: none">• Saves farmers money• Improves quality• Increase yield by atleast 10%• Reduce energy
Beneficiaries	Farmers and Environment
Contact Details	Gary Wishnatzki Co- founder email:GW@wishfarms.com

Innovation/ Startup Name	S4S Technologies
Founder/CEO	Vaibhav Tidke, Shital Somani, Ganesh Bhare, Swapnil Kokate, Tushar Gaware, Ashwin Pawade, Nidhi Pant
Brief about the Startup	<ul style="list-style-type: none"> • S4S Technologies is the food preservation company that invents new food processing machines • They sell these machines to farmers or use these machines at our own facility to produce best quality processed food
Uniqueness	<ul style="list-style-type: none"> • The Solar Conduction Dryer, Smartdry and Frost dry technique of the company helps the farmers to reduce post harvest losses as well as add value to their products • Currently around USD 13 Bn worth of post harvest losses occur in India. If the losses can be curbed by using these techniques as well as add value to the products by primary processing then the agricultural sector of India will improve by leaps and bounds
Beneficiaries	Farmers, Retailers, Exporters
Impact Generation	<ul style="list-style-type: none"> • UN award winning: Solar powered- electricity free- dehydrator that uses conduction – convection – radiation – all modes of heat transfer to deliver the world’s highest drying efficiency. Machine that doesn’t need any maintenance keeps the nutrients at its peak level • Haldi Tech- The low temperature internationally patented technology can dehydrate all tuber crops like ginger, turmeric, cassava to retain 25-50% more the key ingredients like curcumin and ginger oil. The electricity powered machine is highly energy efficient needing only 10% of energy than its competitors • Smart Dry- The latest addition to S4S portfolio, SmartDry brings the best of humidity and heat controlled drying to dry special food products like cooked products and selected fruits-vegetables or say Kale chips. • S4S brings the most ‘High Profile’ machine to it’s processing facility. FrostDry allows the drying at -20 deg C to keep the nutrients intact and give best re-hydration characteristics
Contact Details	<p>Address: Chandrakanta Complex, New Ashok Nagar Rd, Block B 1, New Ashok Nagar, New Delhi, Uttar Pradesh 110096</p> <p>Phone No. 078400 65544</p> <p>Email Id: nidhi@s4stechnologies.com</p>

Span Pumps Private Limited



Innovation/ Startup Name	Span Pumps Private Limited
Founder/CEO	Ajit M Bhandari
Brief about the Startup	It is India's leading manufacturer & sustainable water solutions provider. Established in 1987, they work extensively with domestic and international stakeholders for drinking, irrigation, sanitation, health & personal hygiene water requirements. With Headquarters in Pune, India, Pan Asia and Africa they have interests worldwide.
Uniqueness	Span Agriculture pumping solution provides consistent water to the farmer driving the pumps purely on solar energy without the need of grid power/batteries/fossil fuels. The solution can work for any water source, providing a negligible maintenance, sustainable, GREEN solution to the farmer community. Replacing all Diesel operated pumps with Solar operated pumps. They have invented Solar Dual Pump and See-Saw Pump.
Beneficiaries	Farmers
Impact Generation	Number of Clients served : more than 9000, Scale up plan (turnover in 2019, 2020 & amp; geographies): Increasing our reach in – Afghanistan, Thailand, Indonesia, and South America.
Contact Details	Email Id: info@spanpump.com

Innovation/ Startup Name	StarAgri Bazaar Technology Limited
Founder/CEO	Jaya Prakash Guraja
Brief about the Startup	Brings the best of digital technology for the traders, processors, farmers and banks.
Uniqueness	Help farming communities to protect their produce and reduce post harvest losses to increase food availability without placing additional burden on the environment. Expand access to the global agri-buyer community building regional hubs across key international commodity centres. Provide innovative post harvest farmer services in emerging agri-economies
Beneficiaries	Farmers
Impact Generation	From farmers to buyers to retailers, they strengthen the capabilities of all participants along the agri value chain. They help meet market demand by alleviating constraints in post-harvest storage to reduce wastage, increasing access to high-quality commodity products for buyers and facilitating low-cost finance for farmers.
Contact Details	vaishali.gupta@staragri.com Phone no: 91 22 61829600 Address : Skyline Ikon, 1st FLOOR, 86/92, Andheri Kurla Road Marol Naka, Andheri (E) Mumbai Mumbai City MH 400059

Innovation/ Startup Name	Suma Agro India P Ltd
Founder/CEO	Karthik Krishnamoorthy, Sumathi Balamurukan
Brief about the Startup	<ul style="list-style-type: none"> • Suma Agro brings back soil fertility and help farmers to produce more food and keep the soil healthy for generations to come • The products of Suma Agro India Private Ltd reduces the need for fertilizers, buffers the pH of soil, increases nutrient uptake and builds a eco system for farmers, soils, plants and supports sustainable initiatives in agriculture which includes environmentally responsible soil fertility process thus making agriculture truly sustainable • Ankur Capital has invested INR 60 lakhs to this start up
Uniqueness	<ul style="list-style-type: none"> • The vitality and resistance of a crop is determined in the growth medium • By using soil inputs based on nature, farmers can increase the soil organic matter and creates optimum bio diversity in the soil- The result is macro growth • As a result of this farmers can contribute to climate change by sequestering more carbon, increase water holding capacity, improve pollination, use less inputs all while harvesting higher yields and better profits
Beneficiaries	Farmers and customers
Impact Generation	<p>The quality of lives depends on the food we eat, the water we drink and the air we breathe. All these depend on the quality of SOIL. The Social Impacts of Sustainable Agriculture are:</p> <ul style="list-style-type: none"> • Economy – Reduced inputs • Health - Increase in Nutrition density , Less hunger • Earth – Mitigate climate change • Healthy Soil = Healthy Food = Healthy People
Contact Details	<p>Suma Agro India Private Limited 10, Nathamuni Street, T. Nagar, Chennai, Tamil Nadu, India K Karthik (Managing Director) Contact no: +91 9698827777, +914428152898 Email ID: karthik@sumaagro.com</p>

Surya Power Magic



Name of the Innovation	Surya Power Magic
Founder/CEO	Abhilash Thirupathy and Karthic Ravindranath
Brief about the Startup	<ul style="list-style-type: none">• Surya Power Magic is involved in trading and supplying a wide range of Solar Water Pump, Solar Irrigation Pump and Solar Agriculture Pump• It delivers solar irrigation solutions to farmers in power deficit regions• Surya Power Magic's solar irrigation solutions are easy to use, durable and offers convenient financing arrangements in specific geographies
Uniqueness	<ul style="list-style-type: none">• It offers solar-based irrigation solutions for farmers, and aims to be a pioneer in R&D and distribution solutions for solar products• The company currently creates and sells affordable solar water pumps that allow farmers to access water for irrigation• It is a client centric organization and hence the prime responsibility is to satisfy their customers with the best of their ability and efforts. For this purpose, the product range is procured from well known vendors of the industry
Beneficiaries	Farmers
Impact Generation	Surya Power Magic has installed over 815 solar water pumps across 7 states i.e. Tamil Nadu, Kanataka, Kerala, Andhra Pradesh, Maharashtra, Madhya Pradesh, Telangana
Contact Details	abhilash@goldfarm.in Address: No. 302, 3 rd Floor, PSG-STEP 2 PSG Tech, Peelamedu, Peelamedu, Coimbatore-641004, Tamil Nadu, India Phone no: +91 9787111133



Innovation/ Startup Name	Taru Naturals Private Limited
Founder/CEO	Ruchi Jain
Brief about the Startup	<ul style="list-style-type: none"> • TARU Naturals is a grassroots movement of 3000 tribal and small-scale farmers across India; a fair trade network connecting farmers to markets, with healthy, pure & organic produce • The company strives to build self-sufficiency across the value chain ecosystem for farm produce, intervening with Climate Resilient Agriculture, Clean Post Harvest Technology, Value added products and Market Linkages • They envision to safeguard sustainable rural livelihoods and impact increase in small-scale farmer's income • Currently TARU has a flagship 5g jaggery sachet product supplies to 20 restaurants in Mumbai through their extensive fair-trade value chains
Uniqueness	<ul style="list-style-type: none"> • Around 67% of the Indian farmers are small scale farmers, amongst tribal farmers maximum of the are landless or small scale farmers • Taru Naturals works on three pillars for small scale farmers; access to knowledge - climate resilient sustainable agriculture/ natural farming practices, set up of productive use of post harvest clean tech energy for value addition and access to fair trade marketing linkages
Beneficiaries	Tribal Farmers
Impact Generation	<p>Taru Naturals is an endeavor to empower and safeguard small scale farmer communities, protect their livelihood, by empowering them with environmental services. We strive to protect India's ancient wisdom and sustainable agricultural practices, while ensuring value added livelihood incomes for the communities we work with; ensuring fair trade markets for their end produce .TARU intervenes through Climate Smart Agriculture and small scale technology.</p> <ul style="list-style-type: none"> • Creating Sustainable Livelihoods for tribal communities and small farmers • Creating Markets for agri-produce sourced directly from tribals & small farmers for B2B and B2C. • Knowledge Inputs to tribal communities & small farmers • Value addition scalable products, with sound back end models
Contact Details	<p>Address: 110 Krishna Bhavan, Govandi Station Rd, Deonar, Govandi East, Mumbai, Maharashtra 400088. Contact No. 099586 99685 Email Id : ruchi@tarunaturals.com</p>



Innovation/ Startup Name	ValueFin India
Founder/CEO	Manoj Rawat
Brief about the Startup	<ul style="list-style-type: none"> ValueFin India provides financial and advisory services primarily focused on enabling sustainable value chains in Agriculture, Micro and Small Enterprises, Small Businesses and Green Energy Development It provides the entire suite of financial and advisory services depending on market opportunities & customer demands This includes capacity building, digitization of lending & other financial services platform, training and market linkage services to rural and small enterprises
Uniqueness	<p>It provides Financial Services using State of art technology to its Rural beneficiaries such as:</p> <ul style="list-style-type: none"> Online & cloud based technology Biometric technology Real time data sync & 24*7 security
Beneficiaries	Agri producers, aggregators, food processors , small and medium businesses etc.
Impact Generation	The beneficiaries get financial & advisory services which help them to grow economically. It also emphasis on green energy through solar power thus adapting to climate change.
Contact Details	022 - 49 74 75 00, 102, email- contactus@valuefin.in Madhava, Bandra Kurla Complex (BKC), Bandra (East), Near Family Court, Mumbai - 400051, Maharashtra, India

Innovation/ Startup Name WayCool

Founder/CEO Karthik Jayaraman and Sanjay Dasari

Brief about the Startup

- WayCool is a fresh produce distribution company that procures fruits and vegetables from small-hold farmers and aggregators and sells through multiple distribution channels spanning small local shops, modern retail outlets, and HORECA (hotels, restaurants, and catering establishments)
- It currently deliver over 250 SKUs of fruits and vegetables, and over 100 SKUs of branded food products to 500+ clients across Tamil Nadu and Bengaluru
- WayCool currently operates predominantly in South India via distribution hubs in Bangalore, Coimbatore, and Chennai
- The company employs a hybrid model of working with produce-specific value chain companies as well as directly sourcing from small-hold farmers

Uniqueness

- Building strong testing capabilities to guide farmers towards lower use of pesticides and harmful chemicals, and focusing on working closely with farmers to reduce transportation and handling wastage
- The Produce is directly procured from the farmers, weighed and graded in a transparent manner.
- All payments are electronic, to ensure traceability and transparency
- Techniques under development at purpose-built facility, Dr A P J Abdul Kalam Innovation Labs, include BRICs testing, nitrate testing and NIR Spectrometry

Beneficiaries Farmers, Consumers

Impact Generation Extensive use of automation, resulting in very fast, very short supply chain with very less re-handling (1 or 2 re-handling, against more than 5 in the traditional supply chain). The native vegetables reach customers within 6 hours of harvest. More than 80% of their SKUs reach customers within 24 hours of harvest. This is enabled through use of automated route optimisation, GPS tracking of vehicles, fully mechanised collection and distribution centres, predictive analytics of consumption using Machine Learning, and several other technologies.

Contact Details sanjay.dasari@sunnybee.in
li Cross Street, Dandayuthapani Nagar
Kotturpuram Chennai Chennai Tn 600085 In

Innovation/ Startup Name	Claro Energy Private Ltd
Founder/CEO	Kartik Wahi, Gaurav Kumar, Soumitra Mishra
Business/ Innovate Case Name:	<ul style="list-style-type: none"> • Solar Water pumping systems for irrigation needs in sale and service model • Rural electrification for consumption and productive loads (agro loads) • Solar Rooftops
Year(s) implemented:	2011 – Company started its operations
Geographies covered:	UP, MP, Bihar, Haryana, Chattisgarh, Odisha, Tamil Nadu, Gujarat, Maharashtra, Andhra Pradesh, Telangana, Utrakhand, Rajasthan, Sikkim, Jharkhand
Number of clients/ customers served:	Nearly 10,000
Partners:	<ul style="list-style-type: none"> • Various States- Renewable Energy Development Authorities • Transforming Rural India Foundation • Aga Khan Foundation • IWMI • Jindal Stainless Foundation • Sehgal Foundation • Integrated Development Foundation • Kaushalaya Foundation • GIZ • Smart Power India etc
Team size:	130 plus employees
Scale up plan (turnover in 2019, 2020 & geographies):	<ul style="list-style-type: none"> • INR 100 cr -2019 • Set up / Operate and Maintain 25 mini grids • Target to reach 20 states
Opportunities:	<ul style="list-style-type: none"> • Our boots on the ground can help us enable farmers to lead a better life by providing them access • to energy and technology
Challenges:	High capital costs and recurring operational expenses
Contact Details	kartik@claroenergy.in, gaurav@claroenergy.in, soumitra@claroenergy.in



YES BANK, India's fourth largest private sector Bank with a pan India presence across all 29 states and 7 Union Territories of India, headquartered in the Lower Parel Innovation District (LPID) of Mumbai, is the outcome of the professional & entrepreneurial commitment of its Founder Rana Kapoor and its Top Management team, to establish a high quality, customer centric, service driven, private Indian Bank catering to the future businesses of India.

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