GEMS OF AGRI-INNOVATIONS

GEMS OF AGRI-INNOVATIONS (2022)

Rashtriya Krishi Vikas Yojana Remunerative Approaches for Agriculture and Allied Sectors Rejuvenation (RKVY-RAFTAAR)

Director General's Message

Indian agriculture has long been considered the backbone of the economy, providing livelihoods to the majority of the population. Agripreneurs play a crucial role in promoting innovation in society and are bringing innovative ideas across the country to rebuild the agricultural sector with their aspiring ideas to transform the Agri-ecosystem. Such innovative ideas are what give the startup ecosystem in the country such a bright future.

In countries like India, agricultural transformation into agri-business is an important strategy used by enterprising farmers. The innovative approaches by Agripreneurs have helped stressed farmers and have alleviated the problems faced by Indian agriculture because they have been able to answer their problems.

One of the government of India's initiatives, the RKVY-RAFTAAR Scheme, provides every required support to help agri-innovators of the country grow their ideas into successful businesses. Agri-business becomes a profitable enterprise for the Agripreneur through the scheme, tackling challenges and allowing agriculture to be a profitable enterprise.

We are pleased to announce that the fifth cohort of Agripreneurs have successfully graduated after completing their two-month training programme and is now ready to serve the agricultural community with their innovative ideas and business models. To cope with the competitive startup ecosystem, these Agripreneurs are taught financial management, legal compliance, and innovation management skills. We have every reason to believe that their hard work and perseverance will make them successful business ventures.

Congratulations and good luck to these startups.

Dr. Vijaya Lakshmi Nadendla, IAS
Joint Secretary (Marketing), MoA&FW, GoI
Director General, CCS NIAM

Director's Message

With 20.19% contribution by agriculture and allied sectors in Gross Value Added (GVA) at current prices in Indian economy, it naturally makes this sector very important. Technologies based on agriculture are flooding the country and the adaptation of Agri- stakeholders promises a bright future for the agriculture sector.

Amidst recent uncertainty, only the Agriculture sector stood strong and won the war. As a result of bringing innovation and technology into agriculture, stakeholders have realized the true value of their efforts. The Agriculture sector has kept the wheel of economy moving and reaped fruitful results even when the entire world was standing still due to a global pandemic.

As part of the two-month training program at the NIAM Agri-Business Incubator (NABI), entrepreneurs are mentored by subject experts and ecosystem partners, and they have the chance to collaborate with them. The program closely monitors each participant and makes sure that each budding entrepreneur's needs are met.

I am grateful to the Ministry of Agriculture and Farmers' Welfare, Government of India for supporting our initiative and allowing us to make available technology and innovation from across the country to agriculture.

In this book, the Gems of Agri Innovations are presented at an initial idea stage, but they commit to supporting the agricultural economy of the country by achieving the milestones they are set by CCS NIAM.

My wishes stands with all the Agripreneurs for their future endeavours ahead.

Dr. Ramesh Mittal
(Director, CCS NIAM)

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Sreenivi International KT LLP

"Eco-Friendly Organic Technologies in Animal Husbandry"

"Probiotics- Innovation for poultry health and productivity."

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Poultry is one of the fastest growing segments of the agricultural sector in India with around 8% growth rate per annum. India is the third-largest egg producer in the world and the fourth-largest chicken producer in the world.

The Indian poultry market, consisting of broilers and eggs was worth INR 1,750 Billion in 2018. The market is further projected to reach INR 4,340 Billion by 2024.

70% of the layer birds are being raised in the states of Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Maharashtra in south and Haryana in the north of India.

India with a population of 1.25 billion people is highly focussing on "Development" i.e. good food. The development is not only in size but also in productivity, sophistication and quality practices on nutrition, housing, management and disease control.

Soya bean and maize are utilized as the main feed. These help only in fulfilling minimum nutritional requirements, and do not help in raising high quality, healthy chicken. There is shortage of quality feed in the market and lack of knowledge about the benefits of using quality feeds. The problem is confounded by the fact that there is no alternative protein source available either. This opens up immense opportunities for poultry feed manufacturers and dietary supplement producers.

There are many components of feed such as ß-glycans, pentosans, mannans, cellulose, lignin and phytic acid which cannot be digested by poultry under normally. These non digestible feed ingredients frequently generate digestive stress in poultry with a consequent reduction in nutrient utilization and wet litter problems. These problems could be largely alleviated by use of feed enzymes.

Sreenivi International KT LLP fulfils the need and offers best dietary supplement i.e. innovative spore probiotic strain consistently provides good gut balance and growth performance indicators. The poultry will be healthy, the poultry meat will be stored longer, and the savings will be on antibiotics and veterinary drugs. By replacing antibiotics, the stakeholder will get a high-quality natural healthy food product, poultry meat will be without chemical components and will be safe for humans. The absorption of feed will improve and the risk of diarrhea will decrease. The startup spore probiotic is superior to lacto and bifido probiotics. These strains are developed in Russia and are unique, safe and highly effective.

The cost of a probiotic for the entire growth period will be 12-14 rupees per 1 broiler. It is a white to light yellow powder, soluble in water.

Services: Feed supplement for healthy chicks, prawns and shrimps and maintaining the gut health of cattle and pets. Eco-friendly organic technologies in animal husbandry.

Probiotic Feed for Poultry Birds

Soya bean& maize are utilized as main feed.

Nariksha Pads Pvt. Ltd.

"Residue free saplings to farmers"

"Making biodegradable sanitary napkin from biowaste and agro waste."

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Parali burning is a problem for the environment, agriculture and humans. Farmers burn the agro waste after harvesting because it take a long time to decompose. One acre of agricultural lands generate 4-5 tons of parali waste. Most women use hand made sanitary napkin (like cloth, rags) and face lots of health problem like itching, rashes, infection which is an another problem .

Meghna on one of her visits to her villiage in Rajas met her friends and when they were talking about periods one day then it came out that many of the girls are facing problems like irritation, rashes, infection. At that moment she thought to solve two problems with one single solution by making the biodegradable sanitary napkin by utilizing Agro waste.

Being an environment friendly person Meghna and her co-founder of Nariksha developed a solution for these two problems. It is manufacturing organic and biodegradable sanitary pads using Parali and bio-waste. These sanitary pads are 100% biodegradable and organic. This pad helps farmers to utilize their waste and women to solve their hygiene problem. These pads are cost effective and eco-friendly having beneficial parameters like Ultra-absorbent, soft, cotton surface, antimicrobial , 100% biodegradable, organic and cost effective.

Currently startup is taking help of social media marketing to spread awareness about the product among women and local community. Through the support of the NGOs, local media and the government, the startup is spreading awareness about the product among women. As of now for the startup is providing employment to the rural women and green income to the farmers. The startup has been awarded first runner up in

Competition and second runner up in the National B-Plan Competition. For next one year the startup is planning for the small production unit and sell 1000 napkins at the initially stage.

Advantages:-

1. **100% biodegradable**: These sanitary pads are 100% biodegradable compared to the currently available products in the market, which use super absorbent chemical. This super absorbent polymer is manufactured from chemical compounds like acrylic acid and Acrylamide, which has harmful effect on women's health as well as on the environment.
2. **Organic:** The current sanitary pads manufacturers use plastic based materials for top and back sheet, while startup's pads sheets are manufactured using plant-based bio waste material.
3. **Made from waste material (parali waste, rice husk):** Since other companies and competitors use cotton as raw material, their cost of making is higher as cotton is a fairly expensive commodity. To reduce the cost of final product, the startup is using the waste material produced by farmers. This is beneficial for the farmers as well as for the environment.
4. **Low cost:** Since a large portion of raw materials, used for manufacturing these sanitary pads come from bio waste produced by farmers, the cost of the sanitary pads is fairly low. This way many women can afford these pads. bmbsmb

Organic and Biodegradable Sanitary Pads using Parali and Bio-Waste

5. **No chemical used:** As no chemicals are being used in manufacturing these pads, they can also be used as fertilizers.
6. **Herbal weed extracts used for skin-care:** Another unique feature of these sanitary napkins is the use of herbal weed extracts. Since many women face the problems of skin irritations as well as risk of rashes while wearing sanitary pads, the startup has laced the pads with herbal weeds extracts which prevent the risk of skin rashes and irritations.

Prakriti Agro

"Machines for the Marginal"

"Developing agricultural implements/ machines for small and marginal farmers by involving electric power to it."

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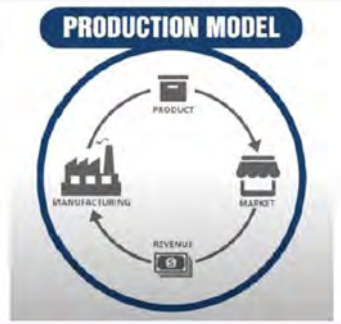

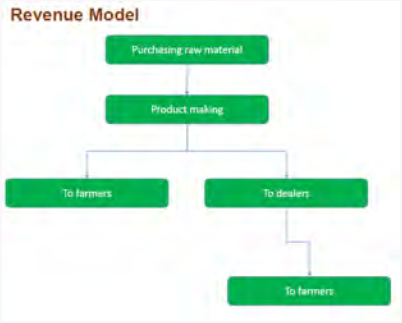

"Prakriti Agro" is founded in the year 2021. As of now the key product is the small electric tractor with attachment of reaper. This is specially designed machine for small farmers keeping in the view their purchasing power.

Vishal Agravat is the founder of the "Prakriti Agro". He did his master's in Agricultural Engineering with specialization in Farm Machinery and Power. He has developed total five innovative machines/equipment for small and marginal farmers.

It is the first ever combination of electric tractor with e-reaper. It will perform several operations in field viz. harvesting, seeding, interculturing, spraying, transportation, etc.

As of now the machine is at prototype stage. The startup is working on its product development, though they have successfully tested it with wheat crop wherein satisfactory results are found. Operating cost is only Rs. 5 to10 per hour.

The Future plans of startup is to finalise the product stage and selling of the machine. After that other machines i.e. coconut tree climbing device, battery powered fruit harvester, battery powered tree pruner will be developed by startup.

Small electric tractor with E-Reaper

Harvesting wheat crop with Electric Tractor

Small electric tractor after detaching the Reaper

Agrovation Pvt. Ltd.

"Input-Output Market linkage for FPO's"

"B2B output market linkage for FPOs & farmers."

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Incorporated in Jan '21, registered in Dhanbad, Jharkhand by group of professionals having worked with MNC's across India. The startup started with a holistic approach to serve the farming community and make agriculture and allied sector a remunerative sector.

The salient features of startup business model are:-

- Market place for buyers and sellers
- Output market linkage of farm produce – B2B

Coconuts loaded on truck

Peanuts geting packed

- Farm Produce–Primary grading, sorting by FPO–Market Linkage
- Reduction of logistics cost through evaluation of opportunity in FPO–FPO trade e.g., vehicle carrying tender green coconut to JH from WB can take back watermelon from JH. Better price realization to FPO and farmers
- Input linkage – Make availability of agri-inputs to farmers
- Agri-Inputs – FPO – Farmers. Contract manufacturing of cattle feed as per BIS norms – ensuring quality product availability
- Service -Traceability – Premium to farmer. Correct source will ensure product worthiness, trust among buyer/users or coding of material with information on source, variety name
- Financial linkage – Service to genuine FPOs seeking finance to expand their operation
- The total Indian agri market size – 55 lakh crores as in 2020. 40% of total food produced in India is being wasted (FAO 2013), which is 14% in developed nation (FAO,2020)
- These losses were driven mainly by the food supply chain (FSC) inadequate processing and packaging, lack of transportation and distribution systems and insufficient storage facilities and techniques

The startup have provided market linkage to 5 FPO in WB, JH and BH for Tender Green Coconut, Watermelon, Groundnut, Maize, Cashew, other fruits and vegetables.

Warehouse for packaging

Agri-J E-Commerce Pvt. Ltd.

"Healthy inputs to wealthy prices"

"Agriculture E-commerce marketplace for farmers to sell their farm produces to the end user through farm centre."

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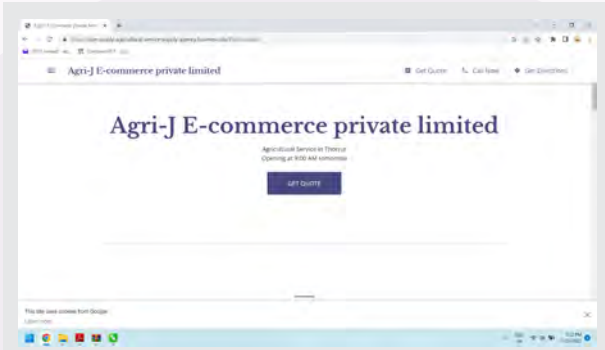
Agriculture E-commerce is the most innovative business, and has become solution for many agriculture problems. Food consumption in India is high, supply and demand needs are to be met, and if we are able to sell farm produce through various platforms like E-commerce then we can address more farmers.

Rajendhar Guguloth is a B.Tech Graduate who is grown in a farming family. He has observed his father very closely while he has been struggling to sell his farm produce.

Rajendhar Guguloth left his railway job to start his entrepreneurial journey. He started working on farm produces sales problem without any intervention like local traders as they pay less then MSP and sometimes time line of payment also take more than 21 days.



Website of Agri-J

Farmer	Consumer
24/7 Procurement	Online/offline booking
MSP given	Reasonable price
Input supply	Home made products

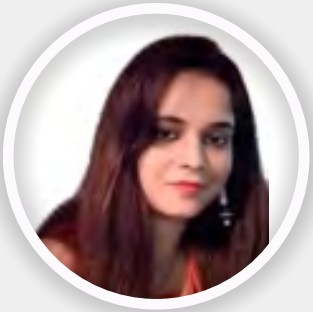
Agri-J is the E-commerce platform which offers consumer raw materials to finished food products at doorsteps. This business solution offers farmers more than MSP and consumers gets benefited in terms of cost of products like rice, jowar, tamarind, tur dal, turmeric, etc.

Agri-J brings rural small flour mills, rice mills and other processing units to our platform for the processing of food products. Agri-J farm centre, in a decentralized manner help to process the commodities at less cost and brings value added products at affordable price to the customers. It aims to benefit all the stakeholders from farmer to end user.

Alterlife Agrotech Pvt. Ltd.

"Eat Pure Live Sure."

"Providing an affordable & highly nutritious food supplement in the form of Millet based Nutri-Bar to BPL, Tribal and Marginalised people of India to meet their daily nutritional requirements."



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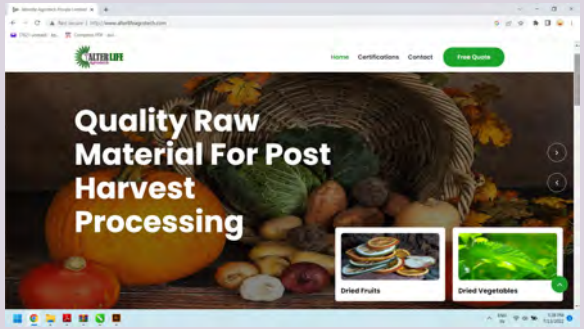
According to the Global Nutrition Repot 2020, India is among the 88 countries that are likely to miss global nutrition targets by 2025. The report also identified the country as one with the highest rates of domestic inequalities in malnutrition. In the 2020, Global Hunger Index India ranked 94 among 107 countries with a score of 27.2, India 35 percent (265 million people) of the rural population was poor. However, this number is expected to rise to roughly 381-418 million, with the total headcount ratio reaching 50.9-55.87 percent in 2021-22. Under the same levels of contractions, it is expected that in urban India 36 to 40 million additional people will fall under poverty, with the total headcount ratio reaching 39.08-42.4 percent.

Under nutrition is a pressing issue in our country and one of the major drivers for the same is poverty and (most of the Indians) awareness on about daily nutritional requirements. Government of India has taken several initiatives to curb undernutrition and in line with this we have developed and affordable low cost nutritional supplement in Ready to Eat form self-sustainable



Website of Alterlife Agrotech Pvt. Ltd.

snack with goodness of essential nutrients, Protein, Fiber, Vitamins and minerals for BPL, Tribal and marginalised people.

Alterlife Agrotech Private Limited is DPIIT registered startup (Start-up India). This new age start-up aims to provide highest quality unadulterated food products to consumers. They broadly operate under Food Processing, export of Agri-commodities, post-harvest consulting, skill and capacity Development realms. Reena has over a decade of experience in financial research valuation and advisory services in equity. The Startup has a strong team with knowledge of diverse fields strong business acumen, business plan formulation, sales and marketing strategy. They have strong liaison with government agencies and corporate clients.

Their Millet based Nutri-Bar is developed by them using full of goodness rich in protein and dietary fiber content, good balance of vitamins and meinerals, gluten free and is a source of omega fattey acids-Hypogeic acid, a fatty acid found in human milk. The product is completely "Vegan" with zero added fat with jaggery as a sweetening agent instead of sugar.

The startup business model is based on overall stakeholder management and inclusive growth locally in the state of Jharkhand where they have planned to establish their first processing unit. While the business model directly benefits around 100 farmers and 50 tribal people dependent on MFP for livelihood along with 20 local youths in terms of their direct employment. It is an affordable nutritional supplement which will fulfil their daily nutritional great extent.

Currently most of the products in RTE self-sustainable healthy snacks segment are premium priced and not affordable to low-income group consumers staying in the rural market. A low-cost nutritious snack in the form of Nutri-bar is perceived need and has a great market potential not only in tribal states but across India.

Initially the startup plans to launch a low cost and affordable Nutri-Bar for current target segment in the states of Jharkhand, Odisha and Chhattisgarh gradually expand with upgraded product and value proposition on PAN India Basis.

Millet based Nutri-Bar

Vishwakarma Agriculture Pvt. Ltd.

"Residue free saplings to farmers"

"Developing SMART electric the sher for post harvest management."

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Vishwakarma Agriculture founded by Vrutik Panchal is a registered company LLP/OPC. They have developed as electric power operated agriculture machinery S.M.A.R.T electric thresher.

This S.M.A.R.T Electric Thresher is the 1st of its kind, machinery available to Indian farmers to aid in their day-to-day farming activities at very affordable price and emission free manner leading lower pollution. This startup is competing in a growing Indian market of Rs. 500 billion which is projected to grow @ CAGR of 6.71% by 2025 and reach a global market value of Rs. 8618 billion at CAGR of 3.6% by 2026. The startup targets to capture 5% market share.

The startup has competitors who are developing similar machines which uses gasoline fuel but not electric, they may enter into EV market later, like Dasmesh, Mahindra, Amar so they have 1st mover advantage. Currently they are working on development of final electric thresher prototype.

S.M.A.R.T Electric Thresher


વિશ્વકર્મા


વિશ્વકર્મા


વિશ્વકર્મા

ColdFlora Solutions

"Load Up and Stow"

"Enabling cold storage logistics by providing portable, renewable energy based, wheel mountable, modified atmosphere, on-field/on-market, micro cold storages for flowers to meet farmers need during procurement and support floriculture supply value"

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Flowers are highly perishable in nature which leads to their short shelf life, limited availability, price fluctuations, increased marketing costs etc. One of major problems faced by flower growing farmers is difficulty in finding Cold Storage near their farms or proper cold supply chain to get their products from farm to market in proper conditions and within stipulated time frame. Also owning and maintaining cold storage is not within reach of most farmers. High cold storage investment is therefore ruled out for marginal farmers due to small farm sizes to offset any big investment. Most of current cold storage facilities are accessible only to big farmers/middlemen who hoard when supplies peak, leading to huge price fluctuations. Lack of cold chain systems force farmers to monetize their produce at first instance by selling in inefficient wholesale markets, which lowers their aesthetic and economic value. On an average farmer is only able to receive 1/4th to 1/3rd of the final retail prices by selling in such wholesale markets. The window available from harvest to end use application is hardly few hours thereby leaving this sector vulnerable to exploitation by middlemen and frequent price fluctuations. It is therefore, necessary to create dedicated cold chain/storages to store flowers at ambient temperature and humidity.

IoT enabled on field, grid independent micro cold storage unit- Cold flora

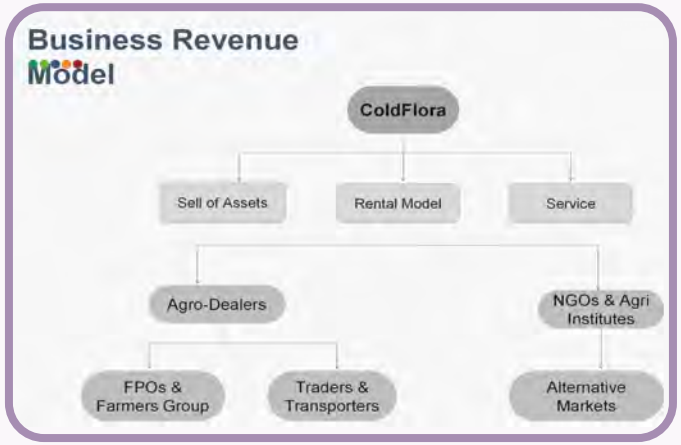
Clodflora has designed a renewable energy based wheel mountable, IoT-Enabled, on field/on market, grid independent micro cold storage unit 'ColdFlora' for storage as well as for transportation of floriculture produce that extends the shelf life and also preserve their freshness. The entire setup could be unloaded from wheels, and can doubly act as on field and on market storage.

The startup has also developed a mobile phone based application in which farmers would be directed automatically to set the required temperature and humidity conditions by choosing the type of flower they want to store. The second set of function will be completely dedicated to farmers engaged in floriculture production, the app will give suggestive advisory regarding the flowers to be grown based upon the local weather condition. Also, the app will provide market information so that farmer can take their products to cities.

ColdFlora aims to address the issue of perishability of floriculture commodities and work towards reducing floricultural waste directly benefitting small and marginal farmers, and traders to ensure better post-harvest outcomes.

Awards and accreditations.

- Winner in "Business Plan Competition" organized by ICAR-CTCRI Agri Business Incubator ICAR-Central Tuber Crop Research Institute, Thiruvananthapuram & Kerala Start up Mission in December 2020
- Finalist in Aakaar (IIT Bombay). Smart Pitch organized by IIT Bombay in March 2021
- Finalist in DS Social Tech Innovation Challenge organized by DERBI Foundation in March 2021
- 3rd Position in AGRI-HACKATHON organized by Bihar Agriculture University, Bhagalpur, Sabour, Bihar in April 2021
- India Finalist in Schneider Go Green Global competition in May 2021
- 4th Position "National Business Plan Competition" organized by Dr. Panjabrao Deshmukh Institute of Management Technology & Research, Nagpur in July 2021
- 2nd position in the business pitching competition organized by startup cell of GCET, Jammu in August 2021



CroPreneurs

"First & Foremost: Farmer & Farming"

"CroPreneurs aims to produce, procure & build a sustainable supply chain model for leafy vegetables in collaboration with Farmers/ SHGs/ FPOs/ Producer Groups."

Dr. Pankaj B. Bankar

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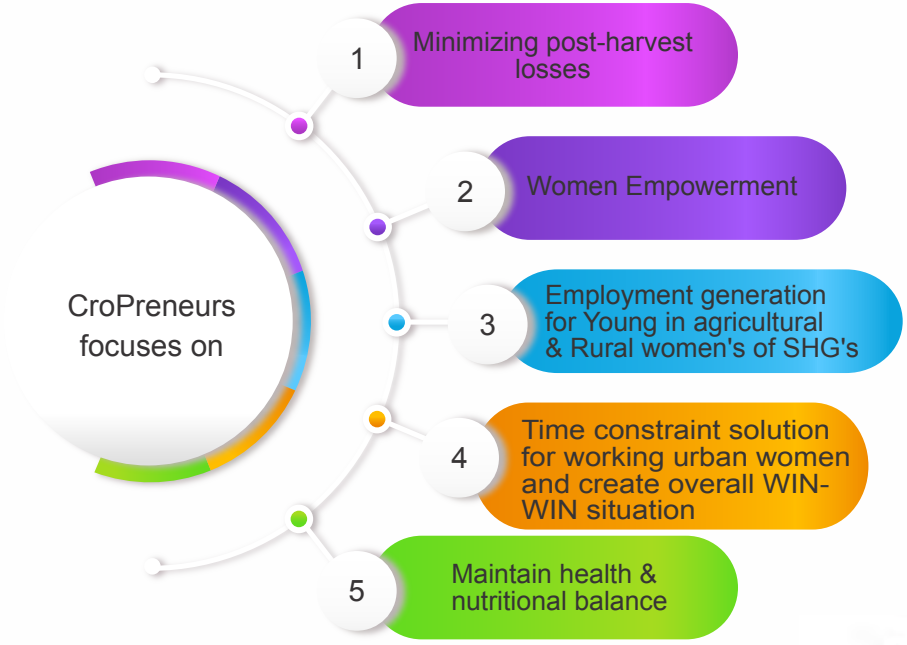
The entire team of CroPreneurs have agriculture background with relevant experience of 4-5 years in agriculture domain.

Provision of organically self-grown leafy vegetables with safe and sustainable practices under technical team guidance and supervision with residue analysis, nutritional analysis is the factor team.



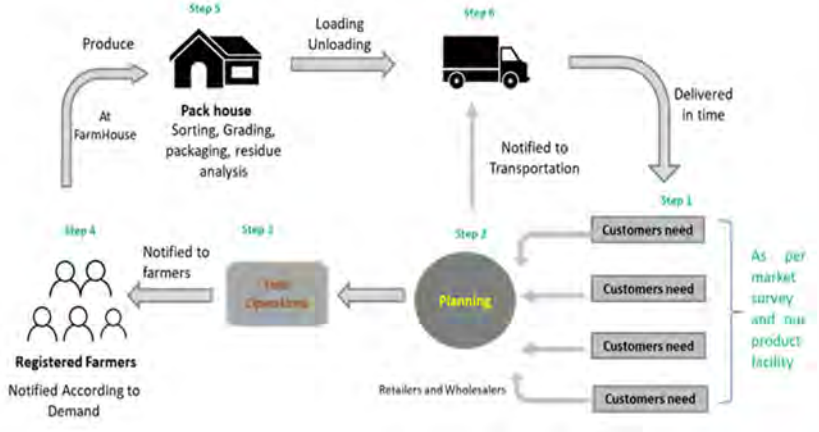
Execution:

To grow leafy vegetables

- ✓ Harvesting using scientific practices
- ✓ Customised eco-friendly packing
- ✓ Harvesting and timely delivery
- ✓ Identify & collaborate with housing societies in urban areas about provision of their produce simultaneously with rural women, SHG's, FPO Farmers
- ✓ Their special service aims to provide working women ready to cook scientifically plucked leafy vegetables daily

Future Agenda:

To create collaborative platform with subscription model among urban societies and farmers group, which will be dedicated to only collaborated members



Vishvarupa Agro Food Pvt. Ltd.

"Improving Agriculture Improving lives"

"Processing and value addition of perishable commodities"

Krushnapriya Swain

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Fruits and vegetables are seasonal as well as perishable in nature. India is the second largest fruit and vegetable producing country in the world followed by China. India accounts for about 15 percent of the world's vegetable production. In the production of many fruits and vegetables, India is either first or second. However, due to poor post harvest management fruits and vegetables being perishable in nature,either get wasted to the tune of 20-30 percent in the whole supply chain. On the other hand, only 2 percent of fruits and vegetables are processed in India and get converted to value added products while the rest is consumed fresh.

Therefore, processing of fruits and vegetables offers immense scope for wastage minimization and value addition, thus generate significant income and employment in Indian agrarian economy. Dehydration of seasonal fruits and vegetables but is also good bet for their long term storage even up to 5 years or beyond if hermitically sealed not only makes them available to consumers during off season. There is immense market scope for certain popular and high value dehydrated seasonal fruits and vegetables.

Machine for dehydration of seasonal fruits and vegetables

VAFPL has all the advanced technical know for dehydration of specific fruits, vegetables with respect to specific parameters for getting good quality standards. These technologies are available through consultancy.

A sustainable business unit must ensure maximum capacity utilization and requires an operation at period of minimum 280-300 per year for receiving reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory. The processor must have linkage with producers preferably FPCs through contract to get adequate quantity which otherwise gets spoiled during glut season.

Manufacturing Process:

Dehydration is one of easiest processing and preservation techniques of agricultural commodities. Dehydration basically removes moistures through heat. The traditional drying process involves sun drying; however, it leads to inferior product quality. Therefore, mechanical drying through electricity/solar power offers better quality and price realization. Though different fruits and vegetables require different temperature; the optimum temperature is 140° F or 52° C as higher temperatures may cause hardening. The product is usually dried up to 15 percent moisture level.

Ekathva Innovations Pvt. Ltd.

"Smart Irrigation-right amount of water at the right time"

"IoT based smart irrigation system for farming with indigenous control algorithms, controllers and sensors to control & micro manage the irrigation cycle effectively."

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Being an engineer, hailing from farming family, Koushik observed that, the advancement in technology is not been applied in agriculture and its allied sectors due to the high investment involved in adopting the few available hi-tech products that are majorly controlled by very few big players in the market.

This motivated Ekathva Innovations team to come together to introduce an advanced technology into agriculture and allied sectors.

Introducing an indigenously developed IoT based smart irrigation system which consists of inhouse built wireless controllers, sensors, software and mobile application interface in regional languages to control and monitor the irrigation system with farm and crop cycle. Increasing the efficiency of irrigation by reducing the existing cost of such controllers and making sure that the crops get the right amount of water at the right time.

Koushik with IoT based smart irrigation system

Equipped with power of IoT & ML, this equipment has been designed uniquely for small and marginal farmers at an affordable cost, minimizing human intervention in farming.

As compared to conventional irrigation methods, this novel system, it saves water by 30% and increases yield by nearly 20%. The startup device eliminates regular farm visits at night time for irrigation.

Sensor enabled controlling units monitor crop by notifying the farmer with real time data about water requirements based on moisture content in fields. Multiple mode of irrigation ensures the possiblity to control and micro-manage irrigation schedule with the click of a button.

The target customers comprise small and marginal farmers with simple drip/sprinkler irrigation systems and potential farmers planning to convert into drip/sprinklers/micro sprinkler type of irrigation in near future.

In Karnataka alone, it is estimated that nearly 7.5 lakh hectare is potential number of farms to implement drip/sprinklers. Out of which, nearly 2-2.5 Lakh hectare are now under drip/sprinkler irrigation and the number is increasing annually as a result of various govt initiatives.

The startup is collaborating with universities, KVKs and research institutions with demo trail for better reach to farmers with demonstrations. They have collaborated with UAHS, Shivamogga under the mentorship of Dr. K C Shashidhar, Director of Extension and HoD, Agricultural Engineering, UAHS. They are also incubated at Deshpande Startups, Hubballi, Karnataka, mentored by Mr. Sasisekar, nanoPix ISS Pvt. Ltd .They are expecting to cater to nearly 200+ farmers in next 2 years, involve rural youth and train them for device installation and services, generate 40 more than direct & indirect jobs. Their plan is to organize skill development training in rural areas, to ensure have at least one service person per village and self-sustained village for faster service, leading to rural empowerment.

First prototype of complete wireless, smart irrigation system and smart sensors has been already been deployed in one of startup farms for testing and validation.

Koushik working on Startup idea

FresHerbal™ Foods

"Harpal tazgi ka ek naya ehsaas"

"Herbal supply chain model linking local farmers to urban customers."

Amit Saha

PhD (Agri. Economics),
Post-Doc (Farm Economics)

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Having served as a farm researcher and consultant for over 20 years around the world, one thing always perplexed Amit Saha was the state of average Indian farmer-most hardworking with minimum margin share and low access to existing technologies to enhance his productivity. Added to it was the survey reports showing over 60% of India' population at risk of lifestyle diseases. So, Amit was determined to initiate a movement that would bring some impact in the present scenario. Amit is experience in working with dairy cooperatives dealing with highly perishable commodity 'milk', motivated him to start working with fresh herbals i.e. medicinal and aromatic herbs, green vegetables disrupting the existing herbal supply chain to ensure the freshness from the farmer's field till it reaches the consumer, thus FresHerbal Foods initiated their operations.

FresHerbal Foods is a herbal supply chain platform that links local farmers to the urban consumers for supply of fresh herbal

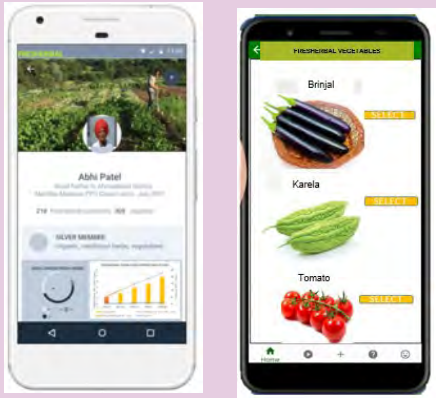
produce. It ensures direct supply of safe and fresh medicinal, aromatic herbs and green vegetables from selected farmers to urban customers. This helps in better returns to farmers and access to better healthy food for urban consumers.

To begin with, startup plans to link 500 farmers from 50 villages in 50 km radius around Ahmedabad city. Startup will ensure herbals are grown using good quality inputs, best practices, optimal eco-friendly methods to ensure traceability and transparency by using IT tools. Different post harvest technologies used by startups ensures that herbal produce retain their freshness, vitality and vigour in the entire process of harvest, cleaning, transit and delivery.

Using innovative route wise pricing app startup will ensure better price realization by farmers and home-delivery to customer within 8 hours of harvest. Startup marketing strategy is to sustain and retain customers using 3S USP - Safe, Secure and Sustainable Foods.

Startup has obtained FSSAI registration certificate for food business operations. Startup has also registered HerbalFresh Foods as company name and logo as Trademark.

ORGANIC HERBAL PRODUCTS



FresHerbal Foods herbal supply chain platform

Kuvakiv Foods

"One Stop FIG Destination"

"Developing Fig processing machine for drying and developing value added products."

Himanshu Gupta

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Indian farmers are not getting the correct value for their efforts. The startup want to provide the technology driven solution to reduce farmers efforts in the process of drying FIG.

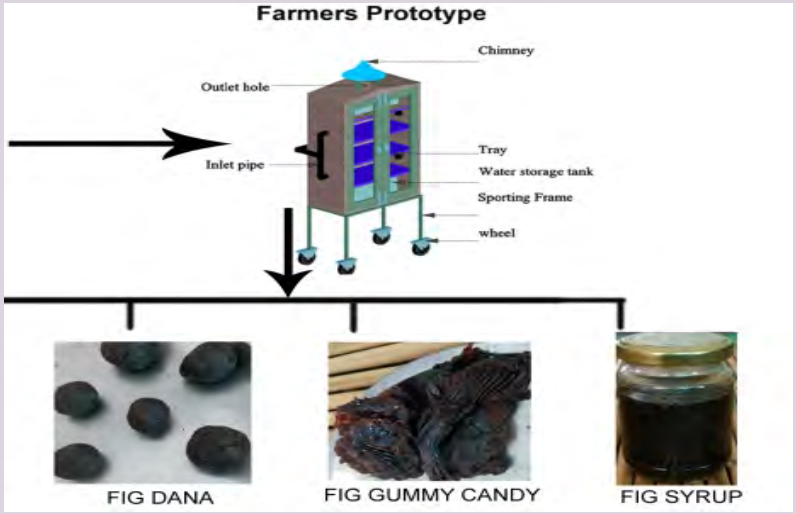
Coming from agriculture business management background Himanshu Gupta is founder of Kuvakiv Foods. He observed that drying fig in less time takes more efforts and cost. And the farmers don't get enough return for their efforts. Kuvakiv Foods is developing a fig drying for drying fig in less time and less cost to be used by business and farmers.

In India Fig farming is mostly done in Maharashtra, Gujarat, Uttar Pradesh, Karnataka and Tamil Nadu. The total area under Fig cultivation is around 5600 hectares of land with a production of about 13,802 thousand tonnes.

The startup has developed a machine which will help to dry 8kg fig in one time. It can be easily used in rural areas because it has attached solar panels for large production, startup has started working on commercial machine as soon as possible.

The startup has done research and test on the different varieties of figs and on the basis of test and results, they have developed this farmer's prototype taking into account consumer needs, preference, and quality attributes.

Dried Fig



Gfarms Private Limited

"Farmer to Business"

GFarms

"Tech based supply chain platform for farmers and bulk buyers."

Shubham Dungarwal

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Gfarms Private Limited was incorporated on 13th June 2019 is a B2B company fousing on consumable food stuff. The startup successfully addresses farmers' need farmers and convinced them to sell their produce on GFARMS's platform, Naman has played an instrumental role in acquiring 10+ B2B clients in a short span of time.

The startup focuses on building a brand synonymous with tech enabled supply chain platform for agri produce thereby improving farmers & consumers lives. A technology enabled solution that eradicates middlemen and connects farmers to customers directly. The biggest obstacle in increasing farmers income in India and creating an efficient supply chain are the profiteering middlemen, commission agents, traders and wholesalers who take a major chunk of profits from farmers' produce.

Procurement, loading and unloading activities of onion crop

Instant Payments

Fair & transparent pricing without any deductions

No Minimum Offtake Requirement

Tech enabled platform for demand determination and pricing

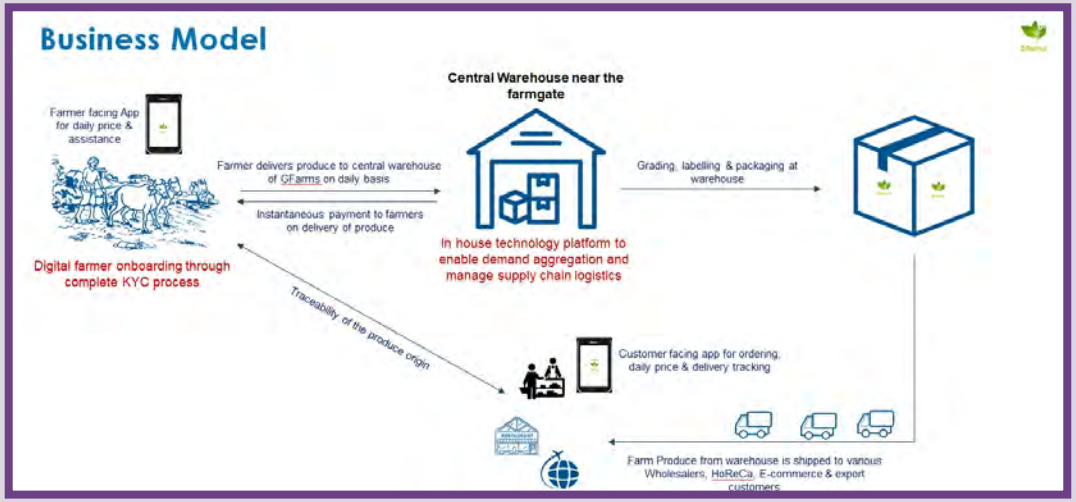
Benefit to Farmer Consumer

Timely Delivery ensuring delivery of fresh produce

Direct sourcing from farmers through GFarms without paying any high commission

Quality & Weight Assurance

Tech enabled platform for order placing, order tracking and pricing



Janmitra Udyog

"For farmers by the farmers"

"Unique marketing system for the farmers' by agro products packing, branding, marketing and supply directly to consumers."

Manmohan Vishwakarma

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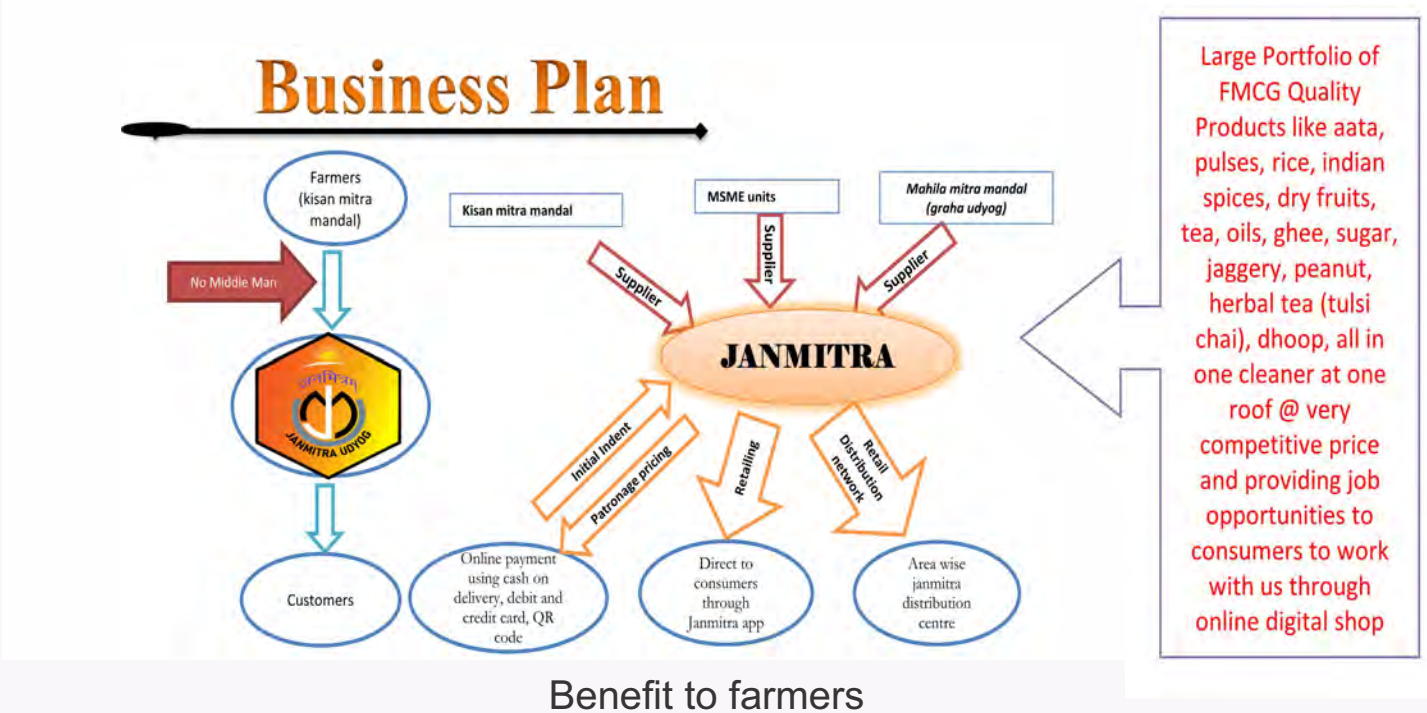
Janmitra Udyog is focused on buying Agri products directly from farmers at MSP with an aim to do pre primary processing of farmers agriculture produce and to provide employment to farmers in the processing plant and make them a partner in profit sharing of the company. The processed goods will then be sold directly to consumers after branding and marketing through Janmitra Online App Portal by establishing area wise Janmitra Kendra (supply & stock warehouses).

The consumers will get free home delivery of Janmitram products through Janmitra Kendra which they can order from the online app portal and additionally provide job opportunities to consumers by introducing a new method of online digital shop in which any consumer/customer can open a digital shop in Janmitram mobile application and work with them and get monthly salary with promotions and incentives according to their work performance.

USP of Janmitra Udyog :

- Large consumer network
- Area wise stock management through Janmitram Kendra
- Area wise supply chain system (home delivery service)
- Order dispatch within 24 hours
- Delivery within just 72 hours
- Direct connection with farmers and consumers
- Presence in more than 9 districts of Rajasthan , 5 cities in India in 5 different states
- Establishment of primary processing unit based on availability bulk product
- Use Nano Technology for Sorting, Grading, Packaging, Storage and Create employment



Benefit to farmers

Commodity Wise

Purchase at Market or MSP

Online payment in farmers account

If farmers provide logistics then company will pay them

Service Wise

Employment in processing units

Being a part of company, farmers get 5% share in company profit income

Logistic will be provided by company to farmers for carrying agri products

Shresth Agro Tech Pvt. Ltd.

"Cultivating Ideas for Growth"

"Use of Solar Energy for Sustainable Mushroom Dehydration for the cottage food processing sector."

Sonam Kumari

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The startup is providing Skill and Entrepreneurship Training programs to beneficiaries in Food Processing/ Agriculture related subjects such as Fruit and Vegetable Dehydration, Organic Farming and Mushroom Cultivation.

The startup has developed an innovative and affordable product technology – solar panel less/powerless mini solar mushroom dehydrator (Dryer) in which no solar panel or external power source is required and sunlight is the only input for mushrooms dehydration. The unit can dehydrate mushrooms @ 5kg/per day approx in normal conditions.

The startup is engaged in business of :-

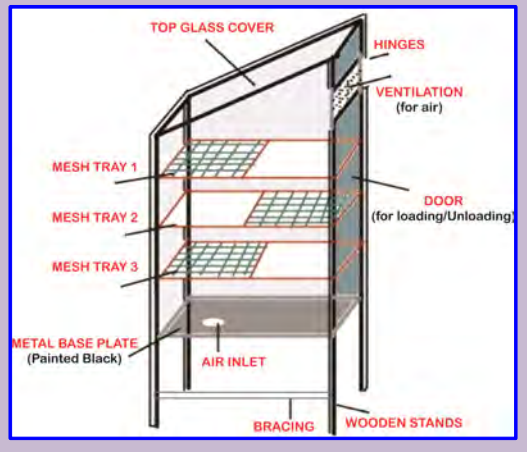
- Agro Food Processing
- Agri Tech Consultancy
- Mushroom Cultivation
- Organic/ Medicinal Plant Cultivation
- Skill and Entrepreneurship Development Training Provider

The startup is having its operations in Jharkhand at present and plans to expand in other neighboring states like Odisha, Bihar and West Bengal.

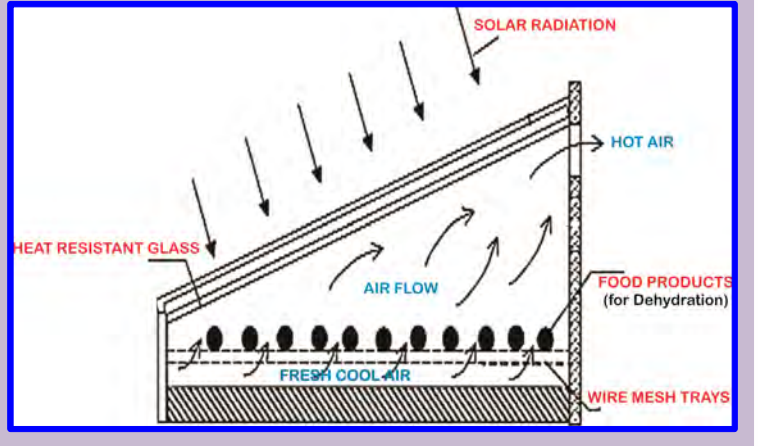
The commercially available Solar Food Dehydrators(Dryers) systems are expensive and the per unit cost is approximately Rs. 90,000/- for producing about 25 kg dehydrated product/day. The Maintenance and Power cost are also very high.

The startup has developed a cost effective, innovative and affordable Solar Panel less/Powerless Mini Solar Mushroom Dehydrator. This dehydrator uses Sunlight as only energy input for drying of mushrooms.

Mini Solar Mushroom Dehydrator (Dryer)



Schematic Layout of Mini Solar Dehydrator



Dehydration Process in Mini Solar Dehydrator

Anguki Industries Pvt. Ltd.

"Engineering the future"

"Developing innovative value added, biodegradable products from Pseudostem of banana crop."

Kapil Thapa

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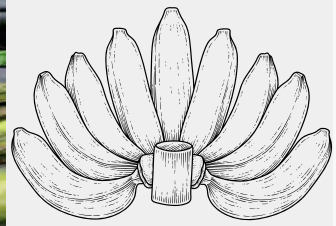
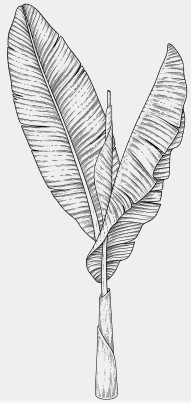




Anguki Industries Pvt. Ltd. converts Waste Banana Pseudostem into Biodegradable Utility Products, Engineering Composite Materials, Textiles and Allied Products.

Anguki Industries Pvt. Ltd. started with a vision to create a circular green economy by converting waste banana pseudostem into commercially viable, marketable and sustainable products and solutions for the Furniture Industries, Paper Industries, Oil and Gas Industries, Automobile Industries, Pipeline Industries with products such as- Banana Fibre Reinforced Composites Furniture

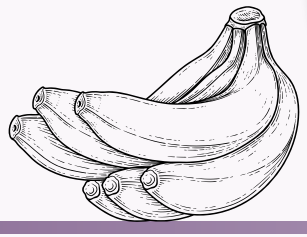
(Beds,chairs etc), Banana FIbre based Papers and Paper bags, Transmission Pipelines and Storage Tanks, Automobile Body Parts.

Anguki Industries has been registered with Startup India and has also been awarded the DPIIT Recognition. Anguki Industries has setup their Research and Development Office at IIT Guwahati. The startup has signed MoU with Olatus Systems Pvt Ltd- A startup from Guwahati to design and Develop Electronic components based on Banana Fibre Composites.

They manufacture different products from waste banana pseudostem acquired from farmers thereby improving their income and help them manage their agricultural waste in a better manner.

Different products manufactured by startup from banana pseudostem waste are namely:-

Banana Fibre Reinforced Composites, Banana Fibre Paper and Paper Bags, Banana Fibre reinforced automobile parts, Banana sap based fertilizer.



Production of Pseudostem of banana crop

Skyware Automation Pvt. Ltd.

"Transforming Post harvest Industry though use of intelligent decision making technology."

"IoT based SAAS commodity assaying Storage innovation for post harvest management."

Rakshit Sateja

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Skyware provides cutting-edge Technology solutions for Agri warehouses. Their vision is to revolutionise the post-harvest industry through the data-driven intelligent decision-making system.

According to UN report published in, every year 1.3 Billion metric tonnes of food is wasted in the post-harvest space i.e they don't even reach the markets after they are harvested from the field.

In India, annual storage losses have been estimated at nearly 100-million tonnes worth Rs. 93,000 crores. This results in food shortages, seasonal availability, and increased pricing of the commodity.

Through extensive market research and analysis, the startup discovered that these huge storage losses happen as a result of unscientific storage methods based on assumptions, spoilage caused by insects, rats, rodents, microorganisms, and so on, and lack of viable system to track environmental impact inside warehouses.

Skyware aspires to trim down these massive losses through IoT and AI-enabled scientific storage systems that forecast spoilage using real-time data modeling and optimize the shelf life of the harvest.

The startup provides IoT- based monitoring devices to deeply understand commodity behaviour with respect to the storage environment with AI-backed virtual assistants for automated maintenance and remote support through our SAAS model.

The startup is at the pre-revenue stage. The business strategy is B2B and B2C with potential channels in the public and private sector which includes Food Corporation of India, CWCs and SWCs, private warehousing companies, Cold storage, farmer associations, Agri Exporters and supply chain service providers.

The Indian warehouse automation industry is valued at 86.2 billion USD and is expected to grow at a CAGR of 26.4%.

Tarun Infotech

"Strengthen Self Help Groups by Mushroom Farming"

"Growing export oriented mushrooms by farmer associations, SHGs using modern technologies and digital platform."

Reena Srivastava

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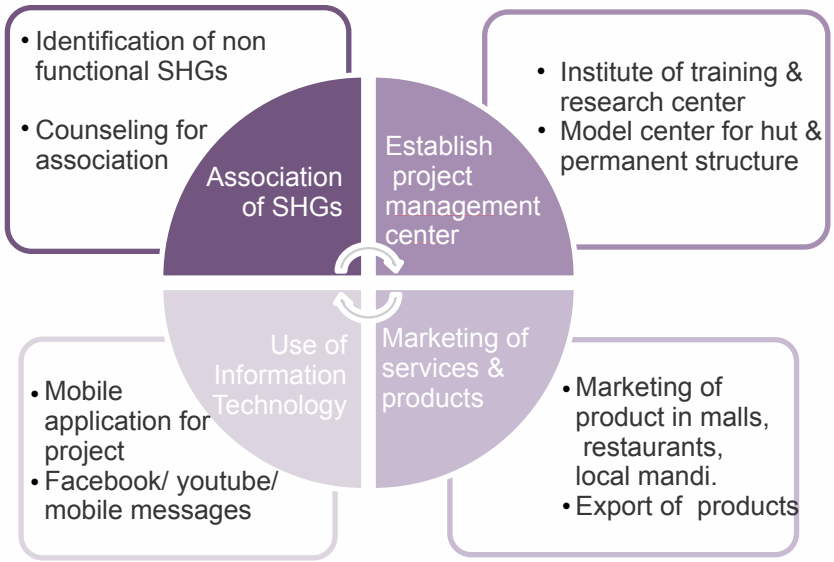
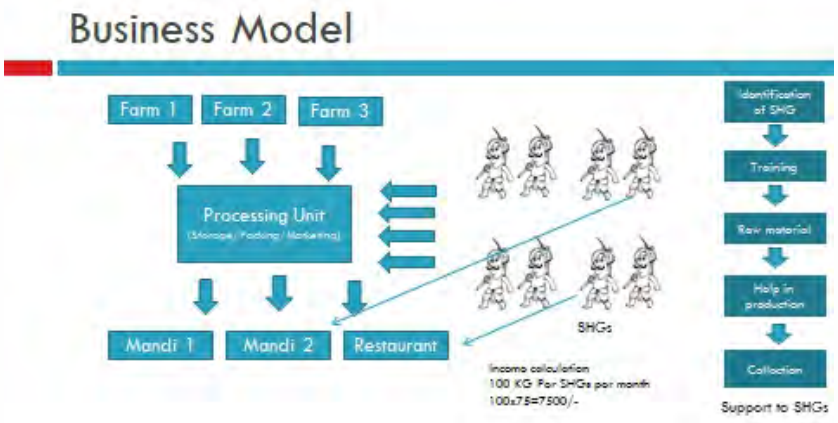
Tarun Infotech works with farmers and provides them modern technology & skill development. Platform Tarun Infotech is dedicated to improve economic condition of farmers by adopting Mushroom farming.

Self Help Groups are small groups of farmers, associated to improve their economic conditions. About 4.7 lac SHGs are registered in Uttar Pradesh, working with different home based low cost business ideas.





- Promotion of mushroom farming in villages to earn extra money
- Target group farmers of Non-Functional SHGs
- Low investment and regular income
- No land is required and can be started from hut or one room
- Use of digital platform for information sharing, marketing & project management
- Resource exchange between SHGs
- Scalable Model

NABI Team

Dr. Vijaya Lakshmi Nadendla, IAS

Joint Secretary (Marketing), MoA & FW, GoI
& Director General, CCS NIAM

Dr. Ramesh Mittal

Director, CCS NIAM

Manoj Agrawal

Chief Operating Officer

Rahul Maheshwari

Manager - Innovation Management

Shashwati Mukharjee

Manager -
Marketing & Communication

CA Abhishek Sharma

Manager - Finance & ICT

Adv. Akshay Singh Ranawat

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Sachin Ukey

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