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Global Agri Connect 2017

Technologies & Innovations in Climate Smart Agriculture

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Foreword

Agriculture is the backbone of Indian economy and since time immemorial has been the source of employment and livelihood to a vast majority of the country. In addition, agriculture and its allied businesses has provided food and nutritional security to the nation and reinforced the growth of many other industries.

Despite its critical role, the sector has been suffering from major deterrents and road blocks which have restrained its growth. Fundamental problems on the production, productivity, sustainability and marketing front have confined the sector's growth from achieving its true potential. Challenges including small land holdings, unsustainable farming practices, information asymmetry, disaggregated marketing structures, wastages across the supply chain and inefficient/ inadequate infrastructure have plagued agri supply value chain in India.

However, these challenges put forth a plethora of opportunities for innovations, Research & Development and technology integration across the supply chain.

There already exist numerous innovations by established companies as well as startups in the agri space who have tried to address the challenges through various means and ways to ensure an efficient supply chain and enhanced farmer incomes. These innovations are well spread across the agri supply chain including farm management, sustainable practices, logistics, market information, market access & linkages, finance and insurance services and many more

Many of such innovations have changed the dynamics of farming for countless farmers including smallholders. I am glad to present the third edition YES BANK-NSFI Knowledge Report – **'Technologies & Innovations in Climate Smart Agriculture'** 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 important insights to industry leaders, policy makers and stakeholders on innovations in the agri space and motivate them to work further on conceptualizing and implementing innovative technologies for boosting growth of the sector and also accomplish our goal of enhancing farmers income.

Thank You.
Sincerely,

Rana Kapoor
Managing Director & CEO YES BANK
Chairman YES Global Institute

Message

The UN Food and Agriculture Organisation (FAO) estimates that world will have to increase agriculture production by 60 percent to feed the growing population. The resources required to feed the growing numbers are vastly stretched for sustainable food security. The situation has grave portents with challenges thrown by the impact of climate change on agriculture. The changing climate threatens both, food security and livelihood of millions of farmers across the world and more seriously in low income countries. Farmers in low income countries are particularly vulnerable to this change as their capacity to adapt is limited. Compounding to this problem, is a very high contribution of agriculture to global greenhouse emissions, by some estimates almost 4th of all GHG emissions.

We need a multi stakeholder and multi sectoral approach to tackle the challenges of climate change on agriculture. This would require deep collaboration between Policy Makers, Research and Academia, Civil Society Organizations, Multilateral and Bilateral Institutions and Private Sector. The climate change challenges are interlinked that necessiates the need for common platforms that can build on evidence based research to develop common frameworks to effectively tackle the problem.

The response to the challenge of climate change needs to be coordinated amongst all stakeholders that should focus on innovation and technology to bring about the change. Traditional response to agriculture will not be sufficient to make a positive impact on food production and livelihoods of farmers. The three pillars of mitigation, adaptation and productivity must become the foundation of our actions on climate change. Inducting farmers at all stages of action plan acquires added urgency as they bring ground knowledge and a perspective to the climate change.

National Skills Foundation of India(NSFI) is deeply committed to agriculture and livelihoods of farmers. Each year, we pick a theme that is relevant to agriculture and organise Global Agri Connect (GAC) with the support of organising committee, co-organisers, partners, delegates, speakers and guests of honour. The broad based participation from a wide spectrum of stakeholders is a testimony to the relevance of GAC. Our theme of GAC-17 is "Technologies and Innovations in Climate Smart Agriculture - Practice or Perish" is rapidly emerging as a key dimension in contemporary agriculture that has a direct bearing on food security and nutrition for our planet and impact on farmers' livelihoods.

We are thankful to our knowledge partner, Yes Bank for putting together the Knowledge report for GAC 17. I do hope, this report will be of use to Policy makers, Academia and Researchers, Business and Civil Society Organizations; and will contribute to the translation of research into action, thus to climate smart agriculture and society.

Sanjeev Asthana
Chairman NSFI
Driving Change, Delivering Impact

CONTENTS

A Grain	
Name of the Innovation	Grain Moisture Detection
Name of the Innovator	A Grain
About the Innovator	Gurvinder Pal Singh is an expert in Electronics, Automation, Quality Control in Agriculture. He has vast knowledge in Agricultural Sector.
Brief about the challenge the innovation/ technology is addressing	Unavailability of measuring devices causes farmers to over water their farms & also sometimes under watering. This causes poor quality yield.
How does this innovation address the mentioned challenges?	Helps save water, increase income by producing better yield and also reducing costs.
How is this innovation a better alternative over the current scenario?	Grain with inadequate moisture levels or excessive moisture level could result in poor yield. Grain Moisture detector finds the exact quantity of moisture that a grain should have. Thus the grain produced is of a much better quality.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Grains with more moistures levels than required causes extra drying costs for farmers. Also, there is an increased risk of loss & spoilages. The grain with adequate moisture levels is known to last in storages for a longer part of time.
Contact Details for Further Information	Email: agrain_india@yahoo.com No. 27, Shivaji Park, Opposite Sector-9 Ambala city Haryana - 134003, India

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Alpha Wind Mills	
Name of the Innovation	Wind Solar Battery Operated Local Grid System
Name of the Innovator	Alpha Wind Mills
About the Innovator	Alpha Power is an ISI & ISO 9001 certified company founded by parent company "Alfa Engineering Works" in 2005 as a dedicated direct Manufacturing & Marketing subsidiary for Promoting On-Grid/Off-Grid Renewable Energy Systems especially in the field of Micro Wind Turbines & Solar Photovoltaic Sytems.
Brief about the challenge the innovation/ technology is addressing	Power Outage in the village is one of the biggest problems which the farmers face. In some areas of India, the power can remain absent for almost 16-20 hours. In absence of it, the farmers have to rely upon Petrol, Diesel, Kerosene operated systems which not only pollute the environment but also is hard to procure & is costly in the longer run.
How does this innovation address the mentioned challenges?	The system consists of the following components i. Wind Turbine + Solar Photovoltaic Panels ii. Control System. iii. Grid Tie Inverter. iv. Battery Bank. In this system, the power generated is primarily used to charge the battery bank, once the battery if fully charged up to the set value, the remaining generated power is directly converted/transformed to 230/440 V AC, 50 Hz, and is fed to any kind of utilities (both Resistive and Inductive), thereby reducing the power drawn from the Grid. When the grid fails the rated output can be drawn from the battery bank and the same will be feed to the utilities for an interrupted Power Supply. If the battery bank voltage drains below the critical discharge level during the grid failed period the system have the option to auto start a rated capacity Diesel/ LPG Generator set.
How is this innovation a better alternative over the current scenario?	Electric & Fossil fuels driven pumps incur sufficient charges. Fossil fuel driven pumps are dangerous to the environment friendly too. Also sometimes petrol, kerosene are difficult to procure.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Wind Solar Battery Operated Local Grid System is not only cost effective in the longer run but it is also environment friendly. It not only is cheaper in the longer run but also saves a lot of time.
Contact Details for Further Information	Email : info@alphawindmills.com 2A, Second Street,K.K.Nagar, Off Police Quarters Ganapathy, Coimbatore, TN

Anaerobic Digestor	
Name of the Innovation	Anaerobic Digestor
Name of the Innovator	Nath motors
About the Innovator	Nath Motors, an ISO 9001-2000 certified company founded by Capt. Sandeep Kumar Agrawal in the year 1998. Since inception, the company has been engaged in the field of converting Diesel and Petrol Engines into Alternative Fuel and providing Energy Saving Solutions. They are also in supplying and commissioning of the Biomass- based Gasifiers and BIO-GAS Plants for Power Generation and as well as for Thermal Applications.
Brief about the challenge the innovation/ technology is addressing	1. Greenhouse Gas Emissions 2. Limited natural source of energy. 3. Degradation of soil quality
How does this innovation address the mentioned challenges?	Anaerobic digestion is the process of fermenting organic materials in a sealed tank without oxygen for a prolonged period of time. Through doing this, two by-products are created: methane-rich gas (biogas) and a nutrient-rich fertiliser (digestate). The methane created by this process can be used to produce energy for either industrial or domestic purposes through powering a generator. Some sites even purify the methane, add propane and odoriser, and use the energy for cooking or heating in the home through pumping onto the National Grid.
How is this innovation a better alternative over the current scenario?	It gives : Self-produced fertiliser Self-produced renewable fuel Additional income Reduction in landfill tax bills Reduction of slurry and waste storage
Who are the beneficiaries of this innovation?	Farmers And environment
What is impact generation capability of your Innovation?	Anaerobic digestor saves farmer money by giving them self produced fertilizer and reduced environmental wastes.
Contact Details for Further Information	13A/5 , Site- II Loni Road Industrial Aria, Mohan Nagar Ghaziabad (U.P.), India Tel: +91 - 120 - 6514570 Mobile: +91 - 09873654850 E-mail: info@nathmotors.com; nathmotors@gmail.com

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AWD	
Name of the Innovation	AWD -(Alternate wetting and Drying)
Name of the Innovator	IRRI
About the Innovator	Established in 1960, IRRI is among the largest non-profit agricultural research centers in Asia, with headquarters in the Philippines and offices in 14 other nations. They are supported by donors and partners around the globe. Their mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. rice research, capacity building, international development, plant breeding, biotechnology, agriculture, and genetics.
Brief about the challenge the innovation/ technology is addressing	Water is precious and scarce input in rice production.Rice cultivation requires large amount of water.Approximately 2500 lt. of water is required in producing 1 kg of rice. By 2025 20mn rice fields may sufer from water scarcity.
How does this innovation address the mentioned challenges?	AWD is a management practice in lowland rice that reduces water use by 30% while maintaining the yield.The practice of AWD is defined by Preodic drying and reflooding the field.
How is this innovation a better alternative over the current scenario?	1. By reducing the no. of irrigation events required , AWD can reduce the water use by 30%. 2. AWD is assumed to reduce CH4 emissions by an average of 50% compared to continous flooding.
Who are the beneficiaries of this innovation?	Farmers and Environment
What is impact generation capability of your Innovation?	This techology help farmers to save their money as it does not reduce yield as compared to continuous flooding. In fact, it increases yields by promoting more effective tillering and stronger root growth of rice plants. http://books.irri.org/AWD_brochure.pdf
Contact Details for Further Information	Dr. Nafees Meah IRRI Representative for South Asia International Rice Research Institute India Office, First Floor, CG-Block, NASC Complex, Dev Prakash Shastri Marg, Pusa Campus, Near Todapur, New Delhi - 110 012, INDIA Tel: +91-011-6676 3000 Fax:+91-011-2584 1801

Big Data - Large Area Analytics for Agriculture	
Name of the Innovation	Large Area Analytics for Agriculture
Name of the Innovator	SatSure Limited
About the Innovator	SatSure is a Large Area Analytics company leveraging Earth observation satellites, Big Data, cloud computing, machine learning and IoT technology. SatSure delivers clear decision points to insurance & re-insurance companies, banks, commodity traders, governments, seed and pesticide enterprises and farmers through a web-based SaaS platform
Brief about the challenge the innovation /technology is addressing.	In India, over 150 million+ rural farmers do not have bank accounts & while only 20% farmers are covered by crop insurance, creating an annual financing gap of $750 billion in India alone! This story is repeated is every developing country. We help financial institutions and states bridge this gap, by creating satellite data-based risk management solutions for $ 2-5 per farmer per year.
How does the innovation/ technology address the mentioned challenge?	Satsure platform enables farm level crop yield based risk assessment for crop-insurance and agri-banking, based on advanced analysis of Satellite Earth observation, weather and IoT sensor data. It uses a combination of satellite image processing techniques and artificial intelligence algorithms to detect farm boundaries, do automated crop classification and do crop yield and health estimates. Also Satsure does multi-variable analysis to correlate crop health or yield with precipitation, soil characteristics, or commodity prices.
How this innovation is a better alternative over current scenario?	Satellites can see a large area. A single satellite image can be as big as 250 Km x 250 Km. This allows states as large as Gujarat to be imaged every 2 days. The SatSure technology platform uses satellite data, Big Data techniques and machine learning to perform agriculture acreage, yield, and health and stress calculations. These calculations leverage SatSure's proprietary algorithms to provide accuracies higher than 90%. In addition as SatSure can reuse the same satellite picture for multiple uses, SatSure can reduce the cost of generating insights by sharing the cost of satellite data across multiple users thus enabling SatSure to providing these insights at approximately $ 2-5 per acre.
Who are the beneficiaries of this innovation?	Governments, Farmers, Insurance & re-insurance companies, Banks, Commodity traders and Seed and pesticide enterprises

What is impact generation capability of your Innovation?	SatSure's algorithms enable Insurance companies to smartlyselect plots for crop cutting experiments (CCE) across an entire state. This helps reduce the bias in the CCEs thus enabling higher accuracy in state-wide crop yield calculations. Similarly, Satsure can provide farm-level high frequency updates on crop health and growth progress over extremely large areas. This information can be analysed and modeled with weather, IOT and financial datasets on SatSure's SaaS dashboard.
Contact details for further information?	Amardeep Sibia, CEO, Amardeep@satsure.co.uk PrateepBasu, COO, prateep@satsure.in Abhishek Raju, Co-founder and Head of Business Development, abhishek@satsure.in

Big Data Analytics	
Name of the Innovation	Big Data Analytics
Name of the Innovator	SatSure
About the Innovator	SatSure was started with the goal of showing that a satellite based FinTech data business, with inherently positive social impact, can also grow rapidly, create wealth for investors, and become a tool for doing good in the world.
Brief about the challenge the innovation/ technology is addressing	In recent times Floods and Droughts have caused economic losses of INR 19,000 crores since 2010. Also, India loses 15-25% potential crop output due to pests, weeds, diseases. All these have increased the farmer's worries.
How does this innovation address the mentioned challenges?	Satsure develop farm level crop yield based risk assessment for crop-insurance and agri-banking, based on advanced analysis of Satellite Earth observation, weather and IoT sensor data. SatSure is working with multiple AgriTech firms in South and East Indian states for providing up to farm level yield estimates and variation along time. SatSure uses a combination of satellite image processing techniques and artificial intelligence algorithms to detect farm boundaries, do automated crop classification and do crop yield and health estimates. It has created a 15-year database of satellite images, taken at 8-day frequency, weather data, and commodity price data over entire India since the year 2001. Also Satsure does multi-variable analysis to correlate crop health or yield with precipitation, soil characteristics, or commodity prices.
How is this innovation a better alternative over the current scenario?	1.Access to 150+ Satellites, with daily data frequency . 2.Easy GUI-based data download. 3.Instant data visualization & analytics on satellite maps.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	SatSure estimated the biomass of grass that was eaten by cattle in the fields of a dairy farmer in New South Wales, Australia. The information was used by the farm vet-doctor to estimate the average pH value change in each cow, which helped them prepare their diet chart. This led to an increase in milk production by 7% for the dairy farmer, which surmounted to additional revenues of 650,000AUD
Contact Details for Further Information	Abhishek Raju Co-founder and Head of Business Development abhishek@satsure.in

<table>
<tr><th colspan="2">BigHaat.com</th></tr>
<tr><td>Name of the Innovation</td><td>BigHaat.com – Digital Platform for all Agriculture Inputs</td></tr>
<tr><td>Name of the Innovator</td><td>Sateesh Nukala and Sachin Nandwana</td></tr>
<tr><td>About the Innovator</td><td>BigHaat is an Agricultural Inputs digital platform for farmers to procure wide choice of branded and quality inputs that ranges from seeds to agri implements. It is a disruptive supply chain technology platform not just for farmers but to all stakeholders in the agri inputs supply chain benefiting from the transparency. Quality of inputs is so vital to crop quality and yield, therefore availability and accessibility of right inputs to farmers is the key for farmer empowerment.</td></tr>
<tr><td>Brief about the challenge the innovation/technology is addressing</td><td>Availability and reach of quality Agri Inputs, Choice of quality Inputs, Adulterated Input, Lack of awareness on Products &Tech know-how, Exorbitant prices, Lack of literacy and Low productivity /Yield are the key challenges farmers are facing</td></tr>
<tr><td>How does this innovation address the mentioned challenges?</td><td>Wide choice of branded and quality inputs to farmers conveniently available on a digital platform; farmers can access BigHaat platform through BigHaat field extension team on fields, Missed call, Web, Mobile, Call center, WhatsApp. Door Delivery of Agri Inputs reduces effort of visiting a retailer and saves money and time and improves productivity. Advisory and knowledge base both through digital platform and through call center ensures dissemination of right information to farmers for their empowerment. There are several innovative products being invented by many start-ups and other established companies, however awareness and accessibility to the same is a tough challenge for these players through traditional distribution system, where as through digital platform, it can reach easier and faster besides enabling farmers to procure these products at their finger tips.</td></tr>
<tr><td>How is this innovation a better alternative over the current scenario?</td><td>BigHaat solution provides great advantages over traditional retailers making it the platform of choice for manufacturers and the farming community. Digitization and data strategy brings a big disruption in the entire eco-system.
<table>
<tr><th></th><th>Advantage to the Manufacturers</th><th>Advantage to the Farmers</th></tr>
<tr><td>Products</td><td>✓ Market Information
✓ Predictability for better forecasts
✓ Farmer Traceability and analytics</td><td>✓ Quality Inputs
✓ Price Transparency
✓ Increased Choices
✓ Branded & reliable</td></tr>
<tr><td>Services</td><td>✓ Market Information
✓ Predictability for better forecasts</td><td>✓ On time and doorstep Delivery
✓ Language support
✓ Awareness</td></tr>
<tr><td>Technology</td><td>✓ Advisory
✓ Omni Channel interaction</td><td>✓ Crop planning
✓ Knowledge & Advisory</td></tr>
</table></td></tr>
</table>

Who are the beneficiaries of this innovation?	Farming Community by having reach to Quality products, product information at transparent price at their finger tips Producers / Manufacturer by having reach to farming community directly through platform. It helps them to increase their reach easier and faster
What is impact generation capability of your Innovation?	Digital platform is linking factory to farm to bring data, cost and value advantage for all the stakeholders and improving efficiency and productivity BigHaat is bringing efficiency by reduce cost of distribution in value chain by organizing fragmented network Leverage data and technology: Active data strategy to bring operational efficiencies, drive growth, build customer relationship Farmers are benefiting with higher germination with best quality of seeds, and reducing overall input cost with access to right package of practices and products.
Contact Details for Further Information	7411053168 email:Sachin@bighaat.com

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Biomass Gasifier	
Name of the Innovation	Biomass gasifier
Name of the Innovator	Nath Motors
About the Innovator	Nath Motors, an ISO 9001-2000 certified company founded by Capt. Sandeep Kumar Agrawal in the year 1998. Since inception, the company has been engaged in the field of converting Diesel and Petrol Engines into Alternative Fuel and providing Energy Saving Solutions. They are also in supplying and commissioning of the Biomass- based Gasifiers and BIO-GAS Plants for Power Generation and as well as for Thermal Applications.
Brief about the challenge the innovation/ technology is addressing	Due to rapid industrialization and the burning of fossil fuels all over the world lead to the emission of CO2 which contributes 50% of green gas emission.The harmful effects of the presence of greenhouse gasses in the atmosphere are global warming, climate change, ozone depletion, sea level rise, adverse effects on biodiversity etc.
How does this innovation address the mentioned challenges?	In biomass gasifier, biomass is converted into a mixture of gases through a thermo-chemical reaction called producer gas consisting of combustible gases mainly hydrogen, carbon mono oxide and methane, non-combustible gases nitrogen, carbon dioxide and water vapor. The essence of gasification process is the conversion of solid carbon fuels into carbon monoxide by thermo chemical process. The gasification of solid fuel is accomplished in air sealed, closed chamber, under slight suction or pressure relative to ambient pressure This technology enables ones to directly treat Green Wood / Biomass having a moisture content of 10-15% without using a drying process.
How is this innovation a better alternative over the current scenario?	1. It saves upto 73% of fuel cost when compared to conventional fuel options 2. Low initial investment and cost of power production 3. Applied over a range of output ratings (5KWe to 2Mwe) with flexible process control.
Who are the beneficiaries of this innovation?	Environment and Farmers
What is impact generation capability of your Innovation?	Biomass gasifier helps many farmers in saving his money as it saves fuel cost. It also provides farmers an alternative source of energy which helps them to run their irrigation pumps and other agricultural machinery.
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Bio-Nano Technology	
Name of the Innovation	Bio- Nano Technology
Name of the Innovator	Soniz Agro
About the Innovator	Soniz Agro, an agriculture revolution of Soniz Meditech Private Limited. It is a privately held subdivision of Soniz Group.Soniz Agro offers agro products with an aim to Save Agriculture, Farmers & Environment (SAFE) in the interest of every people of this Planet. It brings cosmic revolution in agriculture, horticulture & farm forestry.
Brief about the challenge the innovation/ technology is addressing	Chemical fertilizers and pesticides damage our neurological, endocrine and reproductive systems, promote cancer, eye, skin damage and cause birth disability. These fertilizers also affect the quality of the soil.
How does this innovation address the mentioned challenges?	Soniz Agro products are designed to address current need of agriculture to provide 100% organic. They are suitable for every geographical situation, every type of soil, every botanical plant, every farming condition, every climatic zone and every category of farmer (small, marginal, medium & large). They are approved by Ministry of Agriculture (CIB), organically attested by accreditation agency of APEDA & ECOCERT as per NPOP (Gov. of India) & NOP (USDA) standards. ✓ Haritvardan – Polymorphic Bio-Fertilizer ✓ Bioplantomin – A Multi-Functional Liquid Bio-Manure ✓ Hydromax – Hydroponic Solution ✓ Greenpower – Bio-Manure ✓ Farmbahar – Growth Hormone ✓ Farm Dhan – Rooting Hormone ✓ Ultra Biogen – Soil Amendment
How is this innovation a better alternative over the current scenario?	All products are input savings: 50 – 60 % water 75-100 % fertilizers 30-40 % pesticides 40 % more economic yield 15-25 % seeds 100 % Micronutrients
Who are the beneficiaries of this innovation?	Farmers and Environment

What is impact generation capability of your Innovation?	Nanotechnology has the potential to improve the profile of nutrients and their efficiency. This very characteristic of the Bio-Nano Technology reduce farmers cost on the pesticide. According to the company, farmers saves around 30-35% of money by using this product compared to the earlier practices.
Contact Details for Further Information	Soniz Group (India) 4th Floor Heritage Building Near Grand Bhagwati S.G.Highway Ahmedabad India Phone: 91.79.40030723/724

Chlorophyll Meter	
Name of the Innovation	Chlorophyll Meter
Name of the Innovator	A-Grain.
About the Innovator	A-grain ISO-9001 2008 certified company involved in manufacturing, Distribution and Exports of high quality Laboratory Testing, Handling and Grading Equipment for Agriculture, Seed Conditioning and Food Processing Industry.
Brief about the challenge the innovation/ technology is addressing	With the growing worldwide need for food and the resulting increases in demand for fertilizer, the price of fertilizer has risen, and efforts by agribusinesses to reduce fertilizer expenses through fertilization design, etc. to avoid over-fertilization are accelerating.
How does this innovation address the mentioned challenges?	Chlorophyll meter is an instrument which measures the amount of chlorophyll (an important factor for understanding the nutritional condition of the plant) in a plant leaf. Chlorophyll Meter intends to measure chlorophyll so that no extra amout of fertilizers are used and also for knowing whether a plant needs fertilizers or not.
How is this innovation a better alternative over the current scenario?	Lack of knowledge about the nitrogen in the soil often results into farmers using fertilzers in incorrect amounts. Chlorophyll Meter informs the farmer about the chlorophyll level thus helping farmers use the fertlizers in right quantity.
Who are the beneficiaries of this innovation?	Farmers and Environment.
What is impact generation capability of your Innovation?	Accoding to the research, farmers can save 25-27 kg of fertilizers per hectare per annum by using chlorophyll meter.
Contact Details for Further Information	No. 27, Shivaji Park, Opposite Sector-9, Ambala city Haryana - 134 003, India Email : agrain_india@yahoo.com, sales@a-grain.in Mobile : +(91)-9996081859

DeHaat™	
Name of the Innovation	DeHaat App & Centres
Name of the Innovator	Green Agrevolution & Farms and Farmers (FnF) Foundation Shashank Kumar
About the Innovator	Founder, an IIT Delhi alumnus and Ashoka Fellow who got featured as "Forbes 30 under 30" in 2014. https://en.wikipedia.org/wiki/Shashank_Kumar
Brief about the challenge the innovation/ technology is addressing	Some of the biggest problems faced by the farmers are information asymmetry, lack of access to better quality of seeds, lack of crop monitoring devices, no proper information related to weather & improper market linkages.
How does this innovation address the mentioned challenges?	DeHaat intends to bridge the information asymmetry gap by providing information & advisory to the farmers. It further provides the farmers good quality agri inputs. It also connects the farmers with the market.
How is this innovation a better alternative over the current scenario?	The biggest problem which the farmer faces is the lack of information & not getting enough price for the agricultural produce. Adding to this the lack of information about the weather, the crops and fertilisers are one of the major problems related to wastage of crops & production of inferior quality of crops. In other words, farmers have to rely on multiple channels for their various agricultural needs. DeHaat is a technology based one stop destination for small farmers which offers end to end agri services to small farmers through network of trained micro-entrepreneurs.
Who are the beneficiaries of this innovation?	Small Farmers/ FPOs/ Micro-entreprenuers
What is impact generation capability of your Innovation?	DeHaat is an ICT based platform – which brings all agri offerings for small farmers under one roof. It connects small farmers with their various needs – Seeds, fertilisers, equipment, crop advisory & market linkage of agri produce. Farmers get benefitted in 3 ways – a) reduction in cost of cultivation b) improvement in crop yields c) better farm gate price. They experience more than 50% increment in their net income from agriculture.
Contact Details for Further Information	Email : Shashank@agrevolution.in | Twitter: DeHaatTM , ShashankFnF 1003, Springhouse, DLF Phase IV, Gurgaon, Haryana - 122002 B-83, Housing Colony, Lohiya Nagar, Kankarbagh, Patna- 800020

Digital Green	
Name of the Innovation	Free App to facilitate Market Linkages
Name of the Innovator	Digital Green, Rikin Gandhi (CEO)
About the Innovator	Rikin Gandhi is Chief Executive Officer of Digital Green. Rikin's interests include sustainable agriculture and technology for socioeconomic development. Prior to that, Rikin has held key positions in some notable organisations like Microsoft, Earth Institute, Oracle.
Brief about the challenge the innovation/ technology is addressing	The farmers need to go to the market to sell the goods. The biggest problem which the farmers face in it is transportation, not getting enough money & sometimes no buyer for the produce.
How does this innovation address the mentioned challenges?	The app intends to narrow losses of the farmers by creating a system in which the farmers, sellers & transporters are kept in a loop. When the farmer needs to sell his produce he simply updates it in the app, the buyer sees it and then makes a contact with him. After the deal is struck the buyer buys the produce straight from the farm.
How is this innovation a better alternative over the current scenario?	Loop App not only saves the time of the farmers which they spend going to the market but it also has some other advantages too. The products taken by the buyers are often in a better condition than the farmers who mostly take goods on cycle. It also saves the farmer from the additional loss of goods damaged in transit & loss of weight during transit. The product thus sold is of much higher quality thus helping the farmer getting more price on their produce.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Loop app can result in lowering of losses significantly. It not only saves the important time of the farmers but also saves them from a situation where they go to a market and sell products at a lower price because of the non- availability of the buyers. The users of the app have reported not only increase in income but also increase in yield due to the saving of time which else gets wasted going to the market.
Contact Details for Further Information	S-26 to 28, 3rd Floor, Green Park Extension Market, New Delhi - 110016, India Email Id: info@digitalgreen.com

GrainPro	
Name of the Innovation	Cocoon
Name of the Innovator	Grain Pro
About the Innovator	GrainPro, Inc., a green, "not-only-for-profit" company, is driving a global revolution in safe storage and drying of grains and seeds. Using the principles of Ultra Hermetic™ technology and modified atmospheres, GrainPro has grown to become a world-leader and a key proponent of the Second Green Revolution – the proper storage, handling and distribution of food commodities.
Brief about the challenge the innovation/ technology is addressing	Farmers suffer from the problem of warehousing of stocks. A large portion of the stock gets wasted eaten by rats or destroyed by pests etc.
How does this innovation address the mentioned challenges?	Cocoon is extremely helpful as it is a hermetic storage container which protects grains pulses etc. from pests, insects, rodents etc.
How is this innovation a better alternative over the current scenario?	A large portion of the crop is eaten by rodents or infected with pests. Thus a lot of the crop gets wasted.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Cocoon is extremely helpful in countries like India where a lot of crops are destroyed each year by rodents & moisture.
Contact Details for Further Information	Email: avinash@grainpro.com B305, Grande View 7 Hsg. Soc. Ltd., Phase - I, Near Ashok Leyland, Ambegaon BK, PUNE, Pune, Maharashtra, India, 411046 Mobile: +91 9970157263

GrainPro, Inc.	
Name of the Innovation	Solar Bubble Dryer
Name of the Innovator	GrainPro, Inc.
About the (person/agency) (Brief profile about the founders' experience/ background and start-ups)	GrainPro, Inc., a green, "not-only-for-profit" company, is driving a global revolution in safe storage and the drying of grains and seeds. Using the principles of Ultra-Hermetic™ technology and modified atmospheres, GrainPro has grown to become a world-leader and a key proponent of the Second Green Revolution – the proper storage, handling and distribution of dry agricultural food commodities.
Products/services offered	Storage, Drying and Transport Solutions
Issues addressed by the technology	✓ Post-harvest losses due to improper drying ✓ Spillage losses ✓ Sudden rains
Geographical Spread of the technology	There is an increasing number of SBD users among coffee growers in Latin America as part of their patio drying processes. In India, the SBD is already being used to dry high-value spices. There is also a growing number of trials in Africa through the efforts of development organizations.
End users	Smallholder farmers, commodity traders and food processors
Impact (both at social perspective and economical perspective) created through the technology	✓ A safe and innovative drying solution designed to protect commodities from unpredictable rains. ✓ Multi-crop dryer for various agricultural commodities such as paddy, corn, coffee and others. ✓ Prevents grain spillage losses and other unhealthy contaminants (animal feces, stones, vehicle running over, etc.). ✓ Collapsible materials and detachable components make it easy to transport and assemble on any flat surface. ✓ Solar-powered version does not require use of any fossil fuels or grid electricity. ✓ Cheaper than stationary mechanical dryers ✓ Continuous operation

Value proposition of the technology	An innovative drying solution that is easy to install and transport, and minimizes the effects of unpredictable weather to commodities during the drying stage.
Issues & Challenges	✓ Plastic material that can be punctured ✓ Light density material will move with the wind ✓ Cannot be installed on flood-prone areas ✓ Not fully automated and will require some manual labor
Contact details for further information	GrainPro Philippines, Inc. Website: www.grainpro.com Tel. No.: +63 47 252 7884 Fax No.: +63 47 252 7885 Skype: gppsales Email: customercare@grainpro.com

Greeshm A	
Name of the Innovation	Crop Disease Identification
Name of the Innovator	Greeshm A
About the Innovator	M. Reddi Kumar, Plant Pathologist at the Regional Agricultural Research Station's (RARS) Institute of Frontier Technology, developed an android application, Greeshma, which highlights various diseases affecting the crops and the measures to control them.
Brief about the challenge the innovation/ technology is addressing	The laboratories for testing diseases in plants are located miles away from the farms. Thus farmers often need to travel miles with samples to get the disease in plants detected. There is need to create more awareness among farming community regarding technological advancements in the field.
How does this innovation address the mentioned challenges	GreeshmA app consist of information about five major crops in Andhra Pradesh such as groundnut, paddy, sugarcane, sunflower and maize. Besides this, Greeshma have also incorporated details about 'Mushroom Cultivation' as several farmers are growing them on a small scale and cottage industries.
What is impact generation capability of your Innovation?	As Paddy being the major food crop grown in Andhra Pradesh and Telangana, every year the damage caused due to diseases is alarming. By taking corrective measures at appropriate time, can help overcome farmers from losses. This is where, technology helps. As the app is developed to provide information on identification and management practices of important crops, it would be highly beneficial to the farming community of India.
Contact Details for Further Information	M. Reddi Kumar, Plant Pathologist Regional Agricultural Research Station's (RARS) Institute of Frontier Technology Vijaya Durga Towers, M.G. Inner Ring Road, Guntur - 522509, A.P.

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Driving Change, Delivering Impact

HawksPrey Technology	
Name of the Innovation	Agricultural Drone Sprayer
Name of the Innovator	Hawks Prey Technology
About the Innovator	HAWKSPREY is a company dealing with a very wide range of products. The company has an enviable track record of achievements which include the introduction of the latest technology; in-house innovations; time bound executions of assignment and after sales support/service.
Brief about the challenge the innovation/ technology is addressing	The farmers with vast tracts of land suffer from the problem of spraying of insecticides, pesticide etc. The use of manual labourers and sometimes even the machines are often time taking & expensive.
How does this innovation address the mentioned challenges?	Agricultural Drone Sprayer is helpful in spraying insecticides, fertilisers at a faster & efficient rate. Because of the fact that it flies, it can be used for spraying in coconut tree tops etc. which is often a difficult task & also a lot of fertilisers, pesticides get wasted due to it.
How is this innovation a better alternative over the current scenario?	The spraying of pesticides & fertilizers in vast tracts of land is often a tedious process as it requires manual labourers/ machines. Trading them off is not just an efficient move but also a cost effective move.
Who are the beneficiaries of this innovation?	Commercial, Co-Operative Farmers
What is impact generation capability of your Innovation?	Agricultural Drone Sprayer is viable for cooperative & commercial farmers. It's because it helps in spraying fertilisers insecticides really fast. Its not only time saving but also efficient.
Contact Details for Further Information	44E/1,Anupama Housing Complex VIP Road, Kolkata West Bengal 700052 Email: admin@hawksprey.com

Hydroponics	
Name of the Innovation	Hydroponics
Name of the Innovator	www.petbharoproject.co.in (Pioneer in Indian Hydroponics)
About the Innovator	Lt Cdr CV Prakash (Veteran) Indian Navy is a Pioneer who brought Hydroponics Technology to India from Australia where he lived for several years. Hydroponic Greenhouse Technologies India Private Limited of which CV is the Farmer-in-Chief and Founder has the unique distinction of having set up for the first time in the history of Agricultural exhibitions in India a 3500 Square Feet Live Hydroponics/Soiless pavilion at the Agri-Intex 2014 at Coimbatore in July 2014 which was witnessed by thousands of people and had rave reviews.
Brief about the challenge the innovation/ technology is addressing	India has the largest population of poverty stricken people in the world, with about 200 million going hungry. In the coming years this number will increase exponentially. Moreover, with rising population, land available for agricultural activity will be a constraint. Therefore, Indian agriculture has to address simultaneously three intertwined challenges: ensuring food security through increased productivity and income, adapting to climate change and contributing to climate change mitigation with sustainable increase in yields. Hydroponics /Soilless Cultivation are the way to go in mitigating the above problems now and in the future.
How does the innovation / technology address the mentioned challenge?	Pet Bharo's Hydroponics technology saves and conserves water, grows more crop in less land area with less labour intensive and helps the farmer do more crops per annum in comparison to soil cultivation.
How this innovation is better alternative over current scenario?	✓ Reliable production (High predictability of yield), Consistent Quality and Nutritive value, Pesticide Free , Year Round Supply, No water is wasted ✓ No need for Tractors, Tillers etc, No weeds to remove. ✓ Crops can be turned around in very little time.
Who are the beneficiaries of the innovation / technology?	Urban dwellers at the roof top and open space farming in the cities. It also finds application in rural farming.

What is impact generation capability of your Innovation?	It is a relatively new technology, evolving rapidly since its inception 70 years ago. It is for both developing countries and high-tech space stations. Hydroponics is highly productive and suitable for automation. However, the future growth of controlled environment agriculture and hydroponics depends greatly on the development of systems of production that are cost-competitive with those of open field agriculture. Improvements in associated technologies such as artificial lighting and agricultural plastics, and new cultivars with better pest and disease resistance will increase crop yields and reduce unit costs of production. Hydroponics is a technical reality. Such production systems are producing horticultural crops where field-grown fresh vegetables and ornamentals are unavailable for much of the year. The development and use of controlled environment agriculture and hydroponics have enhanced the economic well being of many communities throughout the world. India is a country that can most benefit from this technology. Through use of recycled materials which other wise adversely impact the environment one can be a food basket of the world.
Contact details for further information	Lt Cdr CV Prakash (Veteran), IN. Founder-The Pet Bharo Project Mobile no.: 91-9743219388 email: ceo@petbharoproject.co.in www.petbharoproject.co.in

Ignition Products	
Name of the Innovation	Battery Operated Tea Harvester
Name of the Innovator	Ignition Products
About the Innovator	Ignition products are supported by a team of enthusiastic engineers & experienced workforce who are experts in designing equipment that are reliable and durable.
Brief about the challenge the innovation/ technology is addressing	The traditional method of plucking tea leaves by hand is very much out-dated. It not only is inefficient but also results in the hiring of extra labourers.
How does this innovation address the mentioned challenges?	How does this innovation address the mentioned challenges? Light, motor driven, high-performance harvester capable of harvesting 120 to 150 kgs in a day. This not only helps in saving money but also the time.
How is this innovation a better alternative over the current scenario?	Use of labourers who rely upon plucking leaves manually ends up consuming a lot of time & money.
Who are the beneficiaries of this innovation?	Tea Farmers
What is impact generation capability of your Innovation?	The use of battery operated Tea Harvester helps not only in attaining higher efficiency but it also helps in reducing cost significantly. The workers could harvest more crops in short span of time.
Contact Details for Further Information	Ph 91-9444021584 No. 2/394, Pushpa Nagar, Off Mount Poonamalle Road Iyappanthangal, Iyappanthangal Pushpa Nagar, Chennai - 600056, Tamil Nadu, India

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Impact type small millet huller	
Name of the Innovation	Impact type small millet huller
Name of the Innovator	DHAN Foundation, Madurai & Post Harvest Technology Centre, Tamil Nadu Agricultural University (TNAU), Coimbatore
About the Innovator	✓ DHAN Foundation is a development organisation working for poverty reduction and grassroots democracy by organizing poor into community organizations and offering innovative context specific technical, financial and managerial solutions to their development issues ✓ Post Harvest Technology Centre ofTNAU has been developing and disseminating technologies in the spheres of farm mechanization and value addition of crop produce
Brief about the challenges the innovation / technology is addressing	✓ Drudgery of women involved in processing small millets by manual method ✓ Decreasing consumption of small millets in the production regions due to lack of decentralized processing infrastructure ✓ Decreasing cultivation of small millets
How does the innovation / technology address the mentioned challenges?	✓ Reduces drudgery of women as mechanization replaces manual winnowing, sorting & hulling of Grains ✓ The technology makes possible entry of small processors in the value chain in the form of village level and regional level processing units ✓ Presence of regional level processing will increase regional level consumption of small millets ✓ Regional level demand will result in increase in production
How this innovation is better alternative over current scenario?	✓ Due to drudgery in manual processing, the consumption of small millets has declined drastically in the production regions; by reducing the drudgery the innovation offers an alternative ✓ The prevailing abrasive type hullers results in highly polished small millet rice, while on the other hand the impact type huller retains bran and thereby make available additional fibre and micronutrients to the consumers ✓ The appropriate scale of the technology makes it suitable and affordable to small scale operators

Who are the beneficiaries of this innovation?	✓ Women in the production regions ✓ Village level entrepreneurs ✓ Small scale processors ✓ Medium scale processors ✓ Food industries ✓ Govt. Schemes focusing on improving nutrition ✓ Consumers in general-fights malnutrition and offers balanced diets as millets are rich source of minerals and fibres. ✓ Farmers in general-savings in inputs, healthy farms & living soils, bio-diverse farms
What is impact generation capability of your Innovation?	✓ Improvement in efficiency of hulling of small millets ✓ Improvement in nutrient content of small millet rice processed with impact huller when compared to conventional methods of processing ✓ Number of community level processing units and families served by them ✓ Entry of new processors and the number of customers reached by them or volume of processed materials
Contact details for further information	M. Karthikeyan, Program Leader, DHAN Foundation, 4/230-11, Sixth Street, Rajaji Nagar, Krishnagiri, Tamil Nadu, India- 635 001 Phone: 04343 226568 karthikeyanrfd@gmail.com www.dhan.org/smallmillets2/index.php Dr. Varadharaju, Professor and Head, Post Harvest Technology Centre, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India- 641003 Phone: 0422 6611268, 6611340 phtc@tnau.ac.in

KisanHub	
Name of the Innovation	We are a software platform connecting enterprises with growers to deliver actionable insights.
Name of the Innovator	KisanHub Technologies Pvt.Ltd
About the Innovator	KisanHub is a technology and data science company focused on agriculture, based out of Cambridge, UK with presence in Pune & Noida, India. KisanHub was built out of a desire to give farmers everywhere a simple, meaningful yet sophisticated decision-support at par with any, available in other sectors. We empower growers to take data-driven smart decisions in the shortest time span.
Brief about the challenge the innovation/ technology is addressing	Agriculture is a hard and complex business. To take the right decisions one has to consider multiple data inputs: weather, soil, water, fertilisers, agro-chemicals, pest and disease occurrence, market price,demand and supply. Often, growers and enterprises don't have access to accurate data at the right time which leads to wastage of resources and huge losses. Agricultural research institutes and extension staff also face difficulty in speedy dissemination of critical data that can help farmers.
How does this innovation address the mentioned challenges?	KisanHub is built as a horizontal, scalable cloud platform with end to end delivery of decisions using web and mobile application. We connect agri-enterprises with growers and help them to manage crops, understand risk and uncertainty in supply chain. We provide seamless integration of decision support system for pest and disease monitoring and yield prediction using meteorological data, aerial images, and crop dashboards. This helps growers to take smart and fast decisions to manage their crops. We help researchers to define, monitor and manage field trials. We empower them to disseminate trial's results and reports, thus bringing research benefits to commercial fields.

How is this innovation a better alternative over the current scenario?	KisanHub's core technology brings together data from both public and private organizations, allowing growers to take informed decisions. The platform can assimilate and aggregate farms, fields, crop, soil and weather data from on-field sensors, farm equipments and satellite imageries along with regional statistics for commodity market data. External data sources are seamlessly integrated with grower's own data source helping them to take better agronomic and/or business decisions. KisanHub's ability to bring together researchers, farmers and enterprises puts it in a unique and unrivalled position.
Who are the beneficiaries of this innovation?	KisanHub caters to varied users from growers/farmers, agronomists, field staff, researchers, trials managers and agri enterprise managers. It provides a repertoire of tools for various functional domains.
What is impact generation capability of your Innovation?	KisanHub is both traditional farm management software and a forward-thinking decision support system. It has the potential of reducing cost of inputs, increasing productivity, and ensuring traceability of product from farm to fork.
Contact Details for Further Information	Nithya Mary Senior Engineer Email: nithya@kisanhub.com Website: www.kisanhub.com

Laser and Land Leveller	
Name of the Innovation	Laser land leveller
Name of the Innovator	Landforce
About the Innovator	Dasmesh Group of companies was established in 1965, at Amargarh Punjab, India by Late S Hardial Singh Ji. In the group there are four companies; Dasmesh Mechanical Works, Amargarh: is engaged in manufacturing of agriculture implements that includes Harvesting (Wheat Thresher, Paddy Thresher, Multi Crop Thresher) and Residue management (Straw Reaper, Happy Seeder, Trash shredder).Dasmesh Mechanical Works, Langrian: manufactures agriculture implements includes Tillage (Rotary Tiller, Cultivator, Disc Harrow, Disc plough, Disc Ridger) and Seeding (Seed Drills, Multi Crop Planter, Roto-Seeder, Zero Till Drill) Panesar Agriculture Works: is manufacturing precise Agriculture Implements spare parts.
Brief about the challenge the innovation/ technology is addressing	Traditionally, farmers of India use plankers drawn by draft animals or by small tractors. However, farmers in Punjab, Haryana and Uttar Pradesh use iron scrappers or leveling boards connected to a tractor. Despite all these labor-intensive efforts, desired accuracy is not achieved.As per studies, a significant (20-25%) amount of irrigation water is lost during its application at the farm due to poor farm designing and unevenness of the fields. This problem is more pronounced in the case of rice fields. Fields that are not level, have uneven crop stands, increases weed burden and uneven maturing of crops. All these factors lead to reduced yield & poor grain quality.
How does this innovation address the mentioned challenges?	Laser land leveling is leveling the field within certain degree of desired slope using a guided laser beam throughout the field. In this technique bigger horsepower tractors are utilized that are equipped with laser-guided instrumentation so that the soil can be moved either by cutting or filling to create the desired slope/level.
How is this innovation a better alternative over the current scenario?	1. Save Irrigation water upto 40% by maintaining uniform distribution of water. 2. Reduce weed in agriculture filed. 3. Increase yeild by 30%. 4. Less fertilizer, chemicals and fuel requirements

Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Laser leveling in rice fields reduced irrigation time by 47–69 h/ha/season and improved yield by approximately 7 % compared with traditionally leveled fields. In wheat, irrigation time was reduced by 10–12 h/ha/season and yield increased by 7–9 % in laser leveled fields.
Contact Details for Further Information	Pankaj Demla Director - Business Development DASMESH MECHANICAL WORKS Nabha-Malerkotla Road, Amargarh Sangrur (Punjab) India – 148022 M: +91-9216221149 L: +91-1675 304904 F: +91-1675 304950 Skype id: pankajdemla Alt Email id: landforceworld@gmail.com Website: www.landforce.in

Mobitech	
Name of the Innovation	Mobitech Cell Phone Motor Starter
Name of the Innovator	Mobitech
About the Innovator	Mobitech wireless solution is engaged in irrigation automation and industrial automation.
Brief about the challenge the innovation/ technology is addressing	During Irrigation a lot of the water is wasted as the pumps couldn't be turned off on time. It sometimes also causes excess watering which leads to crop damage & also soil erosion.
How does this innovation address the mentioned challenges?	Could be switched on/off through SMS/Miscall. Saves water, electricity/diesel/petrol, farmers could operate from distance.
How is this innovation a better alternative over the current scenario?	Water wastage in some case also crop damage, increased expense.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Cell Phone Motor Starter is extremely helpful for farmers who have big farms to operate. It is also a feasible option for small farmers too. Water is a scarce resource should be preserved moreover the use of excessive water leads to soil erosion and also additional expenses in operating pumps.
Contact Details for Further Information	Email: dhanasekran@mobilewireless.in Mobitech Wireless Solution Behind RG motors) Tamilnadu, Erode-Perundurai Rd, Vengamedu, Perundurai Tamil Nadu 638052

Plantix	
Name of the Innovation	Plantix
Name of the Innovator	PEAT
About the Innovator	The German company PEAT unites Agroecology, Big Data and Artificial Intelligence for the automated recognition of plant diseases. PEAT believes that Smart Farming solutions are able to implement more precise, effective and resource-saving practices in global agriculture. They connect Big Data and Artificial Intelligence in an unprecedented manner to prevent crop shortfalls and excessive application of pesticides especially for smallholder farmers. PEAT developed the plant diagnostic App Plantix to bring the benefits of smart agriculture to billions of smallholder farmers. With cutting edge technologies they support you to secure your harvest.
Brief about the challenge the innovation/ technology is addressing	Plant diseases and pests cause the loss of 30 to 40% of the annual harvest - famines and suffering farmers are the result.
How does this innovation address the mentioned challenges?	Every plant disease, pest or nutrient deficiency leaves a specific pattern. Currently Plantix can detect over 180 different diseases by these patterns. The App provides users worldwide with customized information on diseases and possible treatments, including symptoms, triggers, preventive measures, biological and chemical treatment plans - and all this just by taking a simple smartphone picture. In the case of special requests, the Community Feature connects smallholder farmers regionally or globally with agricultural experts. Further, Plantix offers a Weather Feature showing all important information like temperature, rainfall and forecasts and a Disease Library Feature which is also available offline. The App is available in 8 languages and its overall language and design provides easy and actionable real-time advise. In addition, Plantix is an innovative solution for the direct communication with farmers. Through Push-Notifications it offers customized information such as early-warning of disease spreading which can be delivered directly where and when it is needed.
How is this innovation a better alternative over the current scenario?	1. Provides a real-time identification of plant damages via photo and saves farmers money through a targeted recommendation of fertilizers and pesticides, biological control measures and preventive measures 2. Has a steadily growing community forum where farmers worldwide can connect, discuss their problems and get solutions. 3. Includes other useful features like a disease library that is offline available and a local weather feature.

Who are the beneficiaries of this innovation?	(Smallholder) Farmers, extension workers, gardeners, plant lovers
What is impact generation capability of your Innovation?	Coming from Germany, Plantix was published in 2017 for Indian farmers where it is so far available in English, Hindi and Telugu. Plantix has already more than 270,000 active users (190,000 in India) with a daily active user rate of 17,000 to 20,000 people (13,000 to 15,000 in India). Further the App has over 250,000 community members (180,000 Indian ones), who published over 70,000 contributions. The goal is to extend the user-base particularly to the rural Indian population. A group that is often depending on small-scale agriculture and that belongs unfortunately to the most vulnerable groups of our society. Fortunately, smartphones are advancing fast, this applies particular to rural areas, where smartphones are increasingly functioning as mobile service centers. Thanks to its users, PEAT is able to monitor the spread of plant diseases and can give instant alerts to other users – the App and its collaboration with its users helps ensure a safe food production for us and the generations to come.
Contact Details for Further Information	PEAT GmbH Rosenthaler Straße 13 // 10119 Berlin EU // Germany contact@peat.ai

Plastic Mulching	
Name of the Innovation	Plastic Mulching
Name of the Innovator	Ira Agrotech and Research pvt.ltd
About the Innovator	Ira Agrotech & Research Pvt. Ltd." is established in the year 2010, are an eminent firm engaged in manufacturing, exporting and supplying a range of Shade Nets, Agro Nets, Fencing Nets, Mulch Films and other Agro Products. The products they offer to customers are acclaimed for their seamless finishing, durability, resistance and ability to withstand adverse weather conditions. Furthermore, they also provide Services for Construction of Shade Net Houses and Poly-Houses to the valuable patrons.
Brief about the challenge the innovation/ technology is addressing	1. Water losses 2. Germination of weeds and Pathogen.
How does this innovation address the mentioned challenges?	Mulching is covering the soil around the plant with plastics film which prevents the loss of moisture and acts as a barrier between the soil and atmosphere. It helps in moderating the soil temperature & micro-climate in the plant root zone, which helps to increase yield and early maturity of crops.
How is this innovation a better alternative over the current scenario?	1. Provides favorable soil moisture for development of roots and plants. 2. Prevents weed growth. 3. Provides ideal environment for earthworms and other soil micro-organisms beneficial for crops. 4. Improves soil micro climate. 5. Conserves water.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	Plastic mulching technology saves farmers money which they used to spend on controlling weed and conserves water.
Contact Details for Further Information	Ira Agrotech & Research Pvt. Ltd. Prashant Agrawal(Director) B-1/ 2, Industrial Area MIDC, Butibori, Industrial Area Butibori, Nagpur - 441122, Maharashtra, India

Radongrow	
Name of the Innovation	Static Solution Culture, (Deep water culture)
Name of the Innovator	Radongrow
About the Innovator	RADONGROW is biggest online hydroponic store in India. Radongrow has different products like Hydroponics Nutrients, Hydroponics grow kit, Net pot, Hydroton (LECA) , Vermiculite, perlite, etc.. They provide complete end to end solutions for Soilless Roof Top Gardening, Vertical Gardening, Urban Garden, Kitchen Garden, Indoor Gardening, Hydroponics, Nutrients, Horticulture, Commercial farming.
Brief about the challenge the innovation/ technology is addressing	Static Solution Culture intends to grow plants in containers etc. in a solution. Thus it is helpful in arid, semi-arid or even in any other places and helps in getting good yields
How does this innovation address the mentioned challenges?	The plants take nutrients from the solution and grow. It not only helps the plant grow but the output is better as the controlled environment helps it stay away from pests & insects.
How is this innovation a better alternative over the current scenario?	Static Solution Culture helps the plants to grow taking essential nutrients from the solution. It delivers nutrients directly to the plant roots. It is a system which conserves water as plants are grown in a solution which doesn't require as much water as the conventional system. 1. Save 80% water compare to traditional farming 2. No day to day watering require. 3. As long as you can apply water once in week. 4. Easy to handle, 5. Low power consumption.4-5 Unit per month for 20 Plants.
Who are the beneficiaries of this innovation?	Farmers, Kitchen Gardener, Terrace gardener, Roof top Gardener, School
What is impact generation capability of your Innovation?	It is an efficient way to grow plants. It not only requires less water but also the food produced are of a better quality as they are grown in a controlled environment.
Contact Details for Further Information	Chanakya Marge, Cozway Road Tadvadi, Surat, Gujarat 395009 Email: info@radongrow.com www.radongrow.com

Rural Agriventures	
Name of the Innovation	Waste-reducing transport trucks
Name of the Innovator	Rural Agriventures Dr.Manoj Vaish
About the Innovator	Dr.Manoj Vaish is the MD & CEO of the company. He earlier worked as the CEO of BSE, NSDL, Dun & Bradstreet India respectively.
Brief about the challenge the innovation/ technology is addressing	One of the biggest problems which the farmers/ dealers face during transit of goods is that a lot of what they produce gets wasted during transport also along with it there is a degradation in the quality of the products due to water loss.
How does this innovation address the mentioned challenges?	Rural AgriVentures use refrigerated trucks for transportation of fruits, vegetables etc. It not only helps the fruits retain its moisture but also helps it stay fresh for the longer duration of time. The efficient transportation thus results in products being handled in a better way.
How is this innovation a better alternative over the current scenario?	India suffers from the problem of poor quality of roads and traffic jams. The additional time due to delay and sometimes the heat etc. causes degradation in quality. The refrigerated trucks helps fruits, vegetables etc. in transit remain in a better condition for the longer duration of time.
Who are the beneficiaries of this innovation?	Fruit Farmers, Vegetable Farmers etc.
What is impact generation capability of your Innovation?	In a country like India where most of the goods don't reach on time due to the poor condition of roads and jams, a lot of the perishable goods gets wasted. Thus refrigerated trucks could is a good means to lower such losses. It would not only help the farmers get more profits on their goods but also the consumers who will get good quality of food.
Contact Details for Further Information	Email: info@mrkool.in Rural Agri Ventures India Limited, First Floor, Plot No. 49, Phase 4, Udyog Vihar, Gurgaon, Haryana,

Sahbhagi Dhan	
Name of the Innovation	Drought resistant variety - Shahbhagi dhan
Name of the Innovator	IRRI
About the Innovator	Established in 1960, IRRI is among the largest non-profit agricultural research centers in Asia, with headquarters in the Philippines and offices in 14 other nations. They are supported by donors and partners around the globe. Their mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. rice research, capacity building, international development, plant breeding, biotechnology, agriculture, and genetics.
Brief about the challenge the innovation/ technology is addressing	Rice cultivation requires a large amount of water. Approximately 2500 lt. of water is required in producing 1 kg of rice. By 2025 20mn rice fields may suffer from water scarcity. Also in countries like India where Agriculture is mostly dependent on rain, drought nowadays is becoming a common phenomena in different states due to scanty and uneven distribution of rainfall.
How does this innovation address the mentioned challenges?	Sahbhagi Dhan- a drought-tolerant variety (IR74371-70-1-1) has triggered all kinds of changes. Sahbhagi dhan can withstand two weeks of dry spell at the vegetative stage and will not have any effect on yield. Because it matures earlier, Sahbhagi Dhan can be harvested several weeks earlier than other varieties. This leads to earlier access to food and it also means that farmers are able to plant the next rabi wheat crop almost one month earlier than normal, which gives an extra yield boost to wheat.
How is this innovation a better alternative over the current scenario?	1. High yields 2. Lower water requirements 3. Cost savings from fewer irrigations 4. More residual soil moisture for subsequent crops 5. Potential environmental externalities: reduced groundwater extraction 6. Short duration 7. Early sowing of subsequent wheat crop 8. Diversification of income sources: increased resilience.
Who are the beneficiaries of this innovation?	Farmers.

What is impact generation capability of your Innovation?	The important characteristic of Sahbhagi Dhan is its visible impact under drought conditions. Along with high yield under drought, the important advantage as reported by farmers is the short maturity duration of this variety. This enables the farmers to advance the subsequent crop and creates the opportunity for accommodating an additional crop under favourable rainfed ecology. It also reduces the input cost by requiring less number of irrigations. Sahbhagi Dhan along with other drought tolerant varieties can serve as the most promising and deliverable technology for alleviating poverty in the communities dependent on rainfed rice.
Contact Details for Further Information	Dr. Nafees Meah IRRI Representative for South Asia International Rice Research Institute India Office, First Floor, CG-Block, NASC Complex, Dev Prakash Shastri Marg, Pusa Campus, Near Todapur, New Delhi - 110 012, INDIA Tel: +91-011-6676 3000 Fax:+91-011-2584 1801

Seed Drummer	
Name of the Innovation	Seed drummer
Name of the Innovator	IRRI
About the Innovator	Established in 1960, IRRI is among the largest non-profit agricultural research centers in Asia, with headquarters in the Philippines and offices in 14 other nations. They are supported by donors and partners around the globe. Their mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. rice research, capacity building, international development, plant breeding, biotechnology, agriculture, and genetics.
Brief about the challenge the innovation/ technology is addressing	Transplanting method involves-seedbed preparation, nursery growing, care of seedlings in nursery, uprooting of seedlings, hauling and transporting operations. The preparation of seedbed and sowing are done 30 days before planting. The seedbed area required is about 10 percent of the main area of the field. The transplanting of paddy at right time is also important parameter. A delay in transplanting by one month reduces the yield of rice by 25 percent and delay by two months results in 70 percent reduction in yield. The rice farmers practicing transplanting are facing problems of high cost of cultivation, less plant population, less tillers per plant, low yields and high weed population.
How does this innovation address the mentioned challenges?	Drum seeder is used to sow pre-germinated seed in a puddled soil. The advantage of drum seeder is that row to row spacing can be easily maintained and dropping of seeds in hills is possible. Drum seeder is an effective mean for timely sowing of rice. Also direct seeded rice may mature 7 to 10 days earlier than transplanted rice. drum seeder successfully reduced the drudgery of labours. cost of cultivation and increased the net profit per ha by avoiding nursery raising and also due to reduction in cost of transplanting.
How is this innovation a better alternative over the current scenario?	The advantage of drum seeder is that row-row spacing can be easily maintained and dropping of seeds in hills is possible. Lack of labour during peak periods of transplanting may cause delay in the operations. In such situations, the drum seeder is an effective mean for timely sowing of rice. Also directly seeded rice may mature 7 to 10 days earlier than transplanted rice. This saving of time is important where multiple cropping patterns are followed.

Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	This method reduced the cost of cultivation by about Rs.9000-10000/ ha as compared to traditional method of rice cultivation and hence direct seeding method using drum-seeder is profitable for farmers even if they the same normal/ regular yields they are getting.
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Shakti	
Name of the Innovation	Solar Pumping System for Irrigation
Name of the Innovator	Shakti Pumps (I) Ltd. www.shaktipumps.com Dinesh Patidar
About the Innovator	Commerce graduate took over the reins of the business from his father.
Brief about the challenge the innovation/ technology is addressing	Uninterrupted power supply still remains a challenge in India. Power In remote places where no electricity, the farmers doing irrigation using diesel/kerosene pumps, suffer from the problem of procurement of diesel/kerosene and higher costs. They sometimes need to travel more than 20 km and have to stand in long queues to procure diesel and kerosene. Also, the use of kerosene and diesel has an adverse affect on environment. The electric operated pumps (electric pumps also have indirect environmental impacts because electricity is produced using coal or oil) are not as beneficial as solar pumps as the rural areas in India don't get continuous electric supply. In some places, the electricity is available only for 6-12 hours in a day or highly erratic. All of these result into a poor agricultural output with reduced income or loss. Here comes the role of solar pumps which can be installed even at the remotest areas. Since renewable energy and its applications are given utmost importance considering climate change mandates, it is high time to think of revolutionizing the agriculture irrigation using solar pumps. Scaling up of solar water pumping on a larger scale sure can bring transformation change in the agricultural landscape of India.
How does this innovation address the mentioned challenges?	The solar pumps are completely environment-friendly and are also cheaper in the long run as compared to fuel cost and electricity bills by diesel and normal electric pumps. Though its cost of procurement is relatively high, it has great benefits as it doesn't need any external electric supply or kerosene/diesel/ petrol. In the longer run it is not only cheap but also has an added advantage of being a standalone system without fuel or electricity to operate.
How is this innovation a better alternative over the current scenario?	In the current scenario, farmers in many parts of India rely heavily on rain. Though some farmers have started using pumps for irrigation yet the problem with these pumps is that, in the case of electric pumps they are useless when there is no electricity and the pumps which run on fuels needs the constant supply of petrol or kerosene. Also, the increasing price of fuels is one of the reasons why Solar Pumps are a better alternative. It also contributes immensely to save carbon footprints to mitigate the impact of global warming and environmental pollution.

Who are the beneficiaries of this innovation?	Farmers will be big beneficiaries of solar pumps. Solar Pumps developed by Shakti Pumps (I) Ltd has proved to be most feasible solution for farmers across India and abroad with an aggregate installations over 35000 such pumps/systems across India.
What is impact generation capability of your Innovation?	Solar Pumps are not only cheaper in the longer run but also promises continuous supply of water in a country like India where there is enough sunlight throughout the year. Thus, it not only saves money but also helps in generation of excess revenues. Water availability in remote areas will bring more areas under cultivation that will increase income, additional job creation leading to overall development and quality of life in rural india with increased agricultural production.
Contact Details for Further Information	Email Id: dinesh@shaktipumps.com Shakti Pumps (I) Ltd. (Head Office) Plot No. 401, Sector - 3, Pithampur - 454774, Dhar (M.P.) India Phone (Off): 07292-410536 Mob: 7024151422/9325317577/9300081819

Skymet	
Name of the Innovation	Weather Monitoring
Name of the Innovator	Skymet
About the Innovator	Founder & CEO of Skymet Technologies; got his degree from Boston University, USA
Brief about the challenge the innovation/ technology is addressing	Famine, floods, hailstorm, rain is one of the major reason of crop loss. Skymet intends to intimate the farmers about the possible weather situation (both long term & short term) to avert such losses.
How does this innovation address the mentioned challenges?	Pre-warning to intimate farmers about any such climate change. (Be it long term or short term)
How is this innovation a better alternative over the current scenario?	Losses due to flood, hailstorm etc.
Who are the beneficiaries of this innovation?	Farmers, Newspapers, electronic media
What is impact generation capability of your Innovation?	Skymet intends to reduce the information asymmetry related to weather in agriculture. Most farmers in rural areas don't have an access to a system that intimates them about the weather of the particular area. Skymet not only provides the temperature but also forecast of rainfall, temperature. Thus, it helps farmers in taking much better decisions.
Contact Details for Further Information	Email: chetam.saini@skymet.co.in Skymet Weather Services, Plot No 10-11, GYS Height, Sector 125, Noida- 201303, India

Solar Bubble Dryer	
Name of the Innovation	Solar Bubble Dryer
Name of the Innovator	Grainpro Inc.
About the Innovator	GrainPro, Inc., a green, "not-only-for-profit" company, is driving a global revolution in safe storage and drying of grains and seeds. Using the principles of Ultra Hermetic technology and modified atmospheres, GrainPro has grown to become a world-leader and a key proponent of the Second Green Revolution – the proper storage, handling and distribution of food commodities. Founded in 1992 in Concord, Massachusetts, USA, GrainPro has a wide distribution network starting from its head office in Concord to its offices in Asia (Philippines and India), Africa (Kenya, Ethiopia and Ivory Coast) and Latin America (Mexico, Costa Rica, Guatemala and Brazil). GrainPro's line of environmentally-friendly, easy-to-use and affordable storage and drying solutions are designed to reduce post-harvest losses of dry agricultural commodities. GrainPro's solutions do not require the use of any toxic chemicals; thereby, increasing the global supply, reducing hunger, eliminating health risks, and improving smallholder farmers' incomes.
Brief about the challenge the innovation/ technology is addressing	Drying is the critical first step in preserving the quality of agricultural commodities. Immediate drying of grains and seeds to the correct moisture content (MC) is an effective post-harvest practice that minimizes fungal growth and infestation. Sun-drying is the most common method used in the tropical and sub-tropical regions of the world. The process is simple and relies on free solar energy. However, it is very dependent on weather conditions. Climate change makes weather very unpredictable and unexpected rainfall can result in delayed drying, re-wetted grains and quality deterioration. This leads to damages that reduce the market value of the commodity.

How does this innovation address the mentioned challenges?	To address these problems, GrainPro, in close collaboration with the International Rice Research Institute (IRRI) and the University of Hohenheim (UOH) Germany, introduces the Solar Bubble Dryer® (SBD®): a modern drying innovation that minimizes the effects of unpredictable weather to commodities during its drying stage. The SBD is designed to safely dry agricultural commodities against unexpected rain and other common contaminants. Its transparent polyethylene (LDPE) cover is UV and water-resistant to safeguard the commodities as it dries. It acts like a bubble that traps solar radiation to heat the commodities. Moisture is then vaporized and pushed out by ventilators (which also maintain the shape of the bubble). The drying floor is made of a proprietary watertight material to prevent water permeation from below. The top cover and the drying floor are joined together by heavy-duty zippers.
How this innnovation is better alternative over current scenario?	The SBD is more flexible, requires lower investment, and does not need fuel for heatng the air or for running the blower.
Who are the beneficiaries of this innovation?	Farmers
What is impact generation capability of your Innovation?	In the US, fuel costs account for over 80 precent of energy costs on all continuous grain drying systems. Local rye, heirloom winter wheat and hulless oats were dried in the Solar Bubble Dryer with impressive results according to Mark Fulford, Research and Product Technician for Adaptive Agriculture. Fulford commented in a report that the SBD 50 is remarkably e ective and easy to assemble, load and operate. He also noted that the Solar Bubble Dryer is an outstanding tool for smallholder grain farmers that will provide them a less expensive alternative to dryers that run on natural gases by as much as 65 percent on the lowest priced mechanical dryers.
Contact Details for Further Information	Avinash Wagh mobile: 9970157263, email: avinash@grainpro.com

Solar PV Powered Cold Storage	
Name of the Innovation	Solar PV Powered cold Storage
Name of the Innovator	ICAR-Central institute of Agriculture Engineering, Bhopal
About the Innovator	The ICAR-Central Institute of Agricultural Engineering is a flagship institute under Indian Council of Agricultural Research to provide engineering solutions for overall prosperity and sustainability of farming systems. The institute came into existence on February 15, 1976 with a general mandate to conduct research on agricultural mechanization, post-harvest food processing, and energy management in agriculture and build capacity of appropriate stakeholders leading to effective management of farming operations, increased productivity, conservation of resources, reduction in drudgery, prevention of losses, generation of employment and improvement in the lives of farming and allied community. The mandate is fulfilled by providing national and international leadership by means of independent and coordinated research through network of research centers established all over the country that results in developing commodity and location specific technologies needed by farmers and manufacturers. Transfer of agricultural engineering technology and education are also important activities of the institute.
Brief about the challenge the innovation/ technology is addressing	In India, 30% of the perishable produce are wasted due to the lack of cold storage and irregular power supply. The current facilities are accessible only to the big farmers/ middlemen who hoard when supplies peak, leading to huge price fluctuations. The bottom of the pyramid (BOP) i.e. the small farmer loses out, as they have to sell their produce at very low prices right after harvest.
How does this innovation address the mentioned challenges?	The product primarily designed for the rural segment serves their needs ideally, as it does not depend on grid electricity and after a 2-year breakeven, leads to over 40% increase in their profits.
How is this innovation a better alternative over the current scenario?	The electrical energy required for operating cold storage system (6–8 tonne capacity) is 35–60 kWh/day in different seasons. In solar powered system, the required energy for cold storage will be met from solar PV power plant with battery bank and it can be grid independent. Therefore, cost towards grid electrical energy will be saved for operating the system. The solar powered cold storage unit can also be installed in rural and remote areas where there is either no grid supply or erratic power supply.

Who are the beneficiaries of this innovation?	Small Holders' Farmers.
What is impact generation capability of your Innovation?	This technology helps horticultural farmers a lot. During a study conducted by ICAR-CIAE, it was found that The total soluble solid (TSS) of Dashari mango increased from initial values of 8.8 to 13.0 during the cold storage period. Loss in weight of Dashari mangoes was 3.1 per cent in cold storage as compared to 14.5 per cent in case of storage at ambient condition. Farmers will able to sell their produces at higher prices as demand is higher in market. Also as renewable energy source it will reduce the green house gas emission (40 g CO2 eq. /kWh as compared to 1000 g CO2 eq. /kWh electricity based on thermal generation).
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Sowing APP.	
Name of the Innovation	Sowing Application
Name of the Innovator	Microsoft-ICRISAT
About the Innovator	Founded in 1975, Microsoft (Nasdaq "MSFT") is the worldwide leader in software, services, devices and solutions that help people and businesses realize their full potential. Microsoft set up its India operations in 1990. Today, Microsoft entities in India have over 8,000 employees, engaged in sales and marketing, research and development and customer services and support, across nine Indian cities – Ahmedabad, Bangalore, Chennai, Delhi NCR, Hyderabad, Kochi, Kolkata, Mumbai, and Pune. The International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT) is a non-profit organization that conducts agricultural research for development in Asia and sub-Saharan Africa with a wide array of partners throughout the world. Covering 6.5 million square kilometers of land in 55 countries, the semi-arid tropics have over 2 billion people, and 644 million of these are the poorest of the poor. ICRISAT innovations help the dryland poor move from poverty to prosperity by harnessing markets while managing risks – a strategy called Inclusive Market- Oriented development (IMOD).
Brief about the challenge the innovation/ technology is addressing	Agriculture and climate change are inextricably linked—crop yield, biodiversity, and water use, as well as soil health are directly affected by a changing climate. Continued changes in the frequency and intensity of precipitation, heat waves, and other extreme events are likely, all which will impact agricultural production.
How does this innovation address the mentioned challenges?	ICRISAT adopted Microsoft Cortana Intelligence Suite including Machine Learning (the ability of computers to learn without being specifically programmed) and Power B.I. or Business Intelligence, to empower farmers and government officials with technology, and promote digital farming practices in the state. The Personalized Village Advisory Dashboard has been specially developed to enable officials of Andhra PradeshPrimary Sector Mission (APPSM) to better manage programs of scale. Using powerful BI tools, this dashboard provides important insights around soil health, fertilizer recommendations, and seven-day weather forecasts derived from the world's best available weather observations systems and global forecast models. This data is then downscaled for the highest possible accuracy at the village level, to transform how small holder farmers tackle climate change to drive effective decision-making for their crops.

How is this innovation a better alternative over the current scenario?	1. The app has crop-specific information . 2. Gives accurate weather information. 3. Suggest the optimal sowing period to the farmers which was calculated based on historic climate data spanning over 30 years.
Who are the beneficiaries of this innovation?	Farmers & Environment
What is impact generation capability of your Innovation?	ICRISAT along with government of Andhra Pradesh conducted trial test . The test results of a new sowing app for groundnut farmers reveal that 175 smallholder farmers who followed the advice provided for sowing and managing their crop experienced a 30% yield increase.
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Swarna Sub1	
Name of the Innovation	Flood tolerant variety- Swarna Sub1
Name of the Innovator	IRRI
About the Innovator	Established in 1960, IRRI is among the largest non-profit agricultural research centers in Asia, with headquarters in the Philippines and offices in 14 other nations. They are supported by donors and partners around the globe. Their mission is to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable. rice research, capacity building, international development, plant breeding, biotechnology, agriculture, and genetics.
Brief about the challenge the innovation/ technology is addressing	Rice cultivation requires a large amount of water, however it cannot withstand inundation beyond few days. Floods due to climatic changes have become very common causing huge damage to paddy crop due to submergence. There is a need to prevent these losses and ensure the food security of poor people living in flood prone areas.
How does this innovation address the mentioned challenges?	International Rice Research Institute (IRRI) successfully incorporated the Sub1 (Submergence tolerance 1) QTL from an Indian landrace to Swarna, a mega rice variety in India. The new version of Swarna, called Swarna-Sub1, can withstand complete submergence for two weeks and recover as water recedes. After few years of evaluation and its excellent performance in farmers' fields, Swarna-Sub1 was released in India for commercial cultivation. This variety has potential to have 1-3 tons/ha increase in yield under flooding conditions and yields same as Swarna in the absence of floods.
How is this innovation a better alternative over the current scenario?	1. High yields 2. Minimize losses 3. Risk mitigation 4. More rice cultivation 5. Crop Insurance
Who are the beneficiaries of this innovation?	Poor farmers

What is impact generation capability of your Innovation?	High quality impact evaluation suggested that the adoption of Swarna-Sub1 significantly increases paddy yields over traditional varieties. The social benefits from the introduction of Swarna Sub1 are evident from the fact that majority of the farmers in typically flood prone areas hail from socio-economically disadvantaged class and they are likely to get substantially more benefits from the adoption of Swarna-Sub1. An improvement in their economic wellbeing is a vital component of the inclusive growth.
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