

‘Arise, Awake & Stop not till the Goal is Reached !
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(Agricultural Research & Innovation for Sustainable Enterprises)

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Director's Message

I am very glad to present the book 'Arise...Get Set ...Go!' that depicts the inspiring journeys of some of the incubates of ZTM & BPD Unit, ICAR-IARI. ZTM & BPD Unit has been working with agri-business start-ups by nurturing them on technical & business grounds by providing them a congenial and cohesive support that is necessary for every enterprise to blossom.

This book narrates the brief journey of these entrepreneurs by enlisting their outreach and social impact where farmers become business partners. This will be one essential step for the farmers to transform agriculture into a business activity like any other businesses.

I am pretty sure that this book will bring a new hope and encourage them to convert their ideas into viable businesses.

A handwritten signature in blue ink, appearing to be 'A K Singh'.

A K Singh,
Director,
ICAR-IARI

Joint Director (Research)'s Message



Agriculture as business is not a novel concept in India although convergence of the trade with the economically diverse activities of farm sector is an unexplored area, as yet in India.

Ironically the country with more than half of its population living on agriculture, has this syndrome of 'poor' and 'bechara' going as prefix to farmers. Foray's into making it an industry in real sense is now more than before, essential for India to become New India, our hon'ble Prime Minister's Dream.

'Arise...Get Set ...Go!' is an attempt to bring the journeys of such start-ups who dreamt and aspired to venture into agriculture so that many more can get inspiration from their journeys.

I congratulate the most enterprising duo of Dr. Neeru Bhooshan and Dr. Akriti Sharma for conceiving the idea and making it an achievable dream to launch farmers of India in commercial world.



Joint Director (Research),
ICAR-IARI

Acknowledgement

This book is a sincere effort to encourage young India by putting a thought into their mind that 'Agriculture can be a successful venturing area'. At first, we acknowledge the courageous young Agri-preneurs of ZTM & BPD Unit for inspiring and helping us to understand their success journeys.

We owe our sincere thanks to Dr A.K. Singh, DDG (Agricultural Extension) & Director, ICAR-IARI for the encouragement and support in giving this book a perfect shape. We owe our deep sense of gratitude to Dr. K.V. Prabhu, Joint Director (Research), ICAR-IARI.

We would also like to thank Dr. Sudhir Kochhar, Former National Coordinator (NAIP) for believing in us and extending his valuable support throughout writing of this book.

We extend our warm thanks to IP&TM division of ICAR for helping us in every manner to raise these start-ups and enable them to create their position in today's market. We also express our gratitude to Ministry of MSME for supporting these enterprises with their grant-in-aid through us that really helped them out in their respective journeys.

We would also like to thank our astonishingly supportive team at ZTM that has put its untiring efforts to make this book a reality. We also thank ICAR-IARI's publishing unit for transforming an unorganized word document into the shape of this book.

In the end, we thank almighty for showering his wisdom, courage and perseverance on us without which nothing is possible.
Many Thanks to all of you!!!!

Preface

Innovations in Agriculture: The Changing face



Agriculture in India contributes to 17.4% in the national GDP (2016-17) and provides bread and butter to nearly 48.9% population of the country (2016-17). Our country stands first in the production of milk, banana, jute, mango, many cereals and fruits and not less but second in cardamom, cashew, rice, tomato and other vegetables. But with so many feathers in its cap, its progress has been slow for many decades. The productivity of Indian agriculture is one-third of the global standards due to multiple reasons. The innovations and their convergence with various disciplines with agriculture serves as an answer to the question of slow progress. As investors say, Indian agriculture is a \$350 bn market, which was hitherto largely untouched, is nowadays becoming one of the favourite destinations for investment. Agricultural Entrepreneurship is no more synonymous with farmers optimizing by the traditional ways to earn more, rather it is increasingly becoming a trend by introducing technology via convergence and innovation. There are a number of engineers, MBAs, technocrats who are coming down to take a pie of this market vis-à-vis to make the life of farmers and consumers much simpler. There is wide scope of enterprising in the

fields of agricultural inputs, Agri- biotechnology, precision farming, food tech, ICT & IOT in Agriculture, farm mechanization, dairy and agri-supply chain. These youngsters are very energetic and dynamic but are lacking in the understanding of the agricultural space and its business connects. Thereby comes the role of Agri-business Incubators. Handling a portfolio of 47 incubates, ZTM & BPD Unit is one of the leading agribusiness incubators in the country. It has start-ups in almost all areas mentioned above and they are being nurtured with the best-in-class mentoring and amenities. In this book, the readers will come to know about the commendable journey of these start-ups which will serve as motivation to many youngsters who are thinking of venturing into agriculture. The book also enlists the outreach impact created by these start-ups in the society. These stories depict the areas in which innovations happened and how it changed the scenario. The authors are glad to put this book in the hands of the readers and wish that it will serve its purpose. Stay Reading! Stay Enterprising!





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Chapter1

Agribusiness Incubation Scenario in India

Chapter 1

Agribusiness Incubation Scenario in India

With the enhanced assurance as well as steps taken by the central government to improve the 'ease of doing business' in the country, entrepreneurs these days are better placed and prepared in terms of converting their ideas into successful new ventures with more chances of success. Further, with the assistance of incubators, incubation programs and initiatives of government/ non-government agencies, their evolution becomes more systematic and productive. This idea of incubation is thus as an indispensable element in the overall development of start-ups or nascent enterprises.

Business incubation is a unique and highly flexible combination of business development processes, infrastructure and manpower designed to nurture new and small businesses by helping them to survive and grow through the difficult and vulnerable early stages of development. Thereby, incubation programs are framed in such a way that they enable the early-stage enterprises to access the resources and all need-based assistance for turning their ideas into viable business ventures. For more than 55 years, these programs have played an important role in growth of country's economy by creating many job opportunities, boosting up innovations and establishing start-ups and its ecosystems in different regions of the world.

The main objective of a business incubation program is to produce successful firms that are financially viable and free standing. The incubators typically provide components like infrastructure/ office space and necessary equipments, mentoring and knowledge sharing, networking, IP support, technology assessment, pitching for financial assistance and investments and technology commercialization via market traction. With time, analysts have divided incubators into several categories to figure out and assess industry best practices and to evaluate outcomes.

Evolution of Incubation in India

Business incubators are designed to foster the development of newly formed entrepreneurial firms by providing them with an array of targeted business support services and resources. The earliest incubation programs focused on a variety of technology companies or on a combination of industrial, technology and service firms. At global level, till October 2006, there were nearly 7000 incubators of various types in different countries of the world (Table 1.1). Out of these, approximately 1400 were in North America (1115 in United States, 191 in Mexico and 120 in Canada), 1000 in Europe (including 370 in Germany), 400 in China, 355 in Korea, 265 in Japan, and 220 in United Kingdom. The remaining were in other countries/parts of the world.

Table 1.1: Worldwide Types of Agribusiness Incubators

TYPES	EXAMPLE	PROS	CONS
AGRIBUSINESS VALUE CHAIN / SECTOR DEVELOPMENT INCUBATORS	Fundación Chile, TechnoServe Mozambique, Fundación Jalisco (Mexico) and Timbali (S. Africa)	Strong network and management basis, abundant and patient capital, effectively leverages services to transform entire sectors and effective in linking smallholders to niche markets	Costly to start-up, difficult to duplicate, highly dependent on external funding and limited sector impact
AGRICULTURAL RESEARCH COMMERCIALIZATION INCUBATORS	ABI-ICRISAT (India), IAA-IPB (Indonesia) and CENTEV (Brazil)	Access to a pipeline of technology and strong linkages with research community	More production than market oriented and subordinate to the research organization to which is affiliated
TECHNOLOGY TRANSFER INCUBATORS	High Tech MLSCF (Malaysia) and Low Tech Vilgro (India)	Pioneering trans-border high technology transfer, abundant capital and works effectively at the bottom of the pyramid launching continuously new programs	Difficult to mix different high tech cultures and Rapid launching of new programs may diminish capability to carry out core incubator tasks

Source: Infodev, 2013

As far as, Indian scenario is concerned, India has around 178 incubators which are being supported by DST, DBT, MeitY and NITI Aayog (Table 1.2). These Incubators span over 22 states and 2 union territories. Among the list of states having maximum Incubators, Tamil Nadu tops the list with 29 Incubators followed by 23 Incubators in Karnataka and 17 in Telangana. Gujarat has established 16 Incubators and 13 are located in Kerala and Maharashtra each.

S.No.	State	Funding Agency				Total Incubators
		DST	MeitY	Niti Aayog	DBT	
1	Andhra Pradesh	3				3
2	Assam		1			1
3	Bihar		1			1
4	Delhi	4	2	2	2	10
5	Chhattisgarh			1		1
6	Goa	2			1	3
7	Gujarat	9	4		3	16
8	Haryana	1			1	2
9	Himachal Pradesh	1				1
10	Jammu & Kashmir	1				1

Table 1.2:
State-wise
Distribution of
Incubators in
India

11	Jharkhand	1				1
12	Karnataka	15	4	2	2	23
13	Kerala	8	3	1	1	13
14	Madhya Pradesh	1	2	1		4
15	Maharashtra	9	2		2	13
16	Mizoram	1				1
17	Odisha	2	1		1	4
18	Punjab	4	1	1		6
19	Rajasthan	4	3	1		8
20	Tamil Nadu	21	2	3	3	29
21	Telangana	9	3	2	3	17
22	Uttar Pradesh	7	2	2	1	12
23	Uttarakhand	2	1			3
24	West Bengal	4	1			5
	Total	109	33	16	20	178

Business incubators have grown in numbers and geographical spread, and also in terms of their acceptance because of the impact on promoting entrepreneurship, job creation and economic development.

Regarding the evolution of incubation in India, the concept of incubation started in 1980 with the establishment of a Science & Technology Entrepreneurs Park (STEP), being an initiative by the National Science and Technology Entrepreneurship Development Board (NSTEDB), Department of Science & Technology (DST), Government of India (GoI). The STEP was started to involve education, training, research, finance, management and government policies in the approach to promote innovation and entrepreneurship. The STEP created the necessary environment for innovation, exchange of ideas, sharing of experience and facilities and thereby opened new avenues for students, teachers, researchers and industrial managers to grow in a trans-disciplinary multi-dimension culture. According to www.nstedb.com, “The major objectives of STEP are to forge linkages among academic and R&D institutions on one hand and the industry on the other and also promote innovative enterprise through S&T persons”.

From 1980 to 1989 only STEP ruled in the country and in 1990 Honey Bee Network, another Government of India initiative which is basically an alliance of individuals having same opinion, innovators, scholars, policy makers, entrepreneurs, academicians, farmers and non-governmental organizations (NGOs), came into picture.

Slowly, during 1990s, two non-governmental organizations (NGOs) i.e. Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and Grassroots Innovation Augmentation Network (GIAN) started budding in India. SRISTI was born in 1993, to support the initiatives of the Honey Bee Network to distinguish, respect and reward creativity of the grassroot inventions. On the similar grounds, GIAN was set up on March 1, 1997 with support from Government of Gujarat, SRISTI and Indian Institute of Management Ahmedabad (IIMA) to incentivize the grassroots people for their innovations beside mere recognition and documentation of their ideas and also to aim towards the commercialization of practicable innovations, so that their fruits are disseminated over a broader range of community.

In 2000, Technology Business Incubators (TBI) by NSTEDB, DST, Government of India was formed for initiating technology led and knowledge driven companies. These mechanisms assisted in the growth of technology based new enterprises and also in enhancing their survival rate significantly. TBIs also facilitate prompt commercialization of research outcomes. NSTEDB has till date created 112 TBIs in collaboration with academia and research institutes.

In the same year, The National Innovation Foundation (NIF), India was set up by the Department of Science and Technology (DST), built on the philosophy analogous to the behaviour of a honey bee. NIF's major role is to serve the knowledge-rich but economically deprived people of the country and is dedicated to make India innovative by documenting, capacity building, adding value and protecting the intellectual property rights (IPR) of the present-day unaided technological innovators as well as of outstanding traditional knowledge-holders and dispersing their innovations on commercial and non-commercial basis.

In 2001, Villgro, another non-profit organization was founded with the mission of incubating early-stage, innovative enterprises/ businesses. As per www.villgro.org, “Villgro was founded in 2001 by PAUL BASIL with the mission of incubating early-stage, innovative businesses and has since worked in discovering thousands of innovations and innovators, and incubated over 100 businesses”.

In 2004, to promote business incubation activities in the country through exchange of ideas, sharing of experiences, and other networking assistance, different Indian TBIs, STEPs and other related organizations networked and decided to engage together in the promotion of start-up enterprises. Another not-for-profit organization i.e. Indian Science and Technology Entrepreneurs Park & Business Incubator Association (ISBA) was established as another initiative of the DST, Government of India. As per www.isba.in, “Today it has grown to a membership base of 70+ organizations that are into entrepreneurship development and incubation.”

In 2006, the Micro, Small and Medium Enterprises Act, 2006 was issued by Ministry of Law and Justice for facilitating the promotion, development and enhancing the competitiveness of Micro, Small and Medium

Enterprises and other matters related therewith or incidental thereto. Also, in 2006, the Indian Council of Agricultural Research (ICAR) took charge for promotion and assistance in scaling-up of agribusiness in India and issued its Intellectual Property and Technology Commercialization Policy elements and guidelines.

Subsequently, in 2008-09, ICAR established ten Business Planning and Development Units under World Bank funded National Agricultural Innovation Project (NAIP) in research institutions and State Agricultural Universities all over India. This gave impetus to agribusiness incubation in India.

In 2008, government of India started Prime Minister's Employment Generation Programme (PMEGP) to create more employment opportunities. This scheme aimed at admitting projects related to manufacturing or business/ service sectors and providing them financial and land assistance.

In 2010, the Ministry of Micro, Small and Medium Enterprises (MSME), Government of India adopted the Cluster Development approach i.e. 'Micro & Small Enterprises - Cluster Development Programme (MSE-CDP)' as a key step for enhancing the productivity and competitiveness as well as capacity building of Micro and Small Enterprises (MSEs) in the country. In the same year, Ministry of Commerce, Government of India started a 'Market Development Assistance (MDA) Scheme' with the aim to encourage exporters (including MSME exporters) to access overseas markets and develop international business.

In 2012, 'NIABI- Network of Agribusiness Incubators', an Initiative under the National Agricultural Innovation Project (NAIP) of Indian Council of Agricultural Research (ICAR) was formed by ABI-ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) to assist and offer incubation services.

In the same year, Biotechnology Industry Research Assistance Council (BIRAC) a not-for-profit Public Sector Enterprise was set up by Department of Biotechnology (DBT), Government of India as an Interface to boost and empower the rising Biotech enterprises to undertake strategic research and innovations.

In 2013, the National Agricultural Innovation Project (NAIP) of the Indian Council of Agricultural Research (ICAR) organized First Agri-Tech Investors Meet which was a unique effort to reach at higher scale of agri-

business promotion in the country. The Meet was organized by NAIP, ICRISAT and NIABI and show cased mass scale awareness in different states about the technologies developed under NAIP, and farmers connect in Krishi Parivartan Yatra on exclusive train journey spanning around 5 states, besides real-time execution of licensing contracts for various ready-to-commercialize agri-technologies from different domains of agriculture, and farmer-industry-research interaction on mass scale to promote business incubation services.

In 2016, twenty-five Agribusiness Incubators were established all together in many ICAR institutes. In the same year, Start-up India was launched by the Government of India, to boost the start-up culture in India by providing hand-holding support, financial assistances, industry-academia partnerships and incubation to the emerging start-ups. Also, in the same year, Zonal Technology Management & Business Planning Development (ZTM & BPD) Unit, ICAR-IARI launched 'ARISE-Launchpad for Agri Start-ups' in association with other nine ABIs of ICAR Institutes and two BPD units State Agricultural Universities of North India to offer capacity building and pre-incubation support, technical and business mentorship, IP support etc.

Additionally, 'National Intellectual Property Rights Policy' was approved by the Indian cabinet on 12 May 2016 to ensure compliance to the Doha Development Round and TRIPS Agreement. This policy aims to create "Creative India; Innovative India". Moreover, National Initiative on Developing and Harnessing Innovations-NIDHI was formed by DST to help the start-ups with initial / ignition funding. Under this initiative, the start-ups have to be essentially student start-ups; and should be a student start-up of Innovation and Entrepreneurship Development Centre IEDC / NewGen IEDC. Supporting this mandate NIDHI-TBI establishment proposal was floated to enable Academic/Technical/R&D Institution and other institutions with a proven track record in promotion of technology based entrepreneurship to apply for setting up incubators.

In the similar time frame, BioNEST- a bio-incubation programme by Biotechnology Industrial Research Assistance Council (BIRAC) with a vision to foster the biotech innovation ecosystem in the country and Atal Incubation Centre (AIC) by NITI Aayog came into picture. Till date BioNEST has supported over 30 bio incubators and created a cumulative area of 3,00,000 sq. ft. for emerging entrepreneurs. As per www.niti.gov.in "The AICs would create world class incubation facilities across various parts of India with suitable physical infrastructure in terms of capital equipment and operating facilities, coupled with the availability of sectoral experts for

mentoring the start-ups, business planning support, access to seed capital, industry partners, trainings and other relevant components required for encouraging innovative start-ups”.

In 2017, ICAR-NAARM Technology Business Incubator (TBI), a-IDEA (Association for Innovation Development of Entrepreneurship in Agriculture) and Indian Institute of Management Ahmedabad’s incubator ‘Center for Innovation, Incubation and Entrepreneurship’ (CIIE) announced “AGRI UDAAN”- Food and Agribusiness Accelerator 2.0.

To give impetus to agro start-ups, in 2018, ICAR-IARI has registered ‘Pusa Taksay’ as a society to work for the betterment of the agri-preneurs and farmers of India.

Services Offered by Incubators

Earlier, few incubators provided an inexpensive physical environment like abandoned or vacant buildings. With time, incubators started focusing on the enterprises themselves thereby helping them to grow and evolve. The underlying principle of incubation is to provide services and facilities that add value to the incubates at affordable costs, in order to help them survive and grow. The services generally offered are :

- affordable space on flexible leases, and broad-band connectivity
- shared facilities, such as a receptionist, conference room, office equipment
- desk space and internet facility to help initiate a business plan
- business planning, accounting and legal advisory services
- trade and technology information services

- facilitation to help overcome regulatory and other obstacles
- mentoring by board members and other specialists, on a one-on-one basis
- accessing seed venture capital and angel networks, possibly in-house
- training for skills development in business management and marketing
- assistance in recruitment of staff
- outreach counseling / training for affiliate-businesses outside the incubator
- access to university faculty, facilities, students
- legal advice on the protection of intellectual property
- business promotion and public relations opportunities
- linkages to international and national support groups.

Incubation Services Growth Trajectory

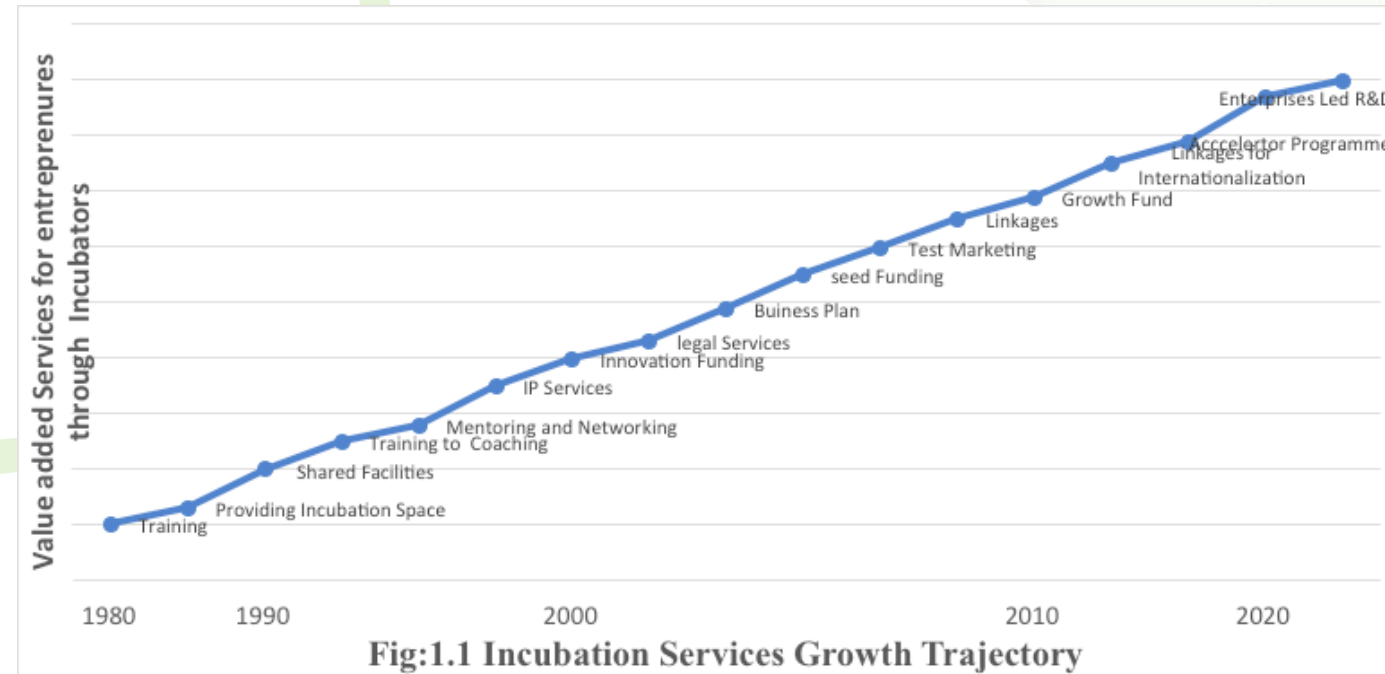


Fig.1.1 Incubation Services Growth Trajectory

In today's time, most incubators, especially private business incubators, have a company-centered approach thereby charge market rates for office space and offer services as value-added benefits for located start-ups within their incubator. Details of types and different stake holders involved in incubation space is described in table 1.3.

Table 1.3: Types & Stakeholder Involved in Incubation Space

Particulars	World Wide	Studies	Indian Context	Studies
Stakeholders	<ul style="list-style-type: none"> State/local/provincial government 24 % No sponsor (independent) 18 % Economic development group 18 % Educational institution 20 % Venture capital 8 % Other 12% 	Rustam Lalkaka (2006)	<ul style="list-style-type: none"> Central Government -50% State Government - 10% Private - 20% Venture capital - 5% Others 15% 	ICRISAT ABI (2011)
BI Types	<ul style="list-style-type: none"> TBIs with Research/University Linkages Single-sector TBIs State or regional development incubators New Economy incubators Public/private partnerships Corporate for-profit incubators Hub incubator with satellites Internal incubators International Business Incubator 	Rustam-Lalkaka (2006)	<ul style="list-style-type: none"> Business Incubators Technology Incubators Technology Innovation Centres Technology Business Incubators (TBI) Agri Based Business Incubation 	Santosh & Vinay (2011)
Services Offered	Facilities that add value to selected firms at affordable costs, in order to help them survive and grow.	Rustam Lalkaka (2006)	Physical environment	Koshy (2011)

Source: Review Paper on Business Incubation - A Way for Sustainable Entrepreneurship Development, 2016

Challenges for Incubators

Sustainability of Business Incubators is the biggest challenge in front of Business Incubators in India. Currently almost all incubators are running on a project funding mode. Some of them are trying to get revenue on an equity participation model in their incubated start-ups. But majorly their exit from the funded and incubated start-ups has not happened yet. The rental and provision for space etc. is also not going to cover the cost of incubation. In India, the government has to pour more money into this space for basic infrastructure building to reach to a level where they can think and work towards self-sustainability. Proper selection of Incumbents is also a big challenge in front of the incubators. Since business incubation is still a nascent concept in India, the incubation managers and the people working in this space are not very experienced and it affects the selection of incumbents. The shortage of trained manpower, lack of convergence technical and business expertise are another few challenges.

Conclusion

Business Incubation scenario is very nascent in India but at the same time it is much needed also. There are many entrepreneurs coming from different domains with their innovative solutions because the trust is being developed in the incubators. Now the entrepreneurs believe that there is some structure that can cushion the adverse effects of the market, that can guide and nurture their thoughts. Exposure to global practices and establishment of Standard Operating Procedures will enhance the effectiveness and efficiency in the operations of business incubators.

Chapter 2

Support Structures for Agri-Entrepreneurship in India

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Support Structures for Agri-Entrepreneurship in India

Agribusiness incubation has been broadly conducted in the same way as the business incubation in general. However, the conditions for business success in some domains of agriculture sector are substantially different. The key difference is the overall context and eco-system for agriculture and agribusiness risk-taking. Agribusiness takes place in a complex environment; involving farmers, intermediaries, government policy and markets (Infodev, 2012). The government and other stakeholders who are acting in support of agri entrepreneurs and agribusiness incubators are actually providing them a cushion to bear the risk. In this chapter, the pillars of this support structure are described. It is divided into two parts, one covering the supporting programs and policies for agri-business incubators, and the other covering similar support for the agri-preneurs.

Agribusiness Incubation Support Systems

It comprises of international and national agents working to support agri business incubators around the world in terms of mentoring, funding and networking.

1. International Support System: In the International scenario, there are few players who are executing the capacity building work and assisting in getting the funding.

1.1. InfoDev: It is a World Bank Group's multi-donor program that supports entrepreneurs in developing economies. They are acting as a global network of business incubators and innovation hubs for climate technology,

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agribusiness, and digital entrepreneurs. They publish educational resources on topics like crowd funding, angel investors, and business incubator management, majorly producing trainers' and trainee manuals. Through their Agribusiness Entrepreneurship Centers, they connect entrepreneurs with the knowledge, funding, and markets where they may need to grow their businesses.

1.2 Global Agri-Business Incubation (GABI): Global Agri-Business Incubation (GABI) network serves as a platform for providing support to agribusiness entrepreneurs and linking farmers, thereby creating additional market opportunities for producers resulting in reduced hunger and poverty in the developing and under-developed nations of the world. The regional agribusiness incubation networks operating in Asia and sub-Saharan Africa as a part of GABI work together to enhance technology exchange and provide soft landing support to agribusinesses in the respective continents.

1.3 Asia Pacific Incubation Network (APIN): National Science & Technology Entrepreneurship Development Board (NSTEDB) of India has partnered with infoDev, World Bank in establishing the Secretariat for the "Asia Pacific Incubation Network (APIN)" in the country that focuses on sharing the good practices of business incubators across the region, to develop the skills of business incubation managers through capacity building programs and to create a network among the incubators for the benefit of start-ups. APIN has more than 100 members representing 20 countries from the Asia Pacific Region. They are also arranging for International training programs for incubation managers to help them in exploring and understanding best incubation practices.

2. National Support System: The national support structure existing in the country for agri-business incubators has many departments and organizations that are extending their support in many different ways starting from funding to networking.

2.1 Start-up India: It is one such forum and program developed by Department of Industrial Policy and Promotion (DIPP) with an objective to create employment opportunities for youth through nurturing their business ideas

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by various modes of simplification and handholding, funding support and incentives with Industry-Academia Partnership and Incubation. They are providing network opportunities for incubators by listing their profiles, connecting them to the start-ups directly and providing them educational and mentoring support.

2.2 National Science & Technology Entrepreneurship Development Board (NSTEDB): This comes under Department of Science & Technology, Govt. of India, which is contributing to build the entrepreneurial ecosystem in the country through various initiatives including promoting entrepreneurship through institutional mechanisms as well as through programmatic support. The initiatives of NSTEDB in creating an enabling environment for the incubation ecosystem including Institutional Mechanisms, Capacity Building Programs / Training Programs, Resource & Knowledge Building, Public-Private Partnerships, Public-Private-Academia Partnerships and Establishing & Strengthening Incubation Networks. Under its various programs, they are providing funding support to existing incubators, opening of new incubators and making well-to-do incubators as Centre of Excellence. Under their NIDHI (National Initiative for Developing and Harnessing Innovations) support they are operating with nine different schemes to support incubators with mega funding and to start-ups through incubators.

2.3 Biotechnology Industry Research Assistance Council (BIRAC): Under Department of Biotechnology (DBT), Government of India, the Council has an objective to assist and promote emerging biotechnology entrepreneurs and facilitate innovative research and development in existing small, medium as well as large industries. Under the scheme, DBT is assisting with funding support to existing bio incubators and opening up of new bio incubators. They are also establishing a network of knowledge sharing among Bio-incubators that supports SME development, and new start-up companies and providing opportunities for the realization of economies of scale by enabling access to national and international markets.

2.4 Ministry of Micro, Small and Medium Enterprises: The ministry, under its various schemes promotes incubators in terms of funding and marketing assistance. One such scheme is Aspire which aims to set up a network of technology centers, incubation centers to accelerate entrepreneurship and also to promote start-ups for innovation and entrepreneurship in rural and agriculture-based industry. The support is being given in the form of grant for the cost of plant and machinery to be installed at the incubator, seed support to be

provided for the start-ups, acceleration workshops and financial incentives for promotion of ideas. Another support is in the form of grant in aid given to incubates through respective incubators who are implementing the scheme 'Support for Entrepreneurial and Managerial Development of SMEs: Through Incubators'.

2.5 Atal Innovation Mission: NITI Aayog with its Atal Innovation Mission (AIM) promotes and establishes incubation centers in specific subjects/sectors such as manufacturing, transport, energy, health, education, agriculture, water and sanitation etc. in the country. These incubation centers are supporting and encouraging innovative technology-based start-ups that have an application and/or impact in the core sectors of the economy and for this AIM provides a grant-in-aid of up to Rs. 10 Crore for a maximum period of 5 years to cover the capital and operational expenditures to establish the Atal Incubation Centre (AIC).

2.6 Technology Development Board (TDB): TDB provides financial assistance to TBIs, and STEP's under Seed Support System for Start-ups in Incubators to incubate innovative technological ideas and to graduate them to successful commercialization. The assistance is positioned to create techno-entrepreneurs apart from acting as a bridge between development & commercialization of the technologies. The grant is meant to support the start-ups primarily for product development, testing & trials, test marketing, mentoring, professional consultancy, filing patents, manpower and other area as deemed necessary.

Agribusiness Enterprises Support Systems

It comprises of the agents working in the direction of providing incubation, IP, Marketing, Networking and funding support to Agribusiness Enterprises in the country.

3. Incubators: There are more than 30 Agri business incubators existing in India as on date. Most of them are part of NAREES (National Agricultural Research, Education and Extension System). Under National Agricultural Innovation Project (NAIP), ICAR has established 22 Agri business Incubation Centers out of which four ABICs have got the status of TBI from DST. Many of State Agricultural Universities have also opened up their Incubation

centers that are dedicated to promote business ideas in agriculture and allied areas. The detailed agri business scenario along with the services, the agri business incubators are offering is given in the forthcoming chapters.

4. IP Support: IP rights provide others encouragement to bring novel approaches for a better system, at the same time it prevents others not to commercially make, use, sell, import or distribute to other without prior permission of the owner. Indian Government has taken initiative by joining in international treaties, which enables Indians to obtain IP protection in the member countries of the treaty.

One Government initiative is establishment of IP Facilitation Centers (IPFCs), which facilitates the entrepreneurs' ideas to be protected under suitable IP regime. These Facilitation Centers, help the entrepreneurs from ideation stage to IP protection. Professional charges for these services are borne by the government. Government has nominated list of IP Facilitators in start-up India portal, to protect the IP of entrepreneur, without paying the professional charges. Government is encouraging the IPR innovations among MSMEs by paying Rs. 25,000/- on grant of Indian Patent and Rs. 2 Lakhs on grant of foreign patent via a scheme of Ministry of MSME.

Relaxation of tax has always motivated the industry and individuals for investing in instruments. It provides the R&D work to reach to new competitive edge. There are a couple of tax benefits given by the Government to IP holders, under new section 115BBF of the Act 1961 relating to tax on income from patents. Patent holder has to pay flat 10% tax on income from patent royalties. Patent holder can also avail waiver of excise duty. Tax deduction on R&D expenditure for doing business in Biotechnology has also being reduced.

5. Networking Support: There are many national and International, government and Non-governmental bodies, working instrumentally to provide networking platforms to start-ups to have the advantage of the ecosystem by leveraging each other's strengths.

5.1 Federation of Indian Chamber of Commerce & Industries (FICCI): FICCI is closely working with the government to effectuate the necessary changes in the policies that is needed to build a positive ecosystem for the start-ups and young entrepreneurs. They also perform various business services like organizing various business meetings, CSR, technology commercialization and provides overview of different sectors. FICCI also

organizes capacity building programs and global events to create awareness about agricultural innovations and technologies, promoting skill development. They have set up their base in various states through their councils and organizing state specific Agri Tech meets and events.

5.2 NEN (National Entrepreneurial Network): It is also organizing various events for mentoring the young professionals, entrepreneurs, small and medium business owners. The programs, a zero equity and zero fee model, focuses on providing goal-based, time-bound, and structured mentoring. It also creates entrepreneurial and innovation ecosystems consisting of institutes that impart education on entrepreneurship and provide a field specific network of mentors, investors, and incubation centers that support start-ups and SMEs with assistance in preparing for pitching.

5.3 The Indus Entrepreneurs (TiE): This is supporting entrepreneurs in their start-up journey by conducting programs and events, as well as providing guidance of experienced mentors and entrepreneurs at every stage of their company's lifecycle through one to one mentoring sessions and mass programs. Tie also works actively in fostering the Connections with experts, mentors, and Influencers who can support the start-ups and budding entrepreneurs' aspirations. TiE organizes various events including flagship events, such as TiEcon, TiE Global Summit, etc.

5.4 PHD Chamber of Commerce (PHDCC): PHDCC provides excellent networking opportunities with government officials, diplomats and also business peers. In its effort towards capacity building, it organizes various Entrepreneurial Development programs, conferences and workshops for the young professionals and budding entrepreneurs.

5.5 Indian STEP and Business Incubators Association (ISBA): It is a not-for-profit Society developed to promote business incubation activities in the country. It organizes conferences and meetings for fostering the entrepreneurial spirit among the youth and bring together Incubators, government officials, successful entrepreneurs and other big names of the business eco-system for networking, experience sharing and new learnings. ISBA has taken many initiatives with State Governments and other organizations to assist, facilitate

and support the start-ups by establishing Entrepreneurship Development Centers and Business Incubators in the country. They also organize ISBA Awards for recognizing outstanding achievements of start-ups and ventures.

6. Marketing support: **6.1 MSME Market Assistance Scheme:** The scheme offers a funding to interested individuals aimed at increasing participation of representatives of small/micro manufacturing enterprises under the MSME India stall at international trade fairs/exhibitions. This scheme by the Indian government also encourages small & micro exporters in their efforts at tapping and developing overseas markets and enhance export from the small/micro manufacturing enterprises. Unit having valid permanent registration with the Directorate of Industries/District Industries Centre are eligible under this scheme. In this their travel expenses are being borne by the government up to an extent.

6.2 Ministry of Commerce and Industry: The Ministry is providing the international platform to the agripreneurs, through its nodal agency (i.e. India Trade Promotion Organization (ITPO)), by organizing India International Trade Fair every year. Such type of international platforms is being proven to be a brilliant opportunity for start-ups to market their products. Moreover, they play a pivotal role in helping businesses; meet with other players of the industry which fosters the process of learning. Apart from this, there are several investors meets are being organized by the ministry in order to connect the start-ups to global, national and regional investors.

6.3 Krishi Unnati: It is a National Agriculture Fair that is being organized by ICAR-IARI annually to make the farmers aware of and commercialize the latest happenings in agricultural research and technological development among farmers and end users. This proves to be a great platform for the start-ups to showcase and market their products, running their feasibility studies and getting their sensory and market testing done with a widely distributed audience.

Apart from this, many state sponsored trade fairs and meets are organized on a regular basis in order to provide start-ups an opportunity to network with the stakeholders in the ecosystem and get a market positioning support.

7. Funding support: It comprises of government funding available from different ministries and agencies in terms of grants, soft loan and equity participation, subsidies, private funding and debt mechanism.

7.1 Start-up India: The Government through this initiative aims to empower Start-ups to grow through innovation and design and to accelerate spreading of the Start-up movement. In this they provide start-up recognition status to enterprises, advisory support, tax exemption, funding support etc. A 'fund of funds' of INR 10,000 Cr is being managed by SIDBI and INR 605.7 Cr have been committed to 17 Alternate Investment Funds (AIFs) and 75 Start-ups have been funded till January, 18. Start-up India is also organizing business learning and development programs to acquaint start-up with the basics of business.

7.2 Technology Development Board: TDB provides equity capital, subject to such conditions as may be determined by regulations, or any other financial assistance i.e., soft loan and grants (especially in the projects having national importance) to Indian industrial concerns and other agencies, attempting development and commercial application of indigenous technology, or adapting imported technology to wider domestic applications.

7.3 NIDHI PRAYAS: Promoting and Accelerating Young and Aspiring technology entrepreneurs (PRAYAS) is specifically to support young innovators turn their ideas into proof-of-concepts. This support shall allow the innovators to try their ideas without fear of failure, hence allowing them to reach a stage where they have a ready product and are willing to approach incubators for commercialization. Hence NIDHI-PRAYAS can be considered a pre-incubation initiative and a source of pipeline for incubators. The funding is routed through Incubators. The incubator can also avail funding support for establishing Fabrication Laboratory.

7.4 NIDHI EIR: Entrepreneurs-in- Residence (EIR) Programme is one of the programs introduced under NIDHI to inspire the best talents to be entrepreneurs, to minimize the risk involved in pursuing start-ups, and to partially set off their opportunity costs of high paying jobs. As an NIDHI-EIR recipient, an entrepreneur gets office space, administrative support and a stipend to establish/make the most of their ideas and turn innovative breakthroughs into viable businesses. This scheme also disburses funding through incubators.

7.5 NIDHI-Seed Support System (NIDHI-SSS): is ensuring timely availability of the seed support to the deserving incubate start-ups within an incubator (a fully operational TBI or STEP), thereby enabling them to take their venture to next level and facilitate towards their success in the market place. The scheme also enables the STEP/TBI to widen their pipeline of start-ups and also share the success of their start-ups which would also result in ensuring their long term operational sustainability.

7.6 NIDHI-GCC (Grand Challenges and Competition): is a pre-incubation activity targeted mainly at scouting of innovations for building a pipeline for the TBIs. These programs are sector agnostic programs being done at two levels i.e., national and regional. At the end of this program, the TBI may consider the winners for a grant or seed investment support, mentoring and incubation as per the design of the program.

7.7 NEWGEN IEDC: The NewGen Innovation and Entrepreneurship Development Centre (NewGen IEDC) program is being run for funding support to be given to young student entrepreneurs for product development, testing, validation and product launch. The programme helps the start-ups with initial / ignition funding and hence would be called Start-up-NIDHI. Start-up-NIDHI would financially support each of the selected start-ups with INR 10.00 lakhs which will be given as ignition grant/award.

7.8 MUDRA scheme: Micro Units Development and Refinance Agency Ltd. [MUDRA] is an NBFC supporting development of micro enterprise sector in the country. MUDRA provides refinance support to Banks / MFIs for lending to micro units having loan requirement upto 10 lakh (shishu loans upto 50,000, kishor loans from 50,000 to 5 lakh and tarun loans from 5 lakh to 10 lakhs).

7.9 BIRAC's Biotechnology Ignition Grant (BIG): BIRAC is supporting the business ideas which have an unmet need for funding and mentorship through a grant funding scheme called Biotechnology Ignition Grant (BIG) which is available to scientist entrepreneurs from research institutes, academia and start-ups. The Applicant must be either an Incubate or have a registered company with a functional R&D laboratory to be eligible for

this grant. The scheme is designed to stimulate commercialization of research discoveries by providing very early stage grants to help bridge the gap between discovery and invention.

7.10 Venture Capital Assistance Scheme of SFAC: Venture Capital Assistance is financial support in the form of an interest-free loan provided by the SFAC (Small Farmers' Agribusiness Consortium) to qualifying projects to meet the shortfall in capital requirements for implementation of the project. SFAC has formed tie-ups with 41 banks to provide financial support. Assistance under this scheme is being available to individuals, farmers, producer groups, partnership/proprietary firms, self-help groups, companies, Agripreneurs, units in agri-export zones, and agriculture graduates individually or in groups for setting up agri-business projects.

7.11 Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE): The scheme was launched by the Indian government to strengthen the credit delivery system and facilitate the flow of credit to the MSE sector. Lending institutions majorly included public, private, foreign banks along with regional rural banks, and SBI and its associate banks. Both term loans and/or working capital facility up to INR 100 Lakhs per borrowing unit are being provided.

7.12 SIDBI Make in India Soft Loan Fund for Micro Small and Medium Enterprises: Under this scheme there is a provision of providing a soft loan, in the nature of quasi-equity, and term loan on relatively soft terms to MSMEs to meet the required debt-equity ratio for the establishment of an MSME as also for pursuing opportunities for growth for existing MSMEs. New enterprises in the manufacturing, as well as services sector, can apply under this scheme. Existing enterprises undertaking expansion, modernization, technology upgradations or other projects for growing their business will also be covered.

7.13 SIDBI Start-up Assistance Scheme: This scheme aims to provide structured financing for 'start-ups' and 'early-stage enterprises' mostly in sectors which traditionally do not involve physical assets. Innovative business models in other asset-based sectors are also being considered selectively. The financial assistance provided is need-based, subject to a maximum of INR 200 Lakhs and equity kicker (1%-2% equity on paid up capital at par or a suitably structured kicker).

7.14 SIDBI Growth Capital and Equity Assistance Scheme: This scheme provides assistance to existing Small and Medium Businesses in need of capital for growth. The assistance is provided in form of mezzanine/convertible instruments, subordinated debt and equity (in deserving cases). This quasi-assistance has a higher moratorium on repayment and a flexible structuring. Under this scheme, the MSMEs are helped to leverage equity/sub-debt assistance from SIDBI for raising higher debt funds. It also helps to avoid the complexities of enterprise valuation, exit issues etc. associated with equity investments.

7.15 PRISM (Promoting Innovations in Individuals, Start-ups and MSMEs): This scheme was launched by DSIR (Department of Science & Industrial Research) to support individual innovators with financial grants. Under this scheme, the funds are directly given to the innovators with incubation centers playing the role of a processing and monitoring agency. The scheme provides grants, technical guidance and mentoring to individual innovators by incubating their idea towards the creation of new enterprises in phases. It also provides grant-in-aid support to technology solution providers developing technology solutions aimed at helping MSME cluster. The assistance is being provided for developing prototype, testing and trial, IP Protection, enterprise incubation etc.

7.16 Subsidy Schemes: There are many schemes available from different ministries under which subsidies are being given to industrial concerns especially MSMEs in order to survive and sustain in the business. The schemes run by Ministry of Agriculture & Farmers' Welfare and Ministry of Food Processing Industries are being covered in this section.


Under *Rashtriya Krishi Vikas Yojana* (RKVY) which is being operated at the state level provides financial assistance to start-up working in agricultural sector. *Pradhan Mantri Kisan Sampada* (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) Yojana is a comprehensive package which will result in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet. Under this scheme programs to establish Mega Food Park, Integrated Cold Chain and Value Addition Infrastructure, Creation / Expansion of Food Processing & Preservation Capacities, Infrastructure

for Agro-processing Clusters, Creation of Backward and Forward Linkages, Food Safety and Quality Assurance Infrastructure are being run in which financial assistance in the form of subsidy is being given to enterprises.

7.17 Angel Investors: An angel investor is an affluent person providing capital i.e., angel funding or seed funding to start-ups usually in exchange for convertible debt or equity. When this concept has started, the investment was generally done by one person on his/her own understanding of the space in which he/she is investing. Now people are making their own groups commonly known as angel groups or angel networks for pooling their money and sharing their research. They not only provide money to the company in which they invest but also bring their advisory role on board. According to many angel networks, Agriculture is an ever-green business and will continue to grow without any steep fall. Mumbai Angels, Bangalore Angels, Indian Angel Network are few in the list who support agriculture and allied sector start-ups.

7.18 Venture Capital Funds: A venture capital fund (VCF) replenish wealth and capital to aspiring knowledge driven companies which speculates to be high risk but promises to grow sustainably with higher potential. These companies may have limited historical track record and higher gestation period to raise or attract finances in conventional mode of financing through capital investment and securing a loan against tangible assets. Venture capital fund not just makes an equity participation in such companies but also supports the management in effective decision making and imparts its expertise in various verticals of the business.

The firm makes such a portfolio that optimizes the risk and returns and an exit can be made within ten years' time frame. The funds generally make money by two ways i.e., by charging the management fees from limited partners for professional management of assets @ 2 to 2.5 per cent on the capital commitments of the fund and by 'carry' or 'carried interest' in which the general partners share the profits of an investment fund in excess of the amount that the manager contributes to the partnership. As per the general trend 'carry' is 20-25 per cent of the total returns. Most VC funds have a fixed life of 10 years out of that the investing cycle is of three to five years and rest of the time is devoted to follow on investments in an existing portfolio. Here a fixed commitment used to be made by investors in the starting of the fund and subsequently investments are called down as and when the fund makes its investments in companies.



Omnivore, Ankur Capital, Unitus Seed Funds, Menterra- a fund managed by Villgro, all are getting into the agriculture space by seeing its worthy propositions.

A good support structure to promote entrepreneurship in a country is highly necessary to have an edge in the competitive business world. According to Agfunder Agtech Investing Report of 2016, More than USD 3.23 Billion was invested in agriculture sector worldwide. The majority of investments are being done in agri-biotechnology, food technology and precision agriculture. New start-ups in these domains can surely give a boost to agri-business. Therefore, promoting Start-ups is on the high agenda of Government of India. Tremendous efforts are to make the Indian business atmosphere congenial for new start-ups to operate and the existing ones to scale up. India has the maximum young population on the world map today, and with such positive reforms and policies can become the start-up hub for the world besides becoming self-sustainable in agri-business and almost all sectors of the economy.

Chapter 3

An Evolution of Agribusiness Incubators in NARS

Chapter 3

An Evolution of Agribusiness Incubators in NARS

Agriculture continues to remain the backbone of Indian economy and agrarian livelihoods for millions across the country despite other sectors gradually assuming importance in terms of their contribution to the national GDP. The total share of agriculture and allied sectors is 13.9 percent of GDP during 2013-14 at 2004-05 prices [CSO]. More than half of the Indian population is still dependent upon agriculture as its principal workforce. With 66 percent of the population below the age of 35 years, India is endowed with huge demographic dividend. Further, despite surpassing the USD 1 trillion benchmark, the economy of India has its own internal problems. Among many such problems, unemployment is one of the major concerns that India faces. It is reported that around 23.4% of male and 16.4% of female aged between 15-29 years with graduation are unemployed [NSSO]. The unemployment rate for the year 2011-12 in rural India is 5.5% and 6.2% for male and female respectively, which is higher than the corresponding unemployment rate in the urban area for the same year; estimated as 4.9% and 8% respectively [NSSO]. Besides, there are issues of under-employment which aren't reflected in unemployment data.

As per the Okun's law, every 1 per cent rise in GDP of a country reduces 3 per cent unemployment and vice-versa. Therefore, to induce its economic growth the country has to create more employment opportunities. In this context, the evolving agribusiness scenario brings new and sustainable hopes. It is through transformation of the conventional household food and nutrition security system into a vast and complex value chain based system that agribusiness transcends far beyond the farm gate to include all those who are involved in bringing

food, fodder and other agricultural produce to processors and consumers and generate handsome employment opportunities. Agribusiness includes, besides those who farm the land, also the people and firms that provide the needed inputs (e.g. seeds, chemicals, credit, etc.), post-harvest management (storage, pre-cooling, cold chains etc.) process the output (e.g. grading sorting, packaging, processing of seeds, grains, milk, meat, etc.), manufacture the food products (e.g. ice cream, bread, breakfast, cereals, etc.), and transport and sell the food products to consumers (e.g. restaurants, supermarkets and millions of households).

Agribusiness has undergone a rapid transformation in the recent past in countries like India. New industries have evolved, and farming operations have grown larger and more specialized. Agripreneurs engage in a variety of activities in agriculture and related sectors. They can take advantage of opportunities to engage in new activities and increase household income, or expand farm operations so that additionally family members and others can be employed. Agripreneurship, overall is a combination of agriculture and business. The whole idea of agripreneurship dwells upon income generation motive by becoming a part of the whole agri-supply chain; through innovation and enterprising in introduction of technology and/or management services. Technology and knowledge are the backbone for agripreneurship. These are products of innovation based on core agricultural research and training skills. India has one of the largest and most complex agricultural research systems in the world, with more than a century of organized application of science and skills in agriculture.

The Indian Agricultural Research Institute (IARI) was established in 1905 which later became a part of the Indian Council of Agricultural Research (ICAR) established in 1929. The role and responsibilities attributed to ICAR at the national level in promoting aiding, and coordinating research and higher agricultural education across the country is of significant importance wherein agricultural universities are part of this national agricultural research system (NARS). ICAR institutes have produced some of the best research outcomes and technologies in agriculture, horticulture, natural resource management, animal husbandry, fisheries, and agri-engineering

sectors. These technologies were essentially productivity and production-centric, developed to meet farmers' needs. Efforts were made through traditional first-line extension channel over the years to take them to the beneficiaries (the farmer) and other end users/enterprises. But a gap persisted between the potential benefit of these research outcomes and new technologies and actual benefit accrued. Agri-business planning and development is a rather new development in the system, improvised inter alia to mitigate the technology percolation gap and also come up with the product patent and global trade regimes.

ICAR, in line with changing priorities with the implementation and evolution of intellectual property and trade regimes, in 2006, in the country developed and published its comprehensive guidelines for "Intellectual Property Management and Technology Transfer / Commercialization". ICAR also institutionalized a three-tier management structure to implement these guidelines. Accordingly, for intellectual property management and transfer/commercialization of agricultural technologies developed in the system, Institute Technology Management Units (ITMU) were established at institute level, Zonal Technology Management Unit (ZTMU) at zonal level and Apex Technology Management Committee (ATMC) at the ICAR headquarter (Fig3.1). Further, in 2009, Business Planning and Development (BPD) component was added to zonal technology management units under the under the joint Government of India - World Bank funded National Agriculture Innovation Project (NAIP). Thus, the concept of incubation support for nurturing start-ups and agri-preneurship development was born, leveraging the technology transfer strengths of NARS.

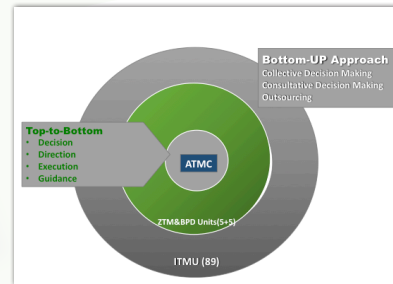


Fig 3.1: Organization of ICAR's Three Tier IP Management System

Agribusiness Planning and Development at ICAR-IARI

The innovative contribution of ICAR and its institutes towards empowerment of agripreneurs in a short span of about a decade deserves special mention. ICAR-IARI is known to be the seat of India's first green revolution, and is now focusing to create an evergreen revolution through new developments in frontier science and technologies, including inventions in areas of crop improvement and protections, natural resource conservation, farm tools and machinery, precision agriculture, post-harvest processing, agri-biotechnology and other related areas. In the meanwhile, as part of the demographic dividend phenomenon, and also as part of India's growth story, a young generation of start-ups was evolving as a silent revolution in agribusiness sector also as in other sectors, who could be instrumental in filling the conventional "Lab to Land" gap, if nurtured and trained systematically.

Strengthening under National Agricultural Innovation Project (NAIP)

The most important link in transforming the agribusiness management system at ICAR-IARI has been the setting up in 2008-09 of the "Zonal Technology Management -Business Planning and Development (ZTM & BPD) Unit" (Table 3.1) followed by its enhancement with the establishment of "Agri-Business Incubator" within the unit. The Unit works as IP management and proprietary tech transfer office at the Institute level and hand holding unit for other ICAR institutes at the zonal level, and also as incubation facility for nurturing ideas into commercially viable start-ups and agri-preneurship development programs, working with an objective of augmenting income of farmers and employment generation by preparing a formidable force of agripreneurs.

Table 3.1: Agribusiness Incubators/BPD Units established by ICAR under NAIP in 2008-09

S.No	Name of the Institute/University	Place	Year of Establishment
1.	Indian Agricultural Research Institute (IARI)	New Delhi	December 2008
2.	Indian Veterinary Research Institute (IVRI)	Izatnagar	May 2009
3.	National Institute for Research on Jute and Allied Fiber Technology (NIRJAFT)	Kolkata	May 2009
4.	Central Institute for Research on Cotton Technology (CIRCOT)	Mumbai	November 2008
5.	Central Institute of Fisheries Technology (CIFT)	Cochin	August 2009
6.	Haryana Agricultural University (HAU)	Hisar	October 2009
7.	Anand Agricultural University (AAU)	Anand	October 2009
8.	Birsa Agricultural University (BAU)	Ranchi	October 2009
9.	Jawahar Lal Nehru Krishi Vishwavidyalaya (JNKVV)	Jabalpur	October 2009
10.	Tamil Nadu Agricultural University (TNAU)	Coimbatore	October 2009

Opening up of 22 Agribusiness Incubators by Indian Council of Agricultural Research (ICAR) through its World Bank funded National Agricultural Innovation Project (NAIP) in 2008-09 (10 Agribusiness Incubators) and core funding since 2013-14 (additional 12 Agribusiness Incubators) has given a boost to technology based entrepreneurship in Agriculture. Moreover, these Agribusiness Incubators were established either in Agriculture Research Institutes or State Agricultural Universities which are generators of Agricultural technologies, so as to leverage their technological strength to the housed agro start up companies by licensing their in-house technologies. The

technology is licensed on non-exclusive basis and sub-licensing is not generally allowed. The first instalment of payment is usually done on the day of signing of legal agreement. Under the licensing agreement, there is a provision that 2-3 persons of the incubate or corporate team will be trained in the facilities of the institute. Technical guidance is also provided for the establishment of their production/ manufacturing facility. The incubate companies were benefitted with technical expertise of these institutions for establishing their own proof of concept, developing new products by using their state of art facilities which otherwise is difficult for these start-up to have access to these facilities as well as conducting field validation/trials as per their requirement.

Strengthening under the National Agriculture Innovation Fund (NAIF)

To give impetus to innovative research and its applications, in 2017, ICAR launched its new scheme National Agriculture Innovation Fund (NAIF) and created incubation fund with objectives:

- To establish/transform Agribusiness Incubator Centers as leaders in NARS that would provide technology and skill up gradation, inputs supply and market support leading to promotion of viable enterprises and sustainable employment to entrepreneurs;
- To undertake last mile scale-up from pilot level of value chain in collaboration with stakeholders;
- To explore and support appropriate technologies including grassroots' innovations that are vital in future for an accelerated growth and competitive technological leadership;
- To impart training and capacity buildings to prospective enterprises; generate value added manpower to compete effectively; and
- To provide seed money support to potential incubates/entrepreneurs taking up promising innovations or technologies.

Under this scheme, 25 Agribusiness we Incubator (ABI) were established (Table 3.2) which are operational in different institutes. These agri-business incubators are envisaged as the nodal point to provide the desired link for the agricultural R&D institution for incubation/commercialization of the validated technologies.

The activities of these incubators include facilitating new and indigenous technologies by nurturing early stage innovation enterprises that have high growth potential, and a pro-active role in lending creditability to start up enterprise and enabling the environment for agri-business entrepreneurs.

Based on the experience gained by ABIs like IARI, NDRI, these incubators provide customized mentorship to incubates, based on their requirements and laggings. These incubators play an vital role to fill the void in varied typed of agri-enterprises and help them with business basics, networking activities, marketing assistance, help with accounting and financial management, access to bank loans, loan funds and guarantee programs, access to angel investors or venture capital, help with presentation skills, links to higher education resources, links to strategic partners, help with comprehensive business training programs, advisory boards and mentors and technology commercialization assistance, thus providing a customized mentorship to each and every incubate.

Table 3.2: Agri-Business Incubators (ABIs) (2017)

S.No	Division	Name of Institute	Place
1	Agricultural Engineering	ICAR-Central Institute of Agricultural Engineering (CIAE)	Bhopal
2		ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET)	Ludhiana
3		ICAR-Central Institute of Research on Cotton and Technology (CIRCOT)	Mumbai
4		ICAR- National Institute of Research on Jute & Allied Fibre Technology (NIRJAFT)	Kolkata

5	Animal Science	ICAR- Indian Veterinary Research Institute (IVRI)	Izatnagar
6		ICAR-Central Avian Research Institute (CARI)	Izatnagar
7		ICAR-National Dairy Research Institute (NDRI)	Karnal
8		ICAR-National Research Centre on Pig	Guwahati
9		ICAR-National Research Centre on Meat	Hyderabad
10	Crop Science	ICAR-Indian Agricultural Research Institute (IARI)	New Delhi
11		ICAR-Indian Institute of Millets Research (IIMR)	Hyderabad
12		ICAR- National Rice Research institute (NRI)	Cuttack
13		ICAR-Indian Institute of Oilseeds Research (IIOR)	Hyderabad
14	Agricultural Education	ICAR-National Academy of Agricultural Research &Management (NAARM)	Hyderabad
15	Fisheries Science	ICAR-Central Institute of Fisheries Technology (CIFT)	Cochin
16		ICAR- Central Institute of Freshwater Aquaculture (CIFA)	Bhubaneswar
17		ICAR-Central Institute of Fisheries Education (CIFE)	Mumbai
18		ICAR- Central Institute of Brackish water Aquaculture (CIBA)	Chennai
19	Horticultural Science	ICAR-Indian Institute of Horticultural Research (IIHR)	Bangalore
20		ICAR-Indian Institute of Vegetable Research (IIVR)	Varanasi
21		ICAR-Indian Institute of Spices Research (IISR)	Calicut
22		ICAR-Central Potato Research Institute (CPRI)	Shimla
23		ICAR-Central Plantation Crops Research Institute (CPCRI)	Kasargod
24	Natural Resources Management	ICAR-ICAR Research Complex for NEH Region	Barapani
25		The International Research Institute for the Semi-Arid Tropics (ICRISAT),	Hyderabad

Source (NAIF Sanction order, 2018)

Future Ahead

Business incubation is a dynamic process of business enterprise development. Agribusiness incubators aim to maximize the probability of success of start-up companies through an array of shared services, business and legal advice and financial inputs. They identify and facilitate their creation and nurturing the development of entrepreneurship, helping them survive and grow during the start-up period - the most vulnerable period of any start-up. These platform assists the start-up during the critical phase of business lifecycle and handholds until 'graduation', when start-ups have the capacity to 'survive' in the outside competitive environment thereby improving their chances of success. Hence, ABIs boost the purpose of translating research into prosperity by creating employment and uplifting the socio-economic status of the agricultural community. In this context, the ZTM & BPD incubator at ICAR-IARI shall strive to strengthen and proliferate its reach and efficiency in fostering new agribusinesses in a well defined and elaborate agri-business ecosystem evolved with ICAR as well as external support.

In the coming years, agribusiness incubators (ABIs) are expected to work towards value added services provided to the incubates, quality management, standardization of the systems and procedures for mentoring other new incubators and achieving financial self-sustainability. With time, it is also expected that the incubation centers might make clear demarcation between social service and profit making regarding their offered services. Future incubation centers' personnel might scrutinize which entrepreneurial system works best for incubators and how different incubation centers should interact to optimize the system's performance

Chapter 4

Agri-preneur Empowerment for Farmers' Welfare

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In recent years, Indian agriculture has shown healthy signs of transformation led by science, technology, innovation and entrepreneurship. Agriculture provides employment and livelihood to more than 50 per cent of Indian population and contributes around 17 per cent of national GDP. Research and innovation are transforming agriculture into an agribusiness continuum resulting in enormous opportunity for entrepreneurship. This realm creates new job opportunities spanning beyond the farm gate to include all those who are involved in bringing food and fodder to consumers. Agribusiness has opened up vast opportunities in the supply chain of food production to consumption including agriculture inputs, production and supply, value addition, packaging, retailing, supply of raw material, processed agri-food production, marketing and export of agricultural products, and other allied field with the use of high application of technology, business processes and management. This has led to development of new paradigm of agriculture enterprise as agri-preneurs (agri-business entrepreneurs), a new breed of start-ups. Realizing the dream of Prime Minister Modi, it is time to nurture agri-preneurs by taking advantage of demographic dividend as well as by strengthening the agriculture sector as a vibrant agri-business sector. The need, therefore, is to provide up-to-date technical, managerial and entrepreneurial support to agriculture through agri-preneurs, taking lesson from country like Israel, which is a small piece of land in desert with virtually no natural resources, yet thriving with a sustainable agricultural system.

Agribusiness faces number of peculiar challenges right from inception, setting up of enterprise to its operational phase. Agriculture being a multi-dimensional enterprise, is a complex system for start-ups to handle; ranging

from field preparation to planting, crop care, harvesting, processing, storage and transportation. It is an investment intensive exercise which contributes to overall productivity and profit. Start-ups need to target right segment of the agricultural operations as per their business goal.

Further, agriculture based industries are broadly raw material specific that could be perishable and inconsistent in quality and availability throughout the year. Start-up cannot ignore these dynamics as well as various government regulations for smooth running of their agri-business while ensuring safe food products befitting the demand. It is challenging to begin a start-up. Access to proper, tested and viable technology is major challenge faced by new start-ups. Effective research-academia-industry linkages can help the budding agri-preneurs to begin and develop their own start-ups. In India, collaborative mechanisms are upcoming between technology incubators, agricultural universities, ICAR Institutes, CSIR labs etc. Availability of skilled human resources and technologies born out of these research establishments are amenable to agri-business, their infrastructure and training facilities are further helpful to new start-ups. During their incubation, the new start-ups are expected to develop their capabilities in some specific imperatives such as supply chain management and logistics, including infrastructure for post-harvest processing, storage etc. Marketing component seeks special attention of the start-ups who may face problems due to either poor quality or inconsistency in the quality of their finished products. Besides, they may lack promotional facilities and support system, and may face competition with other medium and large-scale enterprises.

Some of the other vital requirements for encouraging new agri-industry are; land availability and ease of allotment, convenience of finance and risk management mechanisms, enabling regulatory provisions, stable policies and access to local & global markets. Most of the agri-preneurs are expected to have very limited ability to invest, and therefore government support is crucial for their establishment i.e. for product development and proof of concept, and also for initial operations before the enterprises may look to raise commercial

investment. Start-ups also face huge challenges in raising collateral free low interest loans, especially during initial stages. In fact, lack of access to finance could virtually kill many potential business ideas.

A recent study suggests that 82 per cent of the start-ups actually fail when there is no experience of entrepreneurship from the inventor; the failure rate is 70 per cent when the inventor is experienced to an extent. The key role for an agribusiness incubator is basically to equip the interested parties with all the toolkits available so that the effort may get time to mature before facing the harsh competition outside. Technology business incubators are a powerful economic development tool. They promote growth through innovation and application of technology, support economic development strategies for small business development, and encourage growth from within local economies, while also providing a mechanism for technology transfer.

ZTM & BPD UNIT, IARI- A Centre of Excellence for Empowering Agri-preneurs

In order to address these key challenges, an agri-business incubator called as “Zonal Technology Management -Business Planning and Development (ZTM & BPD) Unit”- was established in 2009 under National Agriculture Innovation Project (NAIP) funded by World Bank with its Mission as “Translating Research into Prosperity”. In the last five years, it has put in place effective and innovative management system, and adopted innovative Public Private Partnership (PPP) models for fast tracking the process of transfer of proprietary and other new, exclusive technologies to farmers through agri-preneurs and agribusiness.

I. IP MANAGEMENT

The ZTM & BPD Unit is facilitating the IP protection of ICAR-IARI innovations through filing applications for patents trademarks, copyrights, PPV&FR etc. and supports them from protection to technology commercialization. From 2009-2017, the unit had filed 42 Patent applications and among them 17 patents have been granted. Four copyright applications were filed and all were registered/granted during the period. Additionally, 17 Trademark

applications had been filed and two have been registered during the period. Fifty-Three Plant Varieties were filed and 26 have been registered over the 2009-17 period.

With mission to provide complete IP solution to Agro-based MSMEs, IP Spectra was launched on December 17, 2016 at ZTM & BPD Unit, ICAR- Indian Agricultural Research Institute with financial support of ministry of MSME, Government of India. Under this programme, the unit provides IP services like drafting and filing applications for patent, copyright, trademark, and advisory services to Agro start up & MSMEs along with IPR awareness programmes.

Dedicated website www.ipspectra.ztmbpd.iari.res.in has been launched to create awareness regarding IP with features like information on IP policies, IP Acts & Rules, Lecture series, downloadable forms for IP Services. These services can be availed by submitting online form/ offline form available on the website.



Screenshot of IP Spectra Website

II. TECHNOLOGY COMMERCIALIZATION

This Unit follows eight typical steps (8) for technology commercialization for Agribusiness Promotion namely, providing guidance to the researchers regarding the problem faced on the ground level farming with inputs directly from the farmers and corporate members having day to day exposure in farming processes; formulating 'invention disclosures'; ready assessment of that invention with the verification of 'Novelty' of that product and process, drafting and filing IPR application before the relevant IP office; evaluating the IP or Knowhow; identifying potential licensees for that particular technologies both from MSME and large enterprise best suited to take this technology to end user farmers; licensing of those technologies to interested parties across the sectors; and providing mentor support to all those licensees regarding the handling of technologies.

During the last seven years, ZTM & BPD Unit has successfully commercialized around 196 agricultural technologies, ranging from crop varieties, bio-fertilizers, post-harvest technologies, agri-chemicals, farm implements and diagnostic tools (Fig 4.1) to 366 agro-based companies and generated the revenue of Rs.654.5 lakhs (Fig 4.2).

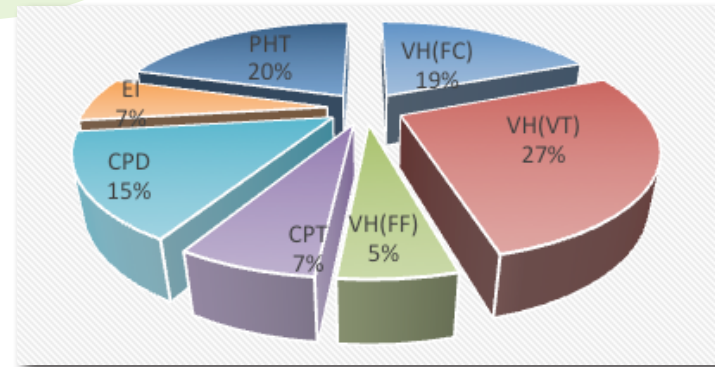


Fig 4.1 : Sector wise Technology Commercialization from IARI (2009- 2017)

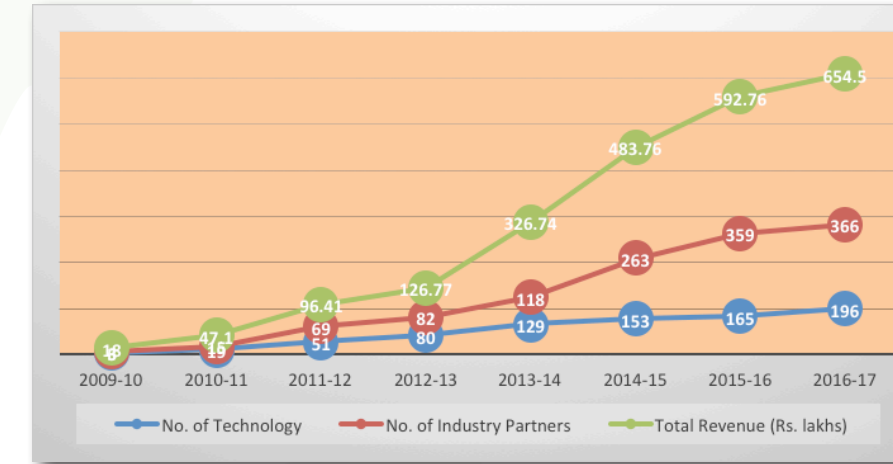


Fig 4.2 : Technology Commercialization Landscape from IARI (2009- 2017)

Twenty-three (23) IP Protected varieties i.e. rice variety PB1509, Pusa 1612; wheat varieties HD 3086, HD 3090, HD 3059, HD 2967, HD CSW 18, HI 1563 and HI 1544; Mustard Varieties PM 25, PM 26, PM 27, PM 28, PM 29, PM 30; floral varieties, Chrysanthemum Pusa Anmol and Pusa Centenary; and vegetable varieties, cauliflower K-25, Pusa Meghna & Pusa Kartik Shankar, Brinjal Pusa Ankur & Pusa Uttam and Onion Pusa Riddhi were commercialized to industry partners. Similarly, 14 patented technologies were licensed to industry for commercial purposes, so that innovative technologies should reach to end-users.

Innovative Marketing Approaches like B2B meetings, timely response to queries, inventor's link, showcasing of technologies at different fora, mass emails and cold calls, news bulletin TAKSAY (Taknique se Vyavsay;), use of social media, like dynamic web portal of ZTM & BPD Unit i.e. www.ztmbpd.iari.res.in, Facebook page & LinkedIn were used for creating the visibility among the industry for wider reach and dissemination of information regarding technologies to Industry partners and other stakeholders.

Besides this, 'Pusa Krishi' Mobile Application has been launched in 2016 by Union Minister of Agriculture, Shri Radha Mohan Singh to realize the mission of "Lab to Land", i.e., to disseminate information about these technologies to update its various stakeholders like farmers, industry, entrepreneurs and start-ups. Till date the App has been downloaded and used by more than 35,000 people.

Pusa Gautami: HD 3086

The unit has executed licensing agreements with 200 plus seed companies for its climate resilient wheat variety HD 3086 in a short period of two years. The wheat variety HD 3086 is the fastest adopted crop improved varieties of IARI that has covered an area of approx. 2 million hectares in 2014-15 and contributed approx. Rs. 15,822 Crores to farmers' income within a record three years of its release. In the past, it usually required 5-7 years for a new variety to reach farmers' field under the conventional system of varietal dissemination.

The impact of timely delivery of new seed variety i.e. HD 3086 can be measured by the level of adoption and increase in farm productivity and production, which is obvious in the productivity gain of wheat in Punjab and Haryana. Out of more than 200 seed companies, 57 seed start-up companies were supported, guided and nurtured by ZTM & BPD Unit. In a way, this initiative has nurtured the entire seed value chain from Lab to Land via industry participation and created around 5000 new employment opportunities in the last two years.

Soil Testing and Fertilizer Recommendation Meter (STFR Meter)

A portable STFR meter designed by the institute's inventors was IP protected and then commercialized to fourteen industry partners for providing the soil testing services at the farmer's doorstep. Three start-up companies took up this technology for manufacturing and marketing of STFR meter. This portable machine has been of immense benefit to the farmers and created employment opportunities to the rural youth. Young one can operate this machine and provide soil testing facility to farmers after getting training for 3-4 days and earn livelihood in the

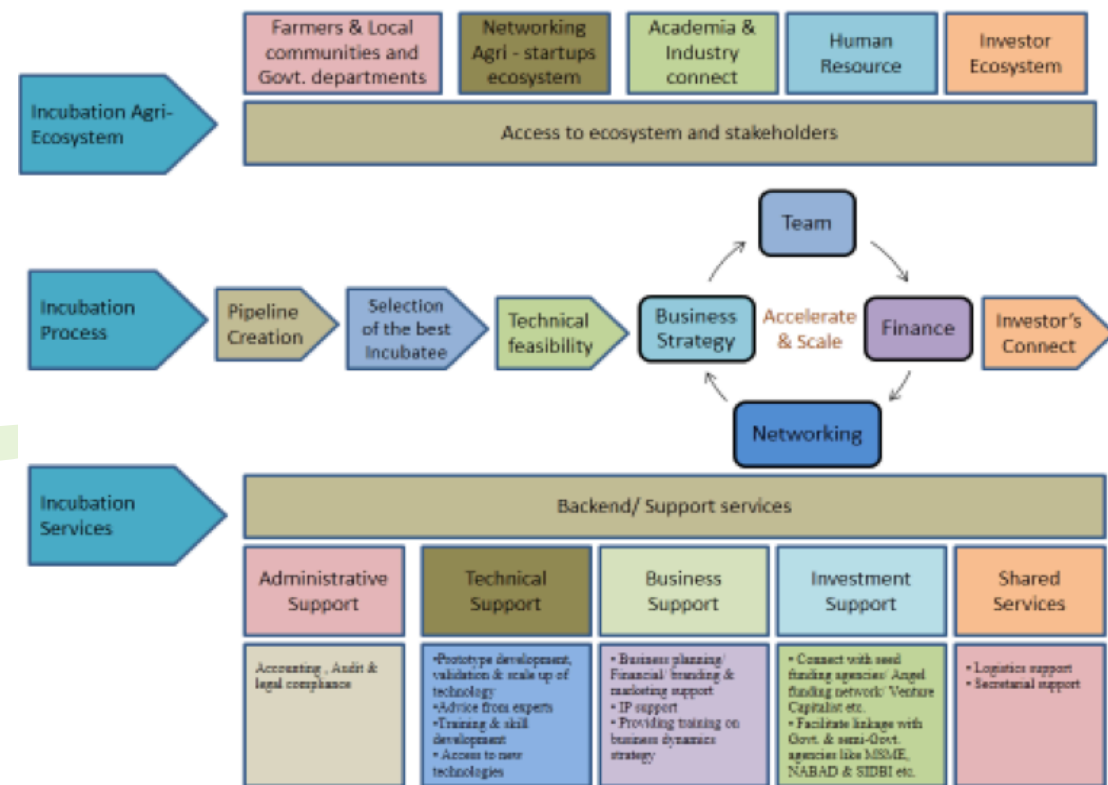
village itself with an initial investment of approx Rs.one lakh only. The impact of delivery of soil/fertilizer testing technology can be measured by the success of the 'Soil Health Card Scheme' of the Government of India in the Northern part of the country.

III. AGRI-BIZ INCUBATION

The Techno-business Incubators graduating at ICAR-IARI have advantage of realizing the synergies between and the needs of a research institution and the industry by way of forward-backward linkages and sharing the resources and information in tandem. The ZTM & BPD Unit of IARI has been obviously providing research institution based platform and opportunities to agri-preneurs that are potentially capable for beginning their own start-ups to convert their innovative ideas into commercially viable products. It has also encouraged and helped the start-ups to access and transfer farm technologies developed by ICAR-IARI and other 14 institutes situated in North India. The expertise, experience and state-of-the-art research facilities at the unit and the institute help, support and mentor the technology-led enterprises on product development and commercialization. It accelerates agro-based companies by offering ready to go technologies, evaluation and up scaling of the technologies at commercial level as well as conducting the field trials. It provides support to agri-preneurs through the use of shared facilities, technical and business mentorship, advisory services and connections through its network. These services and supports are further amplified through collaborative partnerships with other ICAR institutes, State Agricultural Universities, management institutes, business incubators, 400+ industry connect, 500+ agricultural technologies pool, 500+ technical and business mentors, financial linkages and other relevant networks.

The processes, including the networking possibilities for agri-preneurs at the ZTM & BPD incubation unit, ICAR-IARI, New Delhi are illustrated in the following flow diagram (Fig 4.3).

Fig 4.3 : Flow Chart of Processes and Networking Opportunities at ZTM & BPD Unit, IARI



Thrust Areas

Based on core competence of ICAR-IARI, the wherewithal or experience at the ZTM & BPD Unit and the current economic activities in agriculture sector in the country, the unit envisages to identify, support and nurture start-ups in the following and other related areas of agri-business:

- (i) Farm Mechanization
- (ii) Biotechnology and Bioinformatics
- (iii) Post-Harvest Processing
- (iv) Agri-Food Processing
- (v) Agronomy, Soil and Agri Health Services
- (vi) Farm Retailing
- (vii) Precision Farming
- (viii) Nutraceuticals and Agri-Value Chain
- (ix) Supply Chain Management
- (x) Internet of Things (IoT) and Information and Communication Technology (ICT) in Agriculture
- (xi) Artificial Intelligence in Agriculture

Incubation Process

The Unit has created ecosystem for graduating new start-ups through in-house outreach activities and also utilizing other similar platforms at other ICAR institutes and SAUs across the country. Selection of incubates is done through a rigorous process of identification and evaluation using the incubation model. Pre-incubation consultations are

imparted to agri-preneurs/potential start-ups short listed in first round of interviews of candidates. Professional resource persons are networked as mentors at the ZTM & BPD Unit who provide foundation level support to individual short-listed agri-preneurs in refining and communicating their original initial business idea. These agri-preneurs then prepare and present their idea or concept before a committee comprising of independent experts. Selected candidate agri-preneurs are inducted and provided the incubation space, skill training and other facilitation support to nurture them through their graduation process as start-ups. Figure 4 also illustrates other related details and processes followed by the ZTM & BPD Unit towards supporting the to-be-incubated persons/entities in understanding the nitty-gritties of their idea and refining it for market worthiness, frame their best-fit business models, access the base technology and develop their commercial product/services, and optimize their networking requirements including execution of memoranda of understanding or agreement with technology partners, etc., so as to groom into a viable enterprise with such elaborate array of need-based support services, networking opportunities and other actions as a part of the business value chain (Fig 4.4).

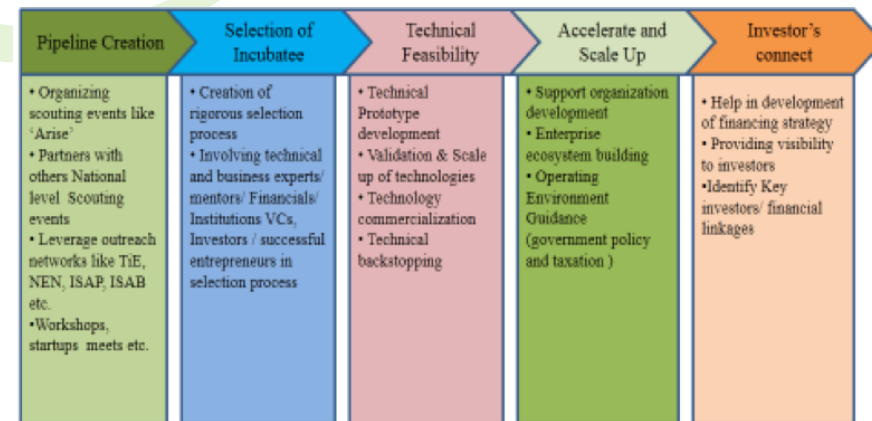


Fig 4.4 Incubation Process of ZTM & BPD Unit, ICAR-IARI

Providing Need-based Assistance

At present, the Unit has well developed capacity to incubate 12 incubates in its own premises. Further, with the support under Technology Business Incubator (TBI) project of Government of India, the unit proposes to scale up its capacity to incubate another 25 incubates and strengthen its office equipment including state-of-the-art communication network. In terms of providing need-based assistance to the start-up entities, focus is mainly on five broader areas enumerated as follows:

a) **Capacity Building:** The Unit focuses on refining the entrepreneurial skills of agri-preneurs/entities. Training is imparted in business and financial models. The unit assists the start-ups in their team building, leadership development, organization structure, HR recruitment, infrastructure development etc. Motivation is done on recurrent basis in their path to establishment, development and persistence; to turn their ideas into an enterprise, and to build and hone up competitive business capacities.

b) **Services:** The Unit provides office space services to identified agri-preneurs/entities with support infrastructure like working lab, testing lab, green house facility, high speed Internet connectivity, conference and meeting facilities, etc. Need based assistance to start ups is also provided for incorporation of company, common secretarial and legal-advisory services, financial-accounting, audit and its compliance, IP services, market research, social media and web presence, branding and marketing promotion to make their business ready for pilot and launch.

c) **Business Support:** The Unit helps start-ups by leveraging the strength of its business partners in developing their business plan, strategy and business model, policies and procedures, branding and marketing strategy, mentoring and financial strategy etc.

d) **Technical Capabilities:** The Unit has its own biotechnology lab, transgenic facility and pilot level tissue culture and green house facility. The unit shares information about innovative technologies available with institute technology pool, commercial technology transfer, background IP, terms for know-how transfer, prototype development, technology refinement, joint development of technology, validation and scale up of technology, and assessment and valuation of technology on one-to-one basis. The state of art research facilities is already available at ICAR-IARI. The unit leverages its own as well as parental institution strength of IARI so as to support incubates for technology development. It facilitates access of start-ups to product testing labs (in association with various institutes) to help make their business ready for pilot and launch.

As a part of commercialization of new varieties, it is essential to evaluate their performance by conducting field trials, which is a rigorous and tedious component for validation of the technology performance. IARI has unique strength in conducting field trials at its headquarters and ten regional stations, which helps to simultaneously validate the technology performance of new varieties under different agro-climatic regions.

e) **Partnerships:** The Unit helps start-up entities in establishing the required partnerships with relevant agencies and institutions like service providers, suppliers and vendors, distribution channels, banks etc. The unit also helps in the process of their networking for marketing of their successful products and offerings that have crossed the proof-of-concept, intellectual property protection and legal stages, and entered into a roll-out stage of finished products and services.

Supplementary Support

The Unit leverages its own institutional as well as its partners', mentors', industry contact's, and network strengths for nurturing and growth of the start-up entities. The unit has organized a large pool of 500+ technical and business mentors. It provides need based technical and business mentoring and guidance to the selected start-ups through its mentors' pool. Some other interventions are made to further amplify the efforts targeted at all round support for the incubation processes. These efforts include:-

Facilitating Peer Group Interactions: To effectively harness the networking opportunities by the incubates, peer group interactions are facilitated for confidence building and to help the agripreneurs/start up entities learn and hunt the business opportunities within the trusted network to begin with before exploring further in open market. Such peer group meetings with established industry and peer groups are organized from time to time which have been well taken by incubates in their learning process.

Extending Partnership Opportunities: The Unit leverages its industry connect and other partnership network for providing the access of industry leaders/mentors to the start-ups whether on pro-bono or low bono or deferred payment basis. The unit is also forging partnerships with service providers like law firms, chartered accountancy firms, financial institutions and design firms etc. to develop the ecosystem that helps start-ups in naturalizing in the grooming process.

Providing Financial Advisory: The Unit helps the start-ups in understanding the basics to create their own business and financial models. Opportunities are created for them to initiate dialogue with investors in order to obtain requisite financing. Incubates are networked with the established financial management partners like Indigram Labs Foundation, Centre for Innovation Incubation and Entrepreneurship (CIIE) etc. to enhance their learning and

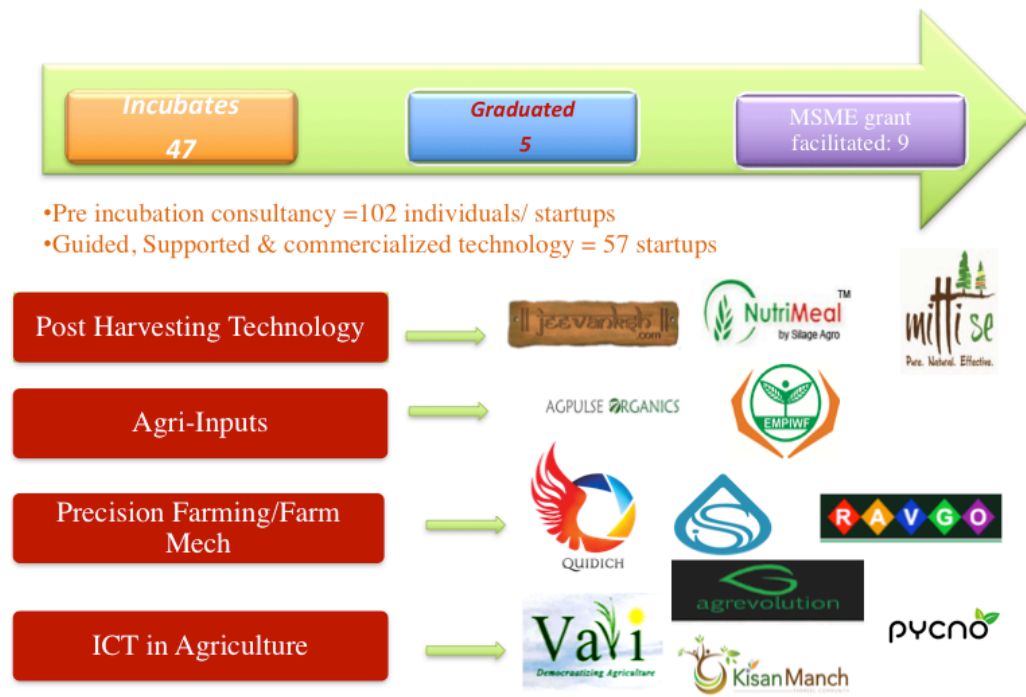


Fig 4.5: Incubates' Portfolio of ZTM & BPD Unit, IARI

management development process. Their relationship with investors and partnerships with different government funding initiatives are also leveraged to facilitate funding.

Status and Achievements

As of now, forty-seven agri-preneurs/entities have been registered for the incubation process towards setting up their enterprises and availing different need based services offered by the ZTM & BPD incubator at ICAR-IARI (4.5). Out of these 47, twelve business incubates have already successfully graduated in 2017.

Outreach activities

For sensitizing and scouting of enterprises for incubation, the Unit has been organizing many awareness, training and skill development opportunities and programs for the promotion of agri-preneurship in the zone.

a) Accelerators

To provide an insight as to how to focus on scaling up a business and “accelerate” growth of an existing company, accelerator programs have been organized with a set time frame. Individual companies/entities could spend anywhere from a few weeks to a few months working with a group of mentors to build out their business and avoid problems faced along the path to such building up. Such arrangements would provide proven, efficient ways to provide intensive and accelerated support to start ups for business, financial, marketing strategy, product design, customer validation as well as to prepare the start up to initiate conversation with investors.

The unit has been organizing one accelerator programme on biennial basis that helped in identifying the potential start-ups from among the participating agri-preneurs, and also honing up their capability in a structured manner.

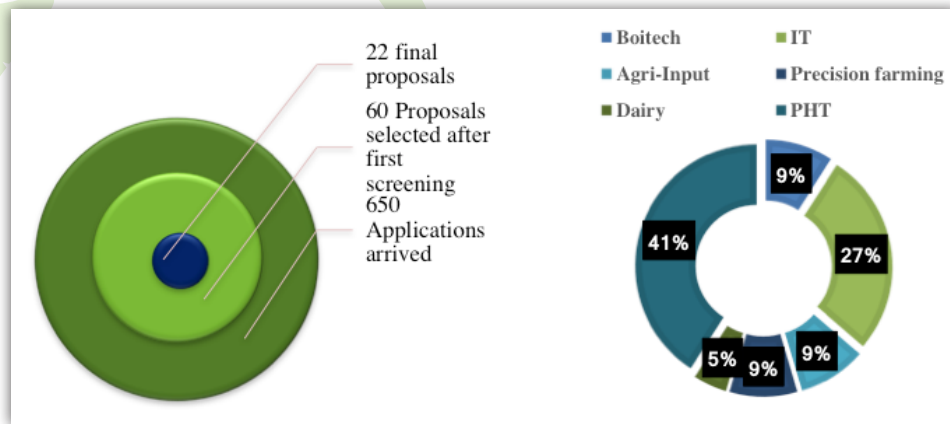


Fig 4.6: ARISE (Agricultural Research & Innovations for Sustainable Enterprises) Portfolio

Recently, the unit has successfully completed the second version of yearlong AgriBiz Accelerator program, “Arise 2016 - Launch Pad for Agri-Start-ups”. It was launched in association with nine Agribusiness Incubators of ICAR (NDRI, Karnal, IVRI, Izatnagar, CARI, Izatnagar, CPRI, Shimla, CIPHET, Ludhiana, IIVR, Varanasi, NIRJAFT, Kolkata, CIAE, Bhopal, and ICAR RC NEH, Umiam), two State Agricultural Universities (BAU, Ranchi and JNKVV, Jabalpur), three knowledge partners (Indigram labs Foundation, CIIE, Ahmedabad, KGS Advisors), two social media partners (Inc 42 and YourStory) and a social partner COWE (Confederation of Woman Entrepreneur).

The ZTM & BPD Unit had received over 650 applications (both online and offline) from different technology domains i.e., Post-Harvest and Food Processing, Agri Inputs, NRM, Farm Mechanization, ICT in Agriculture, Dairying and Livestock, Precision Farming, Sustainable Agriculture, Supply Chain Management, Biotechnology

and Agri Education. Twenty-two business proposals were selected (Fig. 4.6) through already described, rigorous, two-phase selection process yielding a highly-diversified portfolio for incubation shelter and grooming.

The business incubation workshop was organized from 18-24 September, 2016 in order to sensitize and equip selected incubatees with the basics and tools of business such as; company formation, financial prepositions, marketing strategy, accounting, tax planning etc., with a focus on their respective sector. As many as seventy need-based customized one-to-one mentoring sessions were conducted to help them make their viable business, marketing, branding and financial strategies.

Out of the 22 final selections, 11 participants have been linked with Ministry of Micro, Small & Medium Enterprises (MSME) for their grant-in-aid support. Further, five top performers have been linked with Technology Development Board (TDB), Government of India for external funding.



Glimpses of Arise Programme

b) Agri-preneurship Development Programme (ADP)

In order to inspire the progressive farmers, agriculture graduates and others including women and youth in agriculture to become successful entrepreneurs, amplifying the scope of agriculture related enterprise for “Make in India” campaign, Agri-preneurship Development Programs (ADPs) have been made the integral part of agribusiness promotion through human resource development. Therefore, the unit has organized ADPs on a regular basis on different thematic areas. There was an overwhelming response from across the farming community. During the period 2009-2016, the unit has organized 32 such ADPs in which more than 500 budding entrepreneurs were trained on technical as well as business aspects, so as to be able to run their own enterprises and provide the employment opportunities to others in society. Many of the ADP participants have started their own agri-businesses by in-licensing the ICAR-IARI technologies.

Under Corporate Social Responsibility (CSR) of JK Tyres, Mahindra and Mahindra groups, ADPs were organized to empower stakeholders from different sections of society. For example, woman agri-preneurs from Jammu and Kashmir were sensitized and empowered in dry flower business by imparting training on technical as well as business aspects under an ADP.

The Unit has also been creating linkages with other ICAR initiatives like Attracting Youth in Agriculture (ARYA) and *Mera Gaon Mera Gaurav* (MGMG) etc. for harnessing the potential of agripreneurship development in the country.

c) Start-up meets

Aspiring as well as early stage entrepreneurs were involved in start-up meets organized in partnerships with local chapters of The Indus Entrepreneurs (TiE), National Entrepreneurial Network (NEN), Industry associations. Promotion of local celebrity agri-preneurs was also done through social media and other online institutional channels to nurture the incubation ecosystem over all.

d) Workshops

The unit has been organizing workshops from time to time with the help of invited domain specialists and motivational speakers to sensitize and familiarize the budding agri-preneurs with bright spots and peculiarities of agribusiness ecosystem so that they can prepare themselves to take up the challenge and harness the business opportunities. Some glimpses of different workshops organized by ZTM & BPD Unit are illustrated below:



Glimpses of Workshops

Facilitation in establishing Financial Linkages

According to a study commissioned by the World Bank, 43 percent of small businesses (having number of employees between 20 and 99) in low-income countries consider access to finance a major constraint in setting and scaling up their enterprise. Keeping in view these constraints of start-ups, schemes of Ministry of MSME have been linked with by the Unit under a sanctioned project entitled “Support for Entrepreneurial and Management Development of SMEs through Incubators”. This externally funded project sanctioned to ZTM & BPD unit aims to facilitate the much-needed seed funding to grooming start-ups. Under this scheme, nine start-ups incubates of the unit got the

Table 4.1: Companies Supported through Grant in Aid under Ministry of MSME Scheme

S.No.	Name of the Project	Name of the Incubatee	Name of the Company
1	Production and marketing of high quality hybrid and OP seeds of vegetable and field crops	Mr. L.K. Pandey	M/s Ananya Seeds Pvt. Ltd.
2	Innovations, Production and Marketing of Quality Soya Products under Brand name of Soya Nutri Nuts.	Mr. Kundan Kumar	M/s KAD Bio-resources Pvt. Ltd.
3	Manufacturing of Bio-fertilizers and Bio-Pesticides	Mr. Jaideep Pareek	M/s Jai Biotech & Research Centre
4	Utilization of waste mango kernel for extraction of rich mango kernel butter and oil	Ms. Tuba Siddiqui	M/s Nature's Lap Pvt. Ltd.
5	Biscuit-making from nutritionally rich traditional millets in combination with the wheat flour	Mr. Bhopinder Mehta	M/s Society for Farmers Development

6	Cotton Harvesting Machine	Mr. Nitin Gupta	M/s Sickle Innovations Pvt. Ltd.
7	Double Mustard :Commercialization of Zero Erucic Acid Mustard (Brassica juncea) for Enhancing the Competitiveness of Domestic edible oil Industry in India.	Mr. Raju Ram	M/s Arpan Seeds
8	Instant Millets Mix for Breakfast, Soups, Shake, etc.	Mr. Abhay kumar Verma	M/s Unison Agrico
9	Enzys Translational Research and Application Centre (enTRAC)	Mr. Amit kumar Rai	M/s Enzys Gonvindji Bio Labs

grant-in-aid of around Rs 60.03 Lakhs for working in diverse agri-business domains such as post-harvest management, seeds, bio-fertilizer, etc. (Table 1)

The hand-holding ZTM & BPD Unit during incubation programme has been helping each one of the registered incubate to make attempt for accessing their project finance under different schemes of Government of India. Linkages have been developed with Technology Development Board (TDB), Biotechnology Industry Research Assistance Council (BIRAC), National Bank for Agriculture and Rural Development (NABARD), Small Industries Development Bank of India (SIDBI) and other banks for ensuring smooth and hassle-free services to these Agripreneurs.

Marketing & Networking Platform

Platform for networking/marketing were provided to enrolled incubates at the International Trade Fairs during the years 2015, 2016 and 2017. Besides, they were exposed to National Innovation Foundation (NIF) Exhibition at Rashtrapati Bhawan, (2016), National Agriculture Fair “*Krishi Unnati*” at ICAR-IARI, 2016 and 2017 among other

such events in Delhi. The incubates used these opportunities to discuss, showcase and/or market their products wherein some of them got huge response at these platforms. At Krishi Unnati Mela, 2016, Honorable Prime Minister Shri Narendra Modiji visited the ZTM & BPD Unit Stall and interacted with the incubates, which was a morale boosting boon for them.

Corporate Membership

To create strong and meaningful relationship with the industry so that the technologies of ICAR-IARI can reach and benefit the society and farmers, the ZTM & BPD Unit promoted its partnership avenues through 'Corporate Membership'. So far, during the period ranging from 2009-2017 Corporate Members numbering 970 have been enrolled and networked in the agri-preneurship ecosystem developed by the unit.

Linkages/Collaborations

- Marketing and linkage network of around 900 farmers, NGOs, small, medium and large enterprises were created through the corporate membership.
- The Unit has business relationship with around 450 industries of each sphere of agriculture via technology transfer, consultancy, contract research agreements and corporate membership which provided basis of strong linkages with agricultural industry.
- Unit has established linkages with CGIAR institute like IFPRI, ICRISAT, FAO, UNDP under different collaborative mode projects.
- Unit has successfully established financial linkages with Institutional banks like NABARD, SIDBI, MSME etc. for facilitating the funding to incubates.
- Network Development



Marketing
Platform
to Incubate
Companies

The ZTM & BPD Unit has also established the required networks for facilitating enterprise development such as financial institutions/Angel investors/investors' connect, market access, industry connect, local service providers, vendors and suppliers and connect with different government departments and schemes as well as other incubators by participating in different incubation summits and angel workshops. The unit organizes

investors' meet or workshops to create interface between incubates and the potential investors. The ZTM & BPD Unit is also aligning its incubation program by becoming the member of different associations and networks like National Entrepreneurship Network (NEN), Confederation of Indian Industry (CII), FICCI and The Indus Entrepreneurs (TIE), Indian STEP's and Business Incubators Association (ISBA).

Networking Platform harnessing the advantages of Association

Agri-preneurs have found over the time that there are obvious advantages of networking. They acknowledge that their association with ZTM & BPD, ICAR-IARI has been so precious. Same is the case with various licensees, incubates and corporate members associated with the unit.

First and foremost, they have had an easy access to diverse technologies developed by country's premier agricultural scientists and researchers virtually in every field of agricultural sector under one roof.

Second, they got an easy access to training and skill development for optimizing use of technologies.

Third, association with several business conglomerates and financial institutions facilitated by the unit has provided them with a readily available mentor group apart from the excellence that is synonym with the India's prime institution, the ICAR-IARI.

Fourth, a common stage delivering the IP facilitation along with R&D and technology commercialization is a unique combination availed on offer.

Fifth, a common platform for academicians, persons from financial institutions, entrepreneurs and farmers has itself been unique experience to them worth explored through corporate membership.

Sixth and last but not the least, the offer for an office space with all the facilities right in the heart of the Capital of India for a nominal charge has been too fascinating and scintillating.

Of late, ZTM & BPD Unit on way to developing network of various agencies including its members to offer marketing support to other members. The unit has become member of various umbrella bodies and developed linkages and signed MOU with the similar organizations in the field. This strategy has provided our corporate members and incubates access to a very strong network of business leaders in various agri-business domains.

Information Dissemination

The Unit has developed and emphasized on effective and efficient use of its interventions through a well-defined communication strategy of reaching out to all stakeholders. The multi-pronged strategy developed includes effective use of social media such as Facebook and LinkedIn; use of ICT multi-media techniques such as website and e-mail marketing, and reaching out to stakeholders through conferences, workshops, fairs, exhibitions, etc. A facility has been created for budding agri-preneurs for any time walk in for personal interaction with the in-house team of experts to understand basics of agri-preneurship and the facilities offered by ZTM & BPD Unit for nurturing their innovative idea into a successful start-up.

The communication strategy developed by ZTM & BPD Unit of IARI to achieve its mission of "Translating Research into Prosperity" won the prestigious GOLD RMAI Flame Award under the category Agriculture Campaign of the Year 2014-15.

Case Studies of Successful Enterprises from ZTM & BPD Unit

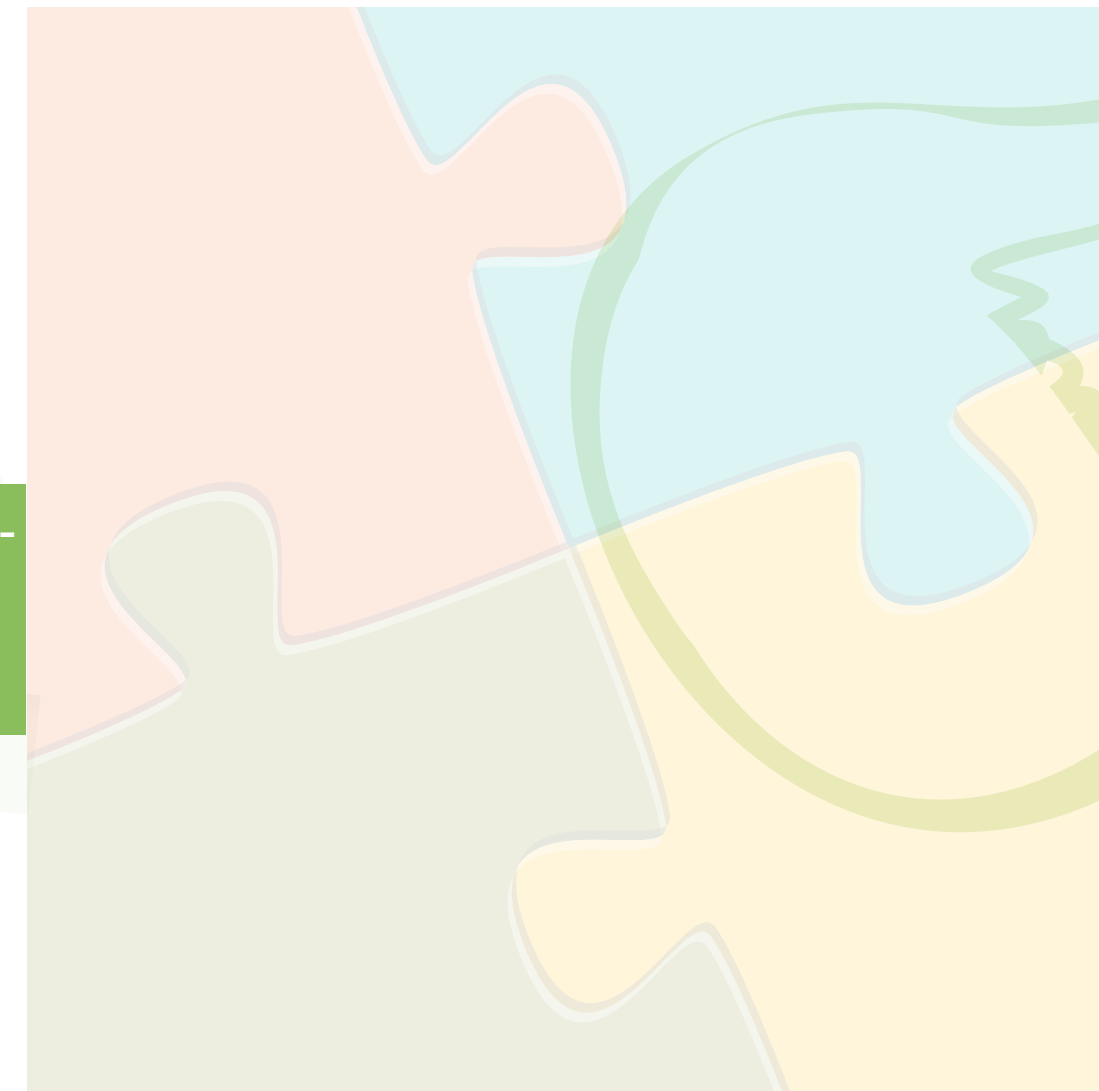
An effort is made to explain some case studies of successful agri-preneurship development by this unit in the next chapter connecting the dot-ZTM & BPD unit illustrates that a mix of various interventions have been provided to nurture the young budding persons with brilliant ideas into successful start-ups. These and many other success stories developed by the unit are not necessarily the best ones but by far these can be termed as most representative ones in terms of the good results achieved despite many constraints faced.

Future Ahead

The need of the hour is to extend much more handholding to budding agri-preneurs in the country to help address a number of challenges faced by the agriculture sector. Emphasis on meeting the demand side is implicit and paramount. But it is equally important to address the supply side equations, focus on new technologies, attract investments, develop infrastructures, and rationalize resource allocation, reach of credit flow from appropriate source, and insurance. However, key role for agri-incubators like ZTM & BPD Unit, IARI is to basically equip the budding entrepreneurs with available toolkits so that they make systematic effort and get time to equip and mature enough before passing out to face the unfamiliar business conditions or harsh competition outside. Once equipped with infrastructure support, technological guidance and mentoring, easy financing, these small agri-preneurs would get the crucial instruments of growth and claim their deserved share of the pie not only in India but also abroad and in international arenas to make the markets competitive and consumer friendly in the longer run.

Chapter 5

Connecting the Dots - ZTM & BPD Unit





Ananya Seeds (P) Ltd.
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Email: lkpande@gmail.com
Website: www.ananyaseeds.com/
Ph: 9811159584
DIPP 1880- Start-up India

Ananya Beej ke Sang Khushhali ke Rang

Key Facts

Founder: Dr. L.K.Pandey
Industry: Hybrid Vegetable Seeds
Founding year: 2012
Initial Investment: 10 Lakhs
Present turnover: 1500 Lakhs
Employment generation: 101
Farmers/Customers outreach:
approx 1,00,000

Dawning

Dr. L. K. Pandey, having a vision of an entrepreneur, left his lucrative job as General Manager in Mahyco Seeds. His journey from an ex-employee to a successful entrepreneur is quite commendable. He started his successful journey by registering his company "Ananya Seeds Pvt Ltd" as a ZTM & BPD incubate and thereafter engaged in various Agri-preneurship Development Programs organized by the ZTM & BPD unit and his unending quest of being an entrepreneur led him to sign up agreement for Vegetable varieties and Hybrids, Wheat variety HD 3086 and Mustard variety PM 30 with ICAR-IARI.

Progress

The company has established in-house processing and packaging unit and launched seeds of vegetables like Okra, Gourds, Melons, Cucumbers, Eggplant, Tomato, Peppers, Carrot, Cabbage, Cauliflower, Radish, and selected field crops like Paddy, Wheat, Corn, Forage Sorghum, Mustard/ Rapeseed, etc. Now the business has grown up from teething to biting stage and is able to provide direct employment to 101 people and 1700 people are linked in entire supply chain to disseminate new seeds in countryside. Presently, the venture is engaged in exporting high quality vegetable seeds and hybrids to Pakistan and Nepal. Company is also extending consultancy regarding tomato seed production in Ghana.

Incubation support

ZTM & BPD Unit has licensed 30 IARI vegetable varieties to the company to start with. Along with technical and business mentoring, infrastructural facilities, marketing and networking platforms. The company has also been facilitated with grant-in-aid from Ministry of MSME, GoI Mentorship introducing to financial understanding, intellectual property rights and agri-networking played an important role in company's growth trajectory.



Recognition

The company has bagged many awards, like Best Company Award' (Pusa Kisan Mela, 2013), Best Company Award' (Pantnagar Kisan Mela, 2015), Selected Company ('Hall of Fame' of IARI, New Delhi), Flame-Asia Award (RMAI, 2015), "Dr. J.S Juneja Award for Creativity & Innovation in Micro, Small & Medium Enterprises, (June, 2016) and its success story has been incorporated in ET's Coffee Table Book 'Kisan Sakha'.

Way forward

The company is now planning to enhance its export market and geographically diversify into related businesses to become a conglomerate.

Mitti ki Jaan Kisano ki Shaan

Key Facts

Founder: Mr. Wazir Singh Dahiya
Industry: Digital Soil Testing
Incubation year: 2016
Initial Investment: 10 Lakhs
Present turnover: 200 Lakhs
Direct Employment Generation: 20
Rural Employment Generation: 300


W S Telematics Pvt. Ltd.

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432, FIE, Patparganj Industrial Area,
Delhi-110092
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Website: www.wstelematics.com
Ph: 09212302277

Dawning

An electronics engineer by education, Wazir Singh Dahiya always wanted to do something for the farmers. Keeping this vision in mind, Mr Dahiya led his company W S Telematics to become the first one to commercialize 'Pusa Soil Testing and Fertiliser Recommendation (STFR) Meter Kit' technology developed by the Soil Science Division of ICAR-IARI, Pusa. He worked hard to commercialize and popularize this technology and as per Prime Minister's vision took the technology from Lab to Land, and strengthened the Soil Health Card mission of Government of India by making available a better, faster and cost effective product for soil testing. Pusa STFR Meter manufactured by W S Telematics is today being used by Krishi Vigyan Kendra's, Government Institutes, Colleges, Private Agricultural Organisations, Farmers and Rural Entrepreneurs to test soil and issue Soil Health Cards.

Progress

The company has established in-house electronics manufacturing unit at Patparganj Industrial Area, Delhi. Now the business is able to provide direct employment to 20 people and has created over 300 rural entrepreneurs by training and helping rural youth in setting up their soil testing labs, thus creating employment for them and many others working in the lab. W S Telematics manufactured 'Pusa STFR Meter' is being used by Agriculture Departments to issue Soil Health Card to farmers. A lot of private organization are making use of this innovative product to make available good soil testing facility to farmers. Use of Pusa STFR Meter resulted in optimum use of fertilisers thus helping farmers in reducing cost, reducing nations expenditure on fertilisers and saving environment from chemicals.

Incubation support

The company has been licensed with STFR Meter technology developed by ICAR-IARI. The company has been provided with technical backstopping throughout the establishment of their facility along with different marketing and networking platforms.

Recognition

The company was selected as one of top 5 agro companies to be presented in front of Prime Minister Shri Narendra Modi Ji in Pusa Krishi Unnati Mela 2016 for its contribution to Indian agriculture. Featured as a success story on DD Kisan TV Channel. Featured as success story on Green TV Channel.

Way forward

The company is now trying to make available quality soil testing facility in all blocks and districts of the country so that all farmers can get benefits of soil testing and do better agriculture. It is working on making new products for the benefit of Indian agriculture and farmers.



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Website: www.sickle.in
Ph:8586971135

Nutritious Meal for Maximum Yield

Key Facts

Founders: Mr. Rohit Sharda,
Mr. Sahil Anand, Mr. Wali Khan
Industry: Animal nutrition and
fodder preservation
Founding year: 2014
Initial Investment: INR 4 crore
Present turnover: INR 15 crore
Employment generation: 125+
Farmers/Customers outreach:
10,000+ farmers; 200,000+

Dawning

“The whole is greater than the sum of its parts”. The foundation and origin of SAPL is largely based on the premises of SYNERGY. The idea germinated after a deliberation amongst 3 engineering batch mates pursuing 3 totally different and unrelated professions, one being an investment banker, another one being in the cattle feed business and yet another being in the heavy engineering business, but they together worked like the spokes of a wheel and rolled out their dream in the form of SAPL. The realization that despite India being the largest producer of milk, faced challenges in terms of quality, milk yield, availability of quality fodder and feed, led them towards the path of SAPL, as a panacea to this problem.

Progress

To kickstart the revolution, where they have been the pioneers as the first organized player of high nutrition fodder, SAPL, has deployed best in class technology and state of art machineries imported from the United States and Europe. For the first time in India, silage made in Punjab was transported to states as far as Maharashtra, West Bengal and Andhra Pradesh. The compact UV protected packing and over 18 months shelf life made it efficient to transport and store the silage bales. They have successfully sustained a high customer retention rate of 85%. They started by selling silage at Rs. 7/kg (on production of 2,500 tons) and are now selling at Rs 5.50 ex-works (on production of 30,000 tons of silage).

Incubation support

The company has been selected under 'Arise' and inducted to a six days extensive business incubation workshop. They have undergone various one-on-one mentoring sessions for getting ready for pitching. They have also been recommended for MSME Grant-in-aid.



Way forward

SAPL was established with a mission "To Improve the Productivity of Indian Dairy & Agriculture Farmers and help them in getting the most out of their farms by providing them best quality products and services". With baled corn silage being its flagship product, the Company aims to cater to the animal nutrition space and provide products like Total Mixed Ration (TMR) bales, which would be a complete feed solution for dairy farms and gaushalas. The Company aims to set up multiple units across India to cater to this growing requirement and make the logistics and pricing more efficient so that the farm-level economics work better. SAPL wants to bring more technologies and indigenize them to suit the Indian agricultural requirements and have a high impact at farm and environment level.



Sickle Innovations Pvt. Ltd
Shed no. 18 to 24,
Mittl Estate, Near Nissan Motor Service Station,
Under Sarkhej Railway Over Bridge, Ujala Circle,
Sarkhej, Ahmedabad, Gujarat 382210
Website: www.sickle.in
Ph: 9426647045

Design Farming Technology

Key Facts
Founder: Mr. Nitin Gupta
Industry: Agritech
Incubation year: 2016
Initial Investment: 10 Lakhs
Present turnover: 60 Lakhs
Farmer/Customer Outreach:
approx 2500

Dawning

Mr. Nitin Gupta, started Sickle Innovations in 2014 after getting his Master's degree in product design from the Prestigious Indian Institute of Science, Bangalore. Nitin has worked with Indian Space Research Organization (ISRO). Mr. Vinay Reddy later joined him after leaving his job at Ashok Leyland. Sickle Innovations, was incubated in ZTM & BPD unit of IARI. The idea was to reduce farmer's drudgery through mechanization.

Progress

Sickle Innovations has started its journey with development of cotton picker. It is a battery operated machine for picking cotton fibre. The technology for picking of cotton fibre and transfer of cotton fibre from picking end to collection unit has been developed and patents for both technologies have been filed. After this, the company has moved towards developing mango picker, apple picker (a patented technology) and vegetable transplanter. Company has commercialized more than thousand apple pickers in Himachal Pradesh and Jammu & Kashmir recently. After hand tools, Sickle Innovations has developed high tech products, we have already developed and demonstrated colour sorting machine for apple and smart food dryers for drying of fruits and flowers.

Incubation support

ZTM & BPD Unit had been instrumental in equipping the company with business mentoring, marketing and networking platforms. The company has also been facilitated with grant-in-aid from MSME department.

Recognition

The Company has received "Innovative Company of the year award, year 2016, from ISBA. They have also received "Villgro Unconventional" award from Villgro.

Way forward

The Company is now planning to venture in new high-tech technology using computer vision, machine learning and artificial intelligence in addition to exploration of export markets for different hand tools and high-tech machines.



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Website: www.tradifo.com
Ph: 9311493935

Traditionally Healthy

Key Facts

Founder: Dr.Kundan Kumar
Industry: Food Processing
Founding year: 2012
Initial Investment: 50 thousands
Present turnover: 35 Lakhs
Farmer Network: 100
Customers outreach:
approx 10,000

Dawning

The idea of Tradifo was conceived to fulfil a desire to provide a healthy, natural and tasty assortment of food products to the existing market while procuring the highest quality of raw materials sourced from farms certified by PGS Organic Council of India. It intends to promote the use of innovative agricultural technology for agriculture based entrepreneurial ventures. 'Tradifo' is synonymous with highest standards of food processing with no addition of any preservatives or artificial flavouring substances.

Progress

The Company has been licensed with many food processing technologies from IARI for market penetration and a new way to innovate and improve their offerings. The company is nurtured and supported by the ZTM & BPD Unit of Indian Agricultural Research Institute, New Delhi. The company has established in-house food processing and packaging unit of Soyanuts, Makhana, Sunflower seed, Pumpkin seed, Flax seed, Amala candy and many more value-added agricultural products. Presently, it has pan-India online sales network through its website tradifo.com and amazon.in.

Incubation support

ZTM & BPD Unit licensed post-harvest technologies developed by IARI to the company to start its business journey. Technical mentoring was extended for establishing its manufacturing facility along with marketing support. Along with business mentoring, marketing and networking platforms at different National level fairs, exhibitions etc. The company has also been facilitated with grant-in-aid from Ministry of MSME.



Way forward

The Company is now planning to set up retail outlets in many places as franchise model and also strengthen backward linkage with farmers to improve organic production. They are also planning to involve in community based contract farming with farmers as an attempt to enhance their income.



Society for Farmers Development
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Ph: 9459873461

Nutritious Biscuits

Key Facts

Executive Director: Mr. Bhopinder Mehta
Industry: Food Processing
Founding year: 2014
Initial Investment: 5.0 Lakhs
Present turnover: 40 Lakhs
Network of Farmers: 100

Dawning

The Society for Farmers Development (SFD) is a not-for-profit organization registered under the HP Society's registration Act 2006. SFD was founded in 2007 by a group of dedicated and experienced professionals with a background of different disciplines and local farmers including women to undertake studies & action research projects leading to enterprise development for livelihood in rural area. The Products are sold under the brand name 'FARMER' mainly in Himachal Pradesh.

Progress

The organization has established in-house processing, lab-testing and packaging unit for about 40 different food products. As incubate of IARI, which started in 2015, the organization has developed processes for six variants of biscuits and launched four variants in the market, which has increased the annual turnover of the society unit by about 20%. The Organization is able to provide full-time direct employment to 12 people and part time to five women and indirectly benefitting approximately 100 marginal farmers.

Incubation support

ZTM & BPD Unit licensed IARI innovative technologies of making healthy snacks using non-conventional food stuffs like Amla, Beetroot, Soyabean etc. to diversify into new range of products. This has led to availability of employment to the local women throughout the year, which was earlier more seasonal in fruits & vegetable processing. The society has also been facilitated with grant-in-aid from Ministry of MSME, Government of India.

Recognition

The society has been participating in various exhibitions and fairs being organized by Department of Science & Technology (DST) New Delhi, CAPART, CEE/UNDP & IARI. It has bagged first prize in exhibition organized by Dr. Y. S. Parmar University of Horticulture & Forestry, Solan at its research station Neri in Feb. 2010.

Way forward

The society is now planning to scale up the production and marketing to distant areas outside the state.



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Website: www.mittise.com
Ph: 9919769079
DIPP 5333- Start-up India

Pure Natural Effective

Key Facts

Founders: Ms. Tuba Siddiqui,
Mr. Fakhra Siddiqui, Mr. Faiz
Siddiqui, Mr. Rafi Shaik

Industry: Organic Natural Personal
Care, Home Care & Health products

Founding year: 2014

Initial Investment: 5 Lakhs

Present turnover: 40 Lakhs

Employment generation: 20

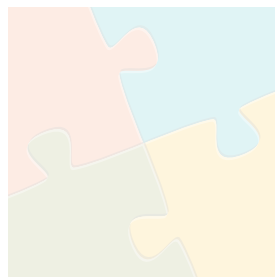
Farmers/Customers outreach:
approx 30,000

Dawning

Ms. Tuba Siddiqui, had a vision of being an entrepreneur, after doing her engineering in Biotechnology. She started her successful journey by registering her proprietary firm “Nature’s Lap” as a ZTM & BPD incubate by making Mango Kernel Butter from waste mango seeds, utilized as a raw material in natural personal care products. In the year 2014, she formed a Private Limited Company ‘Earthkind Eco Ventures Pvt. Ltd. with Brand Name “Mitti Se” along with other three partners. Now, ‘Mitti Se’ has established its brand image of sincerity and purity in the field of Pure Organic Natural Personal Care, Home Care Cleaner and Health Products.

Progress

The Company has won hearts of its customers. The Company’s confidence has increased manifold by getting 95% repeat orders. They are selling their products to through brands like Big Basket, Amazon, Flipkart and many others. The Company is also expecting to market its products via Retail Giants like Future Group-Big Bazar, Hyper city, Reliance, Easy Day, Spencers’ etc.



Incubation support

ZTM & BPD Unit played an important role in infusing the business bent among the founders. Under incubation, along with business mentoring in one to one mentoring sessions, marketing and networking platforms were also provided. The Company has also been facilitated with grant-in-aid from ministry of MSME, Government of India. Their skills and understanding were honed up for series A funding.



Recognition

The Company has bagged many awards, like- 'Best Entrepreneur Award' (Pusa Kisan Mela, 2013), 'Most Promising Entrepreneur of Lucknow' By YSYS, Start Up recognition by DIPP.



Way forward

The Company is now planning to enhance its export market and geographically diversify into related businesses to become a conglomerate.



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E-Mail: -amazon.management@gmail.com
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EM-Powering Organic Farms and Farmers

Key Facts

Founder: Mr. Abhishek Pandey
Industry: Organic Farming
Founding year: 2013
Initial Investment: 2Lakhs
Present turnover: 30 Lakhs
Farmers outreach: 600

Dawning

Back in mid-2006, Mr. Abhishek Pandey, a hospitality and catering graduate, while intern at a famous chain of hotels, noticed that customers were being charged exorbitant prices for organic food. This seemed unfair to him - why should anyone pay more for organic food? Why do the profits from the organic food industry not trickle down to the person who toils the hardest against all odds – the farmer? How can these farmers be empowered? He set out to seeking the answers to these questions and found Dr. Afzal Ahmed with answers to all his questions in the EM method of farming. In 2012, Mr. Abhishek bounced back to his dream and built a team. One of his friends, Ashutosh Dixit (Director, EMPIWF) joined him and both of them worked together and succeeded in raising some money, by winning the “Mahindra’s Spark the Rise” contest in Idea category in 2013. This was his “Aha” moment and it prompted him to found Em-power India Welfare Foundation (A Section 25 Company) in 2013.

Progress

They train the farmers in the Japanese Bokashi method to prepare effective micro-organism enriched compost and pest repellents with EM solution. The benefitted farmers don't have to buy pesticides and fertilizers anymore, allowing cash saving of 30%-40%. Farmers are encouraged to earn extra income (10% - 25%) by selling surplus farm produce and self-prepared EM compost and pest repellent. They also assist in forming a Farmer -Producer Organization and set up their own distribution channel and in getting their farms organic certification under National Program for Organic Production (NPOP) standards. They later aided farmers in finding a market where they can get the fair and premium prices for their organic farm yield.

Incubation support

ZTM & BPD Unit played an important role in equipping the company with technical and business skills. The company has been selected under 'Arise' platform and has been acquainted with basics of financial planning, category assortment, market profiling and regulatory & Secretarial compliances during six days intense business incubation workshop.

Recognition

Winner of 'Mahindra's Spark The Rise contest' in Idea category of Season 2012-2013, Project Champion under NABARD-SDC RIF SCHEME by NABARD 2016, India's leading Top 100 Social Entrepreneur by Action For India (AFI Forum 2015 and 2016).

Way forward

To spike the volume, the company plans to set up processing unit, where products can be directly procured, processed, packaged, and sold in the market. The goal is to be the one-stop shop where a farmer can reach out with confidence that his problems would be resolved via the EM way. Part of the goal is to create more income opportunities, so that a farmer can get hold of the ever elusive “financial security.”



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Begusarai - 851126, Bihar
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Ph: 8130718412

Technology for Prosperity of Farmers

Key Facts
Founder: Dr. Amit Kumar Rai & Mr. Mukesh Kumar
Industry: Agri-Biotech
Founding year: 2015
Initial Investment: 5 Lakhs
Present turnover: 25 Lakhs
Customers outreach: approx 2000



Dawning
Green Revolution led the farmers of Punjab, Haryana, Tamil Nadu, Karnataka and Maharashtra to prosperity, while east Indian states like Bihar/Jharkhand remained underprivileged. These states could not harness the benefits of modern agriculture as it remained technologically deprived. The founders of EG Bio Labs has taken the initiative to bring modern technologies in easily usable formats for farmer communities under the concept of “Smart Agriculture Practices” to these states.



Progress
Optimization and development of mother culture for Banana, Syngonium and mini rubber plants has been completed and pilot scale production and marketing has been done. An extensive research has been carried out to optimize the protocols. Now they are in the process of setting up the facility for scaling up the production so as to achieve a commercially sustainable target of 2.5 million plants per year.

Samraddh Zameen - Samraddh Kisan

Key Facts

Founder : Mr. Jaideep Pareek
Industries: Bio-fertilizers & Bio-pesticides
Founding Year: 2015
Initial Investment: 05 Lacs
Present Turnover: 25 Lacs
Farmers Outreach: 3,000

JBRC
Jai Biotech & Research Centre
Solid Research | Solid Result

Jai Biotech & Research Centre
G1-233, Heerawala Industrial Area,
Kanota, Jaipur-303012 Rajasthan
E-Mail: jaideep123us@gmail.com
Ph: 9414452919

Way forward

In order to set up a platform for serving the needs of farmers, company is building a modern translational research laboratory in Bihar. Under the concept of SMART AGRICULTURE company is working to develop & launch following innovative products:

1. Molecular tools for early, simple, specific and on-farm detection & management of plant pathogens.
2. Disease-free Planting material of new & improved varieties of horticulture crops.
3. Technology for Rapid de-composting of residual farm waste.
4. Farmer Friendly Soil testing & Recommendation tools.
5. Smart Irrigation Systems.

Recognition

DIPP recognition for Start-up, Featured in "Trailblazers" book on Young Bio-entrepreneurs by NAS and BCIL; Business Plan Award 2017 at Bihar Start-up Conclave, Patna.

Incubation support

ZTM & BPD Unit played an important role in standardization of protocols for mass multiplication of Banana & Syngonium. Under incubation support, laboratory and other infrastructural facilities for test marketing production were also provided to the company. The company has also been facilitated with grant-in-aid funding support ministry of MSME, Government of India.

Dawning

Jaideep Pareek, founder of Jai Biotech & Research Centre left his safe & secure job in a Technical Grade Pesticides manufacturing company to start his own venture by registering his company under the incubation of ZTM & BPD Unit IARI PUSA, New Delhi.

Progress

The company is having a state of the art lab at Jaipur and is engaged in manufacturing of Bio-fertilizers & Bio-pesticides and providing direct employment to 10 people along with indirect employment to more than 100 people. The company has made marketing tie-ups with 5 companies which are covering almost entire State of Rajasthan and neighbouring states such as MP, Haryana, Punjab etc.

Incubation support

ZTM & BPD Unit licensed bio fertilizer technologies of IARI to the company to start its business. Technical mentoring was extended for establishing its manufacturing facility along with marketing support. The company has also been supported by grant in aid from Ministry of MSME through ZTM & BPD Unit.

Recognition

The quality of the products has made Jai Biotech & Research Centre well recognized company among the farmers community, that are engaged in organic farming. Jai Biotech & Research Centre is the first company of Rajasthan to get the organic certification from Govt. of Rajasthan, Department of Agriculture.

Way forward

The company is now targeting to make their reach to approximately 10,000 farmers. They have also decided to make their lab available to the entrepreneurs who have ideas but lack the resources to convert them into commercially viable products.

Genomic Solutions for Better Agriculture



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Malviya Nagar, New Delhi -110017
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Website: www.stellargene.com
Ph: 9717049640

Key Facts

Founder: Dr. Aparna K. Sapra & Mr. Kapil Ravi
Industry: AgriGenomics
Founding year: 2016
Initial Investment: 15 Lakhs
Present turnover: 20 Lakhs
Customers outreach: approx 250

Dawning

Dr. Aparna K. Sapra and Mr. Kapil Ravi, Co-Founders of StellarGene Technologies Pvt. Ltd. are both experienced exponents of the Biotechnology sector. They bring with them extensive domain specific business and scientific expertise of more than 25 years. Aparna is a PhD from Indian Institute of Science, Bangalore with Post Doctorate from Max Planck Institute. Kapil has more than 14 years of sales and distribution experience in Life Science Industry, especially in academic and R&D segments. They established StellarGene Technologies Pvt. Ltd. in 2016, with the aim of translating the innovations in Genomics to tools which can be used in Agri and Healthcare.

Progress

Since inception, StellarGene Technologies has been part of the 'ARISE agri-launchpad for start-ups'. The company has obtained government accreditations in the form of Start-up status under the Start-Up India initiative and PC-PNDT certificate for its diagnostic tests. StellarGene Technologies has several Genomic tests and services currently in market. It has markedly increased its repertoire of genomic services being offered to Agri-scientists and is in the process of introducing more in-house developed diagnostics and genomic services to the Agri-market.

Incubation support

ZTM & BPD has provided a much-needed support to StellarGene Technologies in the form of a well setup Biotechnology Lab. Mentorship initiatives introducing start-ups to funding opportunities, financial understanding, intellectual property rights and agri-networking have been crucial in providing the company with a platform for growth.



Recognition

StellarGene Technologies has been part of the 'ARISE agri-launchpad for start-ups' and is being considered for grant-in-aid from MSME department. They have won the "Biotechnology Ignition Grant" from BIRAC-DBT for developing its diagnostic portfolio.



Way forward

StellarGene Technologies will be launching two Agri-Diagnostic tests in 2018. The first test aims at providing a better understanding of soil microbial health, while the second test provides potential for pre/post-symptomatic identification of plant pathogens ranging from bacteria, fungi to viruses.



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website www.ceyon.co.in
Ph: 9044241027
DIPP: 3123 Start-up India

A Healthy Habit

Key Facts

Founder: Dr. Kshitij Bhardwaj
Industry: Medical Food and Chrono medicine
Founding year: 2017
Initial Investment: 2 Lakhs
Present turnover: 10 Lakhs
Farmers Engagement: 50 farmers
Customers outreach: 6 distributors, 50 Retails Stores with online presence



Dawning

Dr. Kshitij Bhardwaj is a Young Social Entrepreneur, M.Tech. & Ph.D from HBTI Kanpur. He is a Chemical Technologist & Researcher by profession. He merged his research career with Social Entrepreneurship and started his journey by registering his company 'Ceyon Healthcare India Private Limited'. He has been selected as one of the 22 participants out of 500 applicants under ARISE, ZTM'S promising Incubation acceleration program." He has filed his product patent recently. The founder has motivated farmers to initiate the production of Flaxseed and Sesame seed, in order to work on establishing a new model to link agriculture, food industry and health industry through medical food to improve the overall health of the consumer.

Progress

The company has established an in-house processing and packaging unit and launched its brand naming Omega Alive, product categories including Blended Omega 3, and Omega 6 and Omega 9 Rich Stable flaxseed oil, Cold pressed Pure Flaxseed oil, Raw flaxseed powder etc. They are expanding their business in nutrition and medical sector and making people aware about importance of Omega 3 and Omega 6 ratio. The company has presently engaged more than 50 farmers with it in production of raw material and employed more than 10 people in this short span of seven months.

Incubation support

The company has been selected as one of the 22 participants of 'Arise' and has been extended with best-in-class mentoring and guidance. They have been acquainted with the basics of business management, financial planning, market acquisition and capital management. They have undergone a six days intense business incubation workshop and various one-on-one mentoring sessions.

Recognition

The Company has been appreciated by Indian Society of Chrono medicine, Best Education Outreach Award' (world congress on chrono medicine, 2017), Best Investigator & product Award' (World congress on Clinical nutrition 2017) for linking food and nutrition.

Way forward

The Company is now planning to launch its product range in super markets and expand its reach to every state of India. They are planning to organize health and agri camp in rural areas to make more and more farmers aware about the role of flaxseed in improving health and its market potential. In the long run, the company will move towards establishing a healthy habit of consuming its products throughout India and abroad.

Ayurvedic Inputs, Farming for Biodiversity

AGPULSE ORGANICS

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Key Facts

Founder: Ms. Sagarika Gandhi & Mr. Rajeev Ranjan
Industry: Organic Agriculture & Agrochemical
Founding year: 2016
Initial Investment: 10 Lakhs
Present turnover: 20 Lakhs
Farmers outreach: approx 2000

Dawning

Mr. Rajeev Ranjan & Ms. Sagarika Gandhi, both are agriculture graduates with experience in development sector. The problem of toxicity and degrading farm biodiversity made them to think for a solution which should be nature friendly and with their associates they came up with Ayurvedic plant medicine to control pest and diseases in crops without inducing toxicity in ecosystem. Both of them had secured PhD admission in UK, but they thought to use that money in creating something sustainable for farmers and their life. They started their journey by registering the company, named "Agpulse (P) Ltd" and got selected in ARISE program competition and undergone a useful incubation and guidance support from the ZTM & BPD, ICAR-IARI.

Progress

The Company has signed an MoU with ICAR - IARI & ICAR - IIFSR for further development of the products. The company also got selected by IIT Kanpur under INVENT program sponsored by DFID and Nexus (US Embassy, India) for incubation. The company is working with few farmers in Black Rice in North Eastern Region and soon will be supporting to 400 women farmers near Rishikesh region in Uttarakhand. The company has also been linked up with ICAR-Sikkim, ICAR - CITH, NRC - Litchi and NRC Grapes.

Incubation support

The Company was selected for incubation support by ZTM & BPD Unit, ICAR-IARI under ARISE program. The guidance, support, mentoring and handholding support received from the Unit really helped the company to find a definite direction. The company has also been provided with different networking and marketing platforms in various national and international forums. The company has also received seed grant from Villgro.

Recognition

The company was selected in prestigious ARISE program of ICAR-IARI. The company has been graduated from IC2, Texas University and selected under top four in first cohort of Nexus and was selected in IIT Kanpur INVENT program as innovative social enterprise.

Way forward

The Company is planning to support Black Rice farmers by holistic model of providing organic input till supporting them in finding the markets for sustainable income. The company is also working to process Black Rice and develop a superfood product to enhance the value of produce.



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Ph: 9440053457

Netflix of Agriculture

Key Facts

Founder: Mr. Sai Krishna Dandamudi
Industry: Agriculture Market Data
Founding year: 2014
Initial Investment: 10 Lakhs
Present turnover: 20 Lakhs
Employment generation: 101
Farmers outreach: 232,787

Dawning

During the 2008 global food crisis, India restricted exports of rice and many retailers began rationing sales. At the same time global prices were rising rapidly. Many farmers, like Sai's father, were struggling with rapidly rising costs of production, including fertilizer, transportation and processing. In spite of rapidly rising global and domestic prices for rice, his father was selling paddy at a loss. As a son of a farmer, he wanted to enable farmers to sell their agricultural products at better prices, enabling them to be profitable. Padmavati & VARI Agro Services (VARI) is founded on the promise that providing better market information to farmers will improve farmers' incomes and deliver better prices to consumers for agricultural products. The goal is to provide channels for direct communication between buyers and sellers using mobile technology and an online platform supported by local field representatives.

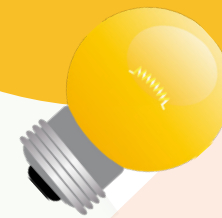


Progress

VARI has 232,787 users in India, posting 253, 426 requirements for 407 different crops and commodities. VARI is aggregating Market Data of Agricultural Produce from different stakeholders in the agriculture supply chain in Southern India (Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Kerala). VARI through its real time agriculture market data has identified niche opportunity for RNR 15048 rice variety and helped farmers to directly sell to consumers through its platform at Rs 5400/QT four times MSP (Minimum Support price). The company has also filed International patent (PCT) titled "Systems and Methods for matching the agricultural products and produce requisites."

Incubation support

ZTM & BPD Unit played an important role in providing the company with technical and business mentoring, marketing and networking platforms. They have been selected as a participant in 'Arise' and have undergone an intense six days business incubation workshop that has equipped them with all the skills needed to make their business flourish. Several One-on-one business mentoring sessions have been conducted in which they have been mentored on profiling of their solution and marketing.



Recognition

2nd place in GODAN (Global Open Data for Agriculture and Nutrition) Open Data Challenge 2016, New York, 2nd place in Vodafone Mobile for Good Awards 2016, Code for Next Billion company (2016) conducted by Facebook & CNBC TV 18, 2nd place in International Entrepreneurship Summit 2017, IISW Kolkata, Winner of Indian School of Business (ISB) Hyderabad India 6th I. iDiya Challenge (2014), National Soc Venture Competition People's Choice Award, Entrepreneur Scholarship to attend SOCAP 13 (Social Capital Markets) held at San Francisco.

Way forward

The Company is now planning to enhance its export market and geographically diversify into related businesses to become a conglomerate.

We bring the goodness of organic food to you



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Website: www.jeevanksh.com
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DIPP 2109- Start-up India

Key Facts

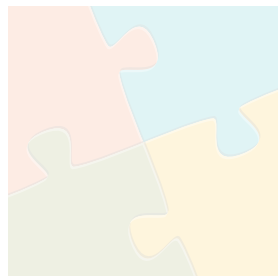
Founder: Mr. Gunajit Brahma
Industry: Organic Food Industry
Founding year: 2014
Initial Investment: 7.5 Lakhs
Present turnover: 9 Lakhs
Farmers outreach: approx. 5,000

Dawning

The idea of Jeevanksh was conceptualised in the campus dorm of IIM Indore while the founders were working on a Retail Management project. The company was registered in Guwahati on the 11th of June 2012, after the founder took a conscious decision not to sit for final placements at IIM Indore, but to chase the dream to start his own business.

Progress

Since inception, the company's e-commerce operation was primarily carried out from Mumbai. The company used to retail organic products through its website. In 2015, the company moved its base from Mumbai to Guwahati, and focused on developing and understanding the organic farming sector of Northeast India. The company had customers from across the world. Currently, the company provides forward market linkages to organic farmers (NPOP/PGS Organic/PGS Green) of Northeast India, and promotes and market their farm produces in India. The company has so far benefited over 5000 small and marginal tribal farmers of the region, and was instrumental in improving the income (upto 5 times) and providing sustainable livelihood to these farmer families.



Organizing the Unorganized



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Key Facts

Founder: Mr. Dev Bhardwaj
Industry: ICT in Agriculture
Founding year: 2012
Initial Investment: 60 lakhs
Present turnover: 65 lakhs
Farmers outreach: approx 1,50,000

Incubation support

The company has been part of 'Arise,- launchpad for Agri Start-ups' and have also undergone the intense business incubation workshop of seven days. Mentorship initiatives introducing to business ecosystem, funding opportunities, financial understanding, intellectual property rights and agri-networking have been crucial in providing the company with a platform for growth. The company was mentored to pitch for Series A funding.

Recognition

The company won the National Entrepreneurship Award 2016 (SC/ST Category) from Ministry of Skill Development and Entrepreneurship, Govt. of India; "Associate Member - IFOAM Organic International & IFOAM Asia"; recognized as a Start-up from DIPP, Gol.

Way forward

Over the next 3-5 years, the company envisions to work with over 100 FPCs/ FPOs from Northeast region, and continue promoting and marketing their organic produces across the globe and to provide direct and indirect sustainable livelihood to more than 50,000 small and marginal farmer families of the region.

Dawning

Kisanmanch's Founder, Dev Bhardwaj has close to 15 years' experience in Data Architecture Designing, Forecasting, Scheduling and bringing improvements in cross border travel technology projects across the world. It gave him ample knowledge and expertise to create a Solution like Kisan manch or organize the most unorganized sector of Indian economy. The platform includes customized project performance, monitoring data dashboards at each stakeholder's Level and supplying real time information management system for the top management to make policies more efficiently

Progress

The Company has established three contract agriculture projects so far in last one year. It is working as field implementation agency (providing crop knowhow, on-farm support, planting material, crop inputs products & secured buyback) for Stevia Biotech Private Limited to cultivate Stevia in 1200 acres in North India. It is also in progress with Department of Industries, Govt. of Himachal Pradesh to supply 100 Ton daily corn by aggregating farmer data on its platform in Himachal Pradesh for poultry & cattle feed.

Incubation support

The company has been part of 'Arise- launchpad for Agri Start-ups' and have also undergone the intense business incubation workshop of seven days and various one-on-one business mentoring (sessions). The company has also been shortlisted for grant-in-aid facilitation from MSME.

Recognition

Kisanmanch was ranked among 100 top social enterprises in India by Action for India at India Habitat Center, New Delhi; Agri-prenuers Award at Constitution Club, New Delhi by EAI; Himachal Achiever's Award; Krishi Bhooshan Award at National Agribusiness Summit for FPOs & AgriTech Start-up at Bhopal, Madhya Pradesh.

Way forward

The Company is now planning to support Department of Industries Govt. of Himachal Pradesh in order to generate real time agriculture data and connecting farmers directly with Food Processing Units established in Food Parks at Tahliwal Una, Himachal Pradesh and pharmaceutical companies located in Baddi, Himachal Pradesh.

Arpan Seeds: A Tribute to Farmers



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Key Facts

Founder: Mr. Bhagirath Choudhary

Industry: Agriculture & Nutrition

Founding year: 2014

Initial Investment: 1 Lakh

Present turnover: Not yet in market

Farmers outreach: approx 600

Dawning

Bhagirath Choudhary is a seasoned entrepreneur with vast expertise in agriculture, technology and innovation management. He founded FarmSolution and South Asia Biotechnology Centre (SABC) - a not-for-profit scientific organization and M/s Arpan Seeds Pvt Ltd based at New Delhi. He is currently involved in the field testing, upscaling and commercialization of the zero erucic mustard in Rajasthan, Haryana, Punjab, Madhya Pradesh & Ladakh. He is deeply committed to and engaged in scouting, due diligence & assessment, evaluation and field demonstration of different technology-led-projects targeted to increase crop productivity, farmers' income and sustainable agriculture in India.



Progress

Indian Mustard, ICAR-IARI has developed the Zero Erucic Acid Variety i.e. "Pusa Mustard 30" having low amount of erucic acid with very high amount of oleic, lenolenic and lenoleic acid and licensed to this start-up. The company is now growing the above-mentioned variety under contract farming mode and executed backward and forward integration by holding the whole supply chain of oil processing and marketing. The company has launched "LifeGard" brand zero erucic mustard oil. This fetches regular, assured and good prices for farmers and ensures availability of canola like oil to consumers at affordable prices.

Incubation support

Under Incubation support Pusa Mustard 30 (zero erucic acid Mustard variety developed by IARI), was licensed, provided Technical back stopping, Facilitated Grant-in-aid from Ministry of MSME under project entitled “Support for Entrepreneurial and Management Development of SMEs through Incubators, Marketing platform at different National level Agricultural fair.

Recognition

Launching of Zero Erucic Mustard oil ‘Lifeguard’ by Union Minister of Agricultural and Farmers’ Welfare during 87th AGM of ICAR, ‘Zero Erucic Mustard Oil’ has been included as one of the key farm innovations in booklet titled ‘2 years of Modi Govt’.

Way forward

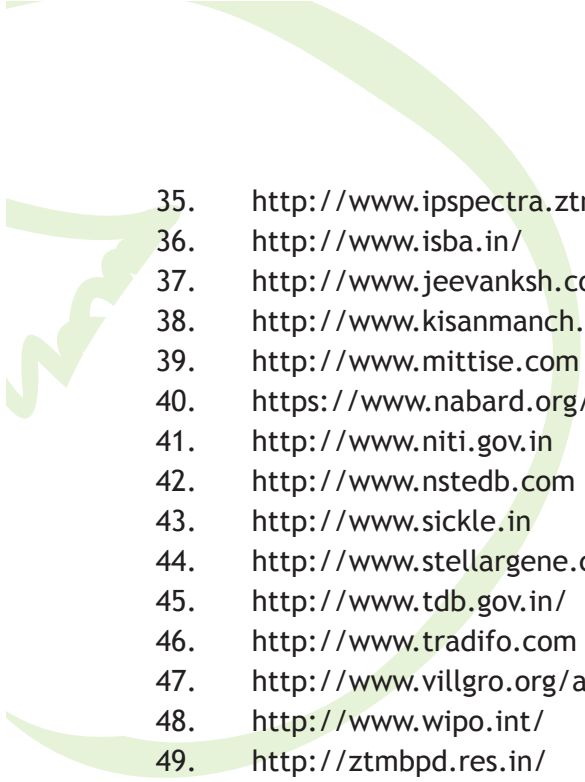
M/s Arpan Seeds Pvt Ltd aims to take “Single Zero” brand “Zero Erucic Mustard” seeds to farmers and “lifeGard’ brand “Zero Erucic Mustard” edible oil to consumers in India and abroad, and plans to expand the nutrition portfolios for a healthy society.

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