Skilling in Agri-Sector For Growth & Sustainability -Mapping of Institutional Arrangements in the area of Education and Training in Agriculture

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1. Introduction

Globalization has created a great demand for a skilled workforce which is responsive to emerging market needs and is equipped with knowledge. Although the Indian economy has experience rapid growth over the recent period, the low level of education and formal training of the workforce are the matter of concern. In India, informal sector employs nearly 90% of the workforce most of which is either non-skilled or inadequately skilled and there is very little investment or opportunity for formal "skilling". To get productive employment, especially in the informal sector, it is crucial to acquire skill set with strong labor market linkages. Skill development and entrepreneurship efforts across the country have been highly fragmented so far. As opposed to developed countries, where the percentage of skilled workforce is between 60% and 90% of the total workforce, India records a low 5% of workforce (20-24 years) with formal vocational skills. There is a need for speedy reorganization of the ecosystem of skill development and entrepreneurship promotion in the country to suit the needs of the industry and enable decent quality of life to its population. If we look specifically to the agricultural sector, women being an integral part of the agricultural workforce constitute a huge number. At the same time gender inequality is a major development issue across all the developing countries in general and India in particular. It is estimated that 43% of world's farmers are women. The FAO during 2011 had reported as part of its global farm status study that, if women had the same access to productive resources as men, they could raise total agricultural output in developing countries by 20% to 30 % and reduce the number of hungry persons in the world by 12-17 %! This holds true for India as well with the fact that women represent nearly 30% of the cultivators and almost half the agricultural labour force in India. As per census 2011 out of 481.7 million total workers in the country, 118.7 million are cultivators and another 144.3 are agricultural labourers , about one in two males and two of every female workers in the country are engaged in agriculture, either as cultivator or labour. The necessity of skilling in the sector is also highlighted from the fact that agricultural share of GDP contribution is as low as 14 % although 49% of the total population and 55% of the working population are engaged in agricultural based livelihood. India has about 161 million hectares of arable land of which 55 million is irrigated. With the increase in population there is increase in demand for food and agri produce but the supply is constant due to low agricultural productivity. The there is requirement for specific set of skills in the field of agriculture.

Against this backdrop, we make an attempt to map the Institutional Arrangements in the area of Education and Training for agriculture and understand how women in agriculture could harness more from the present structure, enhance their skill and therefore prove to be more productive in their work. In this effort we look at the existing structure in general and therefore identify areas where women could also join hands.

2. National policy of skill development

To respond towards the existing skill gaps and identification of the skill needs, the Eleventh Plan has taken the initiative to launch a National Skill Development Mission. Under this mission a National Policy on Skill Development was formulated by the Ministry of Labor & Employment .The objective of this policy was to create a workforce empowered with improved skills, knowledge and internationally recognized qualifications to gain access to decent employment and ensure India's competitiveness in the dynamic global labor market. It aims at increase in productivity of workforce both in the organized and the unorganized sectors, seeking increased participation of youth, women, disabled and other disadvantaged sections and to synergize efforts of various sectors and reform the present system.

At present the capacity of skill development in India is around 3.1 million persons per year. The XI th Plan envisions an increase in that capacity to 15 million annually. Thus, there is a need for increasing capacity and capability of skill development programs. Under the mission several measures have been initiated by the Government at various levels catering to different sectors of the economy. Technical and Vocational Education and Training (TVET) plays a significant role to enhance the skilling at various levels and should be taken seriously to bridge the gaps in the given context.

3. Institutional Arrangements for Skill development in Agriculture

3.1 Ministry of Skill Development:

Today, more than 20 Ministries/Departments run 70 plus schemes for skill development in the country. However, there are gaps in the capacity and quality of training infrastructure as well as outputs, insufficient focus on workforce aspirations, lack of certification and common standards and a pointed lack of focus on the unorganized sector. Recognizing the need and urgency of quickly coordinating the efforts of all concerned stakeholders in the field of Skill Development and Entrepreneurship, Government of India notified the formation of the Department of Skill Development and Entrepreneurship on 31st July, 2014 which subsequently led to the creation of the Ministry of Skill Development and Entrepreneurship on 10th Nov, 2014.

A framework built on five central pillars representing the core requirements for skilling has been conceived by the Ministry – to create a pipeline of skilled people, correct supply for demand, certify global/common standards, connect supply with demand and catalyze entrepreneurship. These five pillars will be supported by cross-cutting enabling measures.

Common norms and metrics on inputs, outcome measures and funding for skill development schemes across Central Ministries/Departments are being developed by the Ministry. Skill gap studies for all high priority sectors including key manufacturing sectors under Make in India have also been initiated. Support to States has been extended via the State Skill Development Mission through funding and technical support to ramp up capacity and improve standards of skilling at the State level. A number of other initiatives such as collaborating with other nations to adopt international best practices, revamping the vocational education framework in the country, partnering with corporate, leveraging public infrastructure for skilling, creating a pipeline of quality trainers and leveraging technology for skill training, are being pursued by the Ministry.

3.1.1 National Skill Development Corporation:

The National Skill Development Corporation India (NSDC) is a one of its kind, Public Private Partnership in India. It aims to promote skill development by catalyzing creation of large, quality, for profit vocational institutions. It provides funding to build scalable, for-profit vocational training initiatives. Its mandate is also to enable support systems such as quality assurance, information systems and train the trainer academies either directly or through partnerships. NSDC provided training 6.6 lakhs trainees and 1251.47 lakhs trainees certified under different sector up to April, 2013 as indicated below in Table 1.

Table 1: Training provided by NSDC under different sectors in India

	Sector	No. of Trainers trained	No. of Trainees Certified (in lakhs)
1	Agriculture Sector Skill Council of India	42668	565.04
2	Automotive Skills Development Council	-	-
3	Banking / insurance and financing Sector Skill Council of India	36500	45.62
4	Capital Goods Skill Council of India	11111	50
5	Construction Skill Council of India	197500	111.78
6	Electronics Sector Skill Council	-	-
7	Food Processing Sector Skill Council of India	5850	93.92
8	Gems & Jewellery Sector Skill Council	4022	18.1

9	Healthcare Sector Skill Council	118319	47.39
10	Indian Plumbing Skills Council	11354	12.12
11	IT-ITeS Sector Skill Council	14000	8
12	Leather Sector Skill Council	3537	19.54
13	Logistics Sector Skills Council	2719	41.87
14	Media & Entertainment Skills Council	40320	11.74
15	Retailer's Associations Skill Council of India	3290	80.83
16	Rubber Skill Development Centre	118319	47.39
17	Security Knowledge and Skill Development Council	31800	53.5
18	Telecom Sector Skill Council of India	24324	44.93
	Total	6, 65, 633	1, 251.47
Source: National skill development corporation web site up to April, 2013			

3.1.2 **National Skill Development Agency (NSDA)**

The National Skill Development Agency (NSDA) is an autonomous body was created with the mandate to co-ordinate and harmonise the skill development activities in the country, is part of the Ministry of Skill Development & Entrepreneurship (MSDE).

Activities undertaken by the NSDA

Besides anchoring and implementation, the National Skills Qualifications Framework (NSQF), some of the other actions taken by the NSDA are as under:

i. Rationalization of the Skill Development Schemes of the Government of India

NSDA works with the concerned ministries and stakeholders to achieve convergence of norms across the various central schemes for skill development, while at the same time recognizing the special needs of the North Eastern States, the hill States, and other geographies that pose challenging situations for skill development.

ii. Creation of an integrated Labour Market Information System

A national database on all major aspects of skill development is being created in partnership with all other Ministries of the Government of India and the State Governments. This would be a one-shop stop where all the relevant information is freely available to citizens. The government has created a National Steering Committee for setting up the Labour Market Information System (LMIS). The LMIS would bring in operational efficiencies, would be transparent and available to all, and would help reduce considerably the situation of one individual being benefitted under different schemes.

iii Engagement with States

The NSDA is actively engaged with the various State governments to plan out their skill development action plan, help them develop their skill development policies, and set up suitable administrative mechanisms. Through Technical Assistance programmes with the Asian Development bank (ADB), European Union (EU) and DFID (Department for International Development of the Government of UK), NSDA is helping the State Skill Development Missions of eleven states build their respective capacities.

iv. Skills Innovation Initiative

A committee has been set up under the Skills Innovation Initiative housed under the NSDA. The NSDA invites innovative ideas, concepts and practices on skill development. The Committee reviews all the proposals of innovations to facilitate their application on a wider scale. Selected innovative practices are to be facilitated and propagated for wider application. Five innovative approaches and solutions have already been identified for wider propagation.

3.1.3 National Skill Development Fund

The National Skill Development Fund was set up in 2009 by the Government of India for raising funds both from Government and Non Government sectors for skill development in the country. The fund is contributed by various Government sources, and other donors/ contributors to enhance, stimulate and develop the skills of Indian youth by various sector specific programs.
The Fund meets its objectives through NSDC. NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organizations that provide skill training. It also develops appropriate models to enhance, support and coordinate private sector initiatives. Till 31st March 2015, NSDF has released Rs. 2333 crore to NSDC towards skill development programmes including National Skill Certification and Monetary Reward Scheme (STAR) and UDAAN Scheme (J&K oriented). NSDC with 160 training partners and 1722 training centres has so far trained around 35 lakh persons across India.

3.1.4 **Sector Skill Councils**
Sector Skill Councils are set up as autonomous industry-led bodies by NSDC. They create Occupational Standards and Qualification bodies, develop competency framework, conduct Train the Trainer Programs, conduct skill gap studies and Assess and Certify trainees on the curriculum aligned to National Occupational Standards developed by them. Till date, the NSDC Board has approved proposals for 37 Sector Skill Councils. For agriculture, the

3.2 Ministry of Labour and Employment:

The Ministry of Labour & Employment is one of the oldest and important Ministries of the Government of India. The main responsibility of the Ministry is to protect and safeguard the interests of workers in general and those who constitute the poor, deprived and disadvantage sections of the society, in particular, with due regard to creating a healthy work environment for higher production and productivity and to develop and coordinate vocational skill training and employment services. Training can be improved by ITIs /ITCs/ Polytechnics/ministries and other organizations. The Directorate General of Employment & Training (DGE&T) in Ministry of Labour is the apex organisation for development and coordination at National level for the programmes relating to vocational training including Women's Vocational Training and Employment Services.

Table 2: Agricultural and related courses under different schemes of DGET

Sr. No.	**Apprentice training Scheme (ATS)** (6 Courses)	**Craftsmen Training Scheme (CTS)** (10 Courses)	**Employable skill courses approved by NCVT under Agriculture stream** (40 Courses)
1	Mechanic (Agriculture machinery)	Craftsmen food production	Basic Tractor Services
2	Horticulture assistant	Cane	Repair maintenance & operation of equipment related to farming
3	Stockmen (dairy)	Willow and Bamboo work	Cultivation of cereal, forage, oilseed, fiber, sugar, pulses, tuber and vegetables crops
4	Attendant operator (dairy)	Dairying	Landscaping and floriculture
5	Pump operator cum mechanic	Floriculture & landscaping	Fruit cultivation
6	Florist and landscapes	Farm mechanic agriculture mechanic	Seed production
7		Horticulture	Mushroom cultivation
8		Mechanic agriculture machinery	Apiary
9		Mechanic tractor	Bio-fertilizer
10		Preservation of food and Vegetable	Medicinal plant

Table 3: Schemes for vocational education in general vis-a-vis agricultural contribution under DGET

S. No.	Schemes	Trainers trained	Total		Agriculture		Percentage of Agriculture Trades
			Trades	Seats	Trades	Seats	
1	Craftsman Training Scheme (CTS)	1467000	132	1466032	10	578	7.58
2	Apprenticeship Training Scheme(ATS)	288304	252	270973	6	.....	3.17
3	Women Training Scheme	180002	117	48138	4	93	3.42
4	Advance Vocational Training Scheme (AVTS)	287032	16		0	0	0
5	Research and Staff Training	21751	202		0	0	0
6	Craftsmen Instructor Training Scheme (CITS)	1600	29	16	2		6.9
7	Hi-tech Training Scheme	1500	6		0		0
	Total	2247189	754	1785159	24	671	3.18
Source: *Annual report 2012-13,MoLE and http://dget.gov.in/*							

Women Training under DGET:

Women Training under Directorate General of Employment & Training, Ministry of Labour & Employment aims to provide vocational skill training to women for wage and self-employment to help them gain economic upliftment and social empowerment. A network of institutes, both under Central & State Governments, has been setup to extend vocational training facilities solely to women which aim at stimulating employment opportunities among women of various socio-economic levels and different age groups. Regular vocational training programmes are being conducted for women under Craftsmen Training Scheme (CTS) and Craft Instructors Training Scheme (CITS) by the Central Government. Training facilities are being offered to women through 11 institutes spread across the country – One National Vocational Training Institute (NVTI) at NOIDA and 10 Regional Vocational Training Institutes (RVTIs) one each at Mumbai, Bengaluru, Thiruvananthapuram, Panipat, Kolkata, Tura, Allahabad, Indore, Vadodara and Jaipur. These institutes are financed and managed by the Central Government. There are about 1988 training seats under CTS and 4080 seats under CITS. A total of 6068 regular seats have been sanctioned in 2013-14 as on September, 2013. Besides providing regular training under the schemes, short-term training is also provided in areas for which infrastructural facilities are available.

Vocational Training is presently being provided in diverse fields such as Electronics Mechanic, Secretarial Practice, Architectural Draughtsman ship, Hair & Skin Care, Computer Operator and Programming Assistant, Dress Making, Catering & Hospitality, Interior Decoration & Designing etc

Vocational training facilities to women are also being provided by the State Governments through a network of Women Industrial Training Institutes (WITIs) and Women Wings in general ITIs. As per the information furnished by the respective State Governments, there are about 1431 Women ITIs and Women Wings in general ITIs (Government as well as Private) having a total of 82,390 Training seats as on October, 2013. These Institutes/ Wings offer training under Craftsmen Training Scheme in selected trades out of about 133 trades approved by the NCVT.

Table: 4 Women Wings in general ITIs

Region	**Government**		**Private**		**Total**	**Total seats**
	WITIs	**Women wing (ITIs)**	**WITIs**	**Women Wings (ITIs)**		
Northern Region	143	181	68	111	503	27221

Southern Region	70	15	26	17	128	16039
Eastern Region	39	16	8	1	64	5464
Western Region	53	570	11	102	736	33666
Grand Total	305	782	113	231	1431	82390

Source: IARI Annual report 2012-13

3.3 Flagship Schemes by Ministry of Agriculture

Ministry of Agriculture focusing the current momentum by stabilizing food grain production to ensure food security. For sustaining higher levels of production, it is necessary to target new areas of food grain production, while promoting conservation agriculture in the high production areas, to maintain current levels of productivity. New technologies are needed to break yield barriers, utilize inputs more efficiently and diversify to more sustainable and higher value cropping patterns. Some of the major programmes of Department of Agriculture for filling skill gaps are covered under Rashtriya Krishi Vikas Yojana (RKVY), Bringing Green Revolution to Eastern India (BGREI),Pulses and Oilseeds Villages in Rain fed areas, Saffron Mission in J&K, National Food Security Mission (NFSM) and National Horticulture Mission. Table 5 gives an overview of the different training programs for skilling conducted by IARI for farmers.

Table 5: Farmers trained under different training programmes of IARI

Department	Training Programme	No. of trainees/farmers
Agriculture Technology Information Centre	On farm demonstration of climate resilient technology	250
	ATIC (Agriculture Technology Information Centre)	26450
	Wheat production technology	2300
	Seed village Programme	48 W
	Vocational training Programme	117
	Agriculture extension & farm advisory service	852
Division of Agricultural Chemicals	Techniques and Methods for Pesticide Residue Analysis	5
	Extraction and Analysis of Nutraceuticals from Vegetables, Fruits and Non-food Crops	19
Division of Agricultural Economics	Agricultural Research Planning and Impact Assessment	25
Division of Agricultural Engineering	Motor Winding for Entrepreneurs	20
	Project Formulation, Risk Assessment, Scientific Report Writing and Presentation	37
Division of Agricultural Extension	Enhancing Motivation for High Job Performance	91
	Life Skills and leadership Development	42
	Experiential learning Andragogical Methods for Developing Entrepreneurial Human Resource	23
	Information and Communication Technology Application	24
	Emerging Paradigms of Competencies in Context of Changing Agricultural Scenario	24
Division of Agricultural Physics	EDUSAT Based off Campus Training Programme on Remote Sensing, GIS and GPS	18
	Assessment of Soil-Plant-Atmosphere System for Improving Resource Use Efficiency in Agriculture	20
	Dspace Admin Training	20
	Advances in Spectrometry for Earth Remote Sensing	30
	Kohati MS Training	23

	Hyperspectral Remote Sensing for Agriculture	25
	Dspace User Training	20
Division of Biochemistry	Current Biochemical & Molecular Techniques for Nutritional Enhancement and Stress Tolerance in Crop Plants	20
CESCRA	Role of Environment Resources in Determining Agriculture Productivity	20
	Safe Use of Radioisotopes and Radiations	12
	Management of Emerging Environment Problem for Enhancing Agriculture Productivity	20
Division of Fruits and Horticultural Technology	Good Agricultural Practices in Production of Horticulture	20
Division of Floriculture and landscaping	Rose Floral Arrangements	50
	Protection of Plant Varieties and Farmers' Rights	100
	Dry Flower Making	50
Division of Plant Pathology	Mushroom Cultivation	42
	Genomics and Diagnosis of Emerging Phytopathogens in Indian Agriculture	20
Division of Post Harvest Technology	Soynut: Processing and Packaging	8
	Post Harvest Management and Value Addition of Horticultural Produce for Export	15
Division of Seed Science and Technology	Seed Quality Assurance	50
	Seed Production and Quality Evaluation	9
	Quality Seed Production	50
	Seed Production of Field Crops	30
Division of Soil Science and Agricultural Chemistry	Soil Testing, Plant Analysis and Water Quality Assessment	20
Water Technology Centre	Water Saving Technologies	952
	Sugarcane Cultivation Through Micro-irrigation	145
	Micro-irrigation for livelihood Improvement	152
Centre for Protected Cultivation and Technology	Advances in Micro-irrigation and Fertilization	25
	Protected Cultivation Technology for Horticulture Crops	172
IARI Regional Station, Pusa, Bihar	Quality Seed Production and Seed Certification	47
IARI Regional Station (Cereals & Horticultural Crops), Amartara Cottage, Shimla	Preparation of Bordeaux Mixture and Application	15
	Seed Stratification Techniques in Apple	25
	Package of Practices of Strawberry Cultivation	25
Regional Station, Karnal	Control of Diseases and Insect Pests in Paddy Crop	60
	Beej Utpadan Dwara Udyamsheelta	20
AKMU (Formerly USI), IARI	Applications of Bioinformatics Tools in Agricultural Research	25
CATAT	Organic Farming, Vermi-Compost, Mustard, Wheat and Rabi Vegetables	24
	Grading, Packing and Post Harvest Management	25
	Pre-Seasonal Rabi Crops and High Tech Agri. Horticulture	25
	Diversification on Agriculture due to Climate Change Skill Development Training and Exposure Visit	27
	Safe and Judicious use of Chemicals for Food Safety and Quality Reference to Food Standards and Other Certificates	20

	Preservation of Fruits and Vegetables	25
	Use and Benefit of Sprinkler and Drip Irrigation System and Use of Net and Green House in Agri-Horticulture	25
	High Tech Agriculture/ Pre-Seasonal Zaid /Kharif Crop	25
	Good Agricultural Practices (GAP) and its Certification	24
	Improved Agricultural Technologies for Higher Productivity and Income	73
	Tips and Strategy for Effective Extension	24
	Total	2882
Total		**32899**

Source: IARI Annual report, 2012-13

The ICAR, another council under the Ministry of Agriculture has taken initiative to set up a very unique National Centre for Women in Agriculture (NRCWA and presently named as the Directorate of Research on Women in Agriculture in DRWA) during 1995-96 itself, with mandate of research on women in agriculture and gender mainstreaming. But the S &T services and Institutions in agriculture maintain status –quo mindset and approaches, with little changes with respect to gender responsiveness, denying the need for a comprehensive approach through educational and research efforts within the National Agricultural Research System (NARS).

3.3.1 Role of Krishi Vigyan Kendra (KVK) in Agricultural Sector:

The Ministry of Agriculture's Krishi Vigyan Kendra's (KVK) impart training to farmers, farm women, rural youth and grass roots level extension workers in broad based agricultural production systems The innovative approach of the KVKs can be judged through its training approach programme based on the principle of "teaching by doing" and "learning by practicing". Moreover, the courses are need based and flexible to cope with the needs of the young farmers, practicing farmers and farm-women of the area. KVK is considered innovative institution for transfer of technology and Waste land management etc. related to agriculture and allied areas through vocational training and follow-up activities like demonstrations, personal visits, village and block level meetings and audio- visual aids. The KVK have largely taken up training programmes in poultry production, fisheries/fish processing, dairying, sericulture, apiculture, floriculture, plant protection, agricultural chemicals, inland fisheries, plantation crops and management, seed production technology, swine production, vegetable seed production, medicinal and aromatic plant industry, sheep and goat husbandry, repair and maintenance of power driven farm machinery, veterinary pharmacist-cum-artificial insemination assistant, agro based food industry (animal based), agro based food industry (crop based), agro based food industry (feed based), post harvest technology, fish seed production, fishing technology, horticulture, soil conservation, crop cultivation/ production and very recently a programme of user reclamation and social forestry on private community land. This scheme is of vital importance, for it is intended to provide problematic and field oriented training which can have direct bearing on the agricultural and allied production.

3.4. Role of Khadi & Village Industries Commission (KVIC) in Agricultural Sector:

The KVIC is mainly involved in planning, promotion, organization and implementation of programs for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development. Its functions also comprise building up of a reserve of raw materials and implements for supply to producers, creation of common service facilities for processing of raw materials as semi-finished goods and provisions of facilities for marketing of KVI products apart from organization of training of artisans engaged in these industries and encouragement of co-operative efforts amongst them. To promote the sale and marketing of khadi and/or products of village industries or handicrafts, the KVIC may forge linkages with established marketing agencies wherever feasible and necessary. At present every year 50000 to 60000 units are being setup, thereby generating employment opportunities for around 5 lakhs people every year. The 65 crore scheme of fund for regeneration of traditional industries (SFURTI) has been financial assistance and technical support to 29 Khadi and 50 village industries clusters, benefitting around 50000 artisans and craftsmen. The commission conducts training programmes for food and agro based industries, hand made paper and fibre industries and biotechnology based industries.

3.5 National Bank for Agriculture and Rural Development (NABARD) who promote sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives also play important role as bankers in skill development of women in the agricultural sector.

It is therefore observed that skilling in agriculture is undertaken by multiple central ministries/departments under their respective schemes and programs. Table 6 summarizes such initiatives along-with their target groups.

Table 6: Various agriculture and related central government schemes and programs for skill development

Name of Ministry	Name of Scheme	Duration of the Training Program (hours/days/ months)	Any specific socio-economic group the scheme caters to
M/o Agriculture (Department of Agriculture & Cooperation)	Extension Reform-Farm School	Once during each of the 6 critical stages in a cropping season	Farmers
	Agri clinic and Agri Business Centres Scheme	2 Months	Graduates in agriculture and allied subjects from SAUs/ Central Agricultural Universities/ Universities recognized by ICAR/ UGC and the beneficiary farmers
	Diploma in Agricultural Extension Services for Input Dealers (DAESI)	48 days spread as 1 year	Input dealers and prospective dealers
	Post Graduate Diploma in Agricultural Extension Management (PGDAEM)	1 Year	Graduates in Agriculture
	National Food Security Mission (NFSM)	Full crop season for single day in a week or fortnight 8-20 seasons	Farmers
	National Horticulture Mission (NHM)	3 months-1 year (Farmers-2to 5 days)	Entrepreneurs, Gardeners, Farmers, Supervisors, Field Staff
	Horticulture Mission for North East and Himalayan States (HMNEH)	3 months-1 year (Farmers-2to 5 days)	Entrepreneurs, Gardeners, Farmers, Supervisors, Field Staff
	National Centre for Organic Farming	4 weeks	Farmers
	Mechanization and Technology (M &T)	Not fixed (generally 4 weeks	Farmers
M/o Agriculture (Department of Animal Husbandry, Dairying and	Department of Poultry and Fodder	2 weeks to 4 weeks	Farmers
	Department of Cooperatives and Dairy Development	4 to 5 Days, For Maitris 3 Months	Farmers
	Department of Livestock Health	h 2 to 5 Days	Vets and Paravets

Fisheries)	Department of Fisheries		Fishermen and people engaged in the post production activities
M/o Agriculture (DARE)	Training in Agricultural Extension (21 training centers)	one day to three weeks	Personal engaged in Agricultural Institutions and support services, members of cooperatives, and Farmers under KVK, 550/589 districts are covered
	Under the University stream, various under-graduate, post- graduate and PhD courses are offered (DARE)	UG courses – 4 years, PG Courses- 2 years and PhD	Students with Qualifications as usual under University stream of education
	There is one Central Agricultural University, thirty one State Agriculture University (SAUs) and four National Institutes of Indian Council of Agricultural Research having the status of Deemed University	undergraduat e (UG), Master's and PhD degree programme	Students with Qualifications as usual.
	ICAR also arranges need based training programs in any of State Agricultural University or ICAR Institutes in new and emerging areas	One week to three months (or longer duration, as fixed)	Faculty and Scientist
M/o Food Processing Industries	Creation of infrastructure facilities for running Degree/ Diploma courses in Food Processing Technology under NMFP	N.A.	N.A
	Entrepreneurship Development Programme (EDP) under NMFP to be conducted by various government and private organizations, industries, or NGOs	6 weeks	SC/ST/Minority Community/Women- At least 35%
	Grants-in-aid for setting up of Food Processing Training Centres (FPTC) under NMFP	N.A.	SC/ST/Minority Community/Women- Percentage not specified
	Training at Recognised National/State level Institutes etc. sponsored by MoFPI/ other training programmes under NMFP	1- 10 working days	N.A.
	Degree Programmes and short term courses offered by National Institute of Food Technology, Entrepreneurship and Management (NIFTEM), Kundli, Haryana and Indian Institute of Crop Processing Technology (IICPT), Tamil Nadu	1 day - 1month (IICPT); 1-2 weeks (NIFTEM)	N.A.

Source: http://www.nsda.gov.in/NSQF/nsqfIndexPage.html?name=CentralMinistrySkillPrograms

4. Vocational education & training in agricultural sector

Since vocational education covers education and skill development at all levels from post primary to tertiary education it is therefore important to map the existing scenario for women in the agricultural sector. Among the persons of age 15-29 years, only 2% are reported to have received formal vocational training and another 8% reported to have received non-formal vocational training indicating very few persons actually enter the world of work with any kind of formal vocational training. Bearing with the fact that Vocational Education and Training (VET) is often considered (restricted) to be essential for catering needs of the industrial sector as evident from several published reports. Agricultural sector which has remained weak in terms of human resource base also remains neglected as far

as VET is considered. The **PSS** Central Institute of Vocational Education (BHOPAL), has been the backbone in terms of providing academic support to VET programmes in this sector. Although 32 competencies based curricula for vocational courses in the discipline of agriculture are available across diverse areas, yet enrolment in such courses fall behind the set targets. Several modules have also been developed by the Institute across a wide range of disciplines in the agricultural sector covering hundreds of occupations but they fail to be delivered due to non-availability of ITI's and polytechnics; also the apprenticeship scheme not taking care of this sector. The non-formal system of VET in agriculture takes place under the aegis of various Departments/ Ministries who have established the training centres, e.g. Krishi Vigyan Kendras, Khadi and Village Industry Centres, state institutes of rural development, extension training centres etc. There exist several associated schemes under which training programmes are conducted. 119 skills/ modules in six areas, i.e. agriculture, poultry, sericulture, fisheries, animal husbandry and food processing & preservation are available under the Modular Employable Skill (MES) programme under the Ministry of Labour and Employment which aims to equip people with marketable skills. The Department of Agriculture & Cooperation is the nodal unit and is working on modalities. However, the non-formal system often suffers from limitations, e.g. problem of standardization, crisis of recognition etc.

4.1 Vocational training by Ministry of Labour and employment under National Vocational Education Qualification Framework (NVEQF)

NVEQF is a descriptive framework declared by the Ministry of Human Resources in 2012 that organizes qualifications according to a series of levels of knowledge along with the skills. The key elements of the NVEQF are to provide
(a) national principles for providing Vocational Education (VE) leading to international equivalency,
(b) multiple entry and exit between VE, general education and job markets,
(c) progression within VE,
(d) transfer between VE and general education, and
(e) partnership with industry/employers

The courses proposed under NVEQF for specialization for the agricultural sector are Agriculture mechanization Agriculture operation and maintenance (Table 7)

Table 7: Courses offered for specialization in Agriculture mechanization and Agriculture operation and maintenance

S/No	**Agriculture mechanization**	**Agriculture operation and maintenance**
1.	Level 1 1. Basic tractor servicing 2. Repair maintenance & operation of energy sources equipment	Level 1 1. Basic Cultivation for Cereal Crops
2.	Level 2 1. Repair, maintenance & field operation of Tillage Equipments. 2. Repair, maintenance & field operation of soil farming equipment	Level 2 1. Custom Hiring of Agriculture Machinery 2. Cultivation of oilseeds and pulses
3.	Level 3 1. Repair, maintenance & field operation of Seed drills 2. Repair, maintenance & field operation of Planters & Trans Planter.	Level 3 1. Cultivation of orchards with special reference to citers 2. Cultivation of potato 3. Cultivation of fodder

4.	Level 4 1. Repair, maintenance & field operation of Harvesting and Threshing Equipments. 2. Repair, maintenance & field operation of Root Harvesting Equipments.	Level 4 1. Cultivation of vegetables 2. Seed Production
5.	Level 5 1. Repair, maintenance & field operation of Spraying and dusting equipments. 2. Repair & Maintenance of Tyres and Tubes 3. Repair & Maintenance of Radiator.	Level 5 1. Medicinal Plant 2. Agro Forestry
6.	Level 6 1. Repair, Maintenance of Operations of Power Tiller. 2. Repair, maintenance & field operation of Combine Harvester. 3. Repair, maintenance & field operation of Processing Equipments.	Level 6 1. Landscaping & floriculture 2. Fruit cultivation
7.	Level 7 1. Repair and Overhauling of Tractor. 2. Repair, maintenance & field operation of Post Harvesting Equipments.	Level 7 1. Entrepreneurship Development in Agri Business 2. Bio Fertilizer 3. Vermi-culturing & Vermi-composting

4.2 Status of Education at Primary and secondary Level in Agriculture:

At present CBSE is offering 33 Vocational courses consisting of 97 subjects out of which only three vocational courses are based on Agriculture. Table 6 reflects the subjects included in the above mentioned courses. The data signifies the necessity of more agriculture related courses to be included at primary level such that children, especially girls could be trained during their schooling such that interest could be generated in the area. Morever given the rate of girl child drop outs from school, exposure to such courses could be very fruitful for future employment generation or entrepreneurial development.

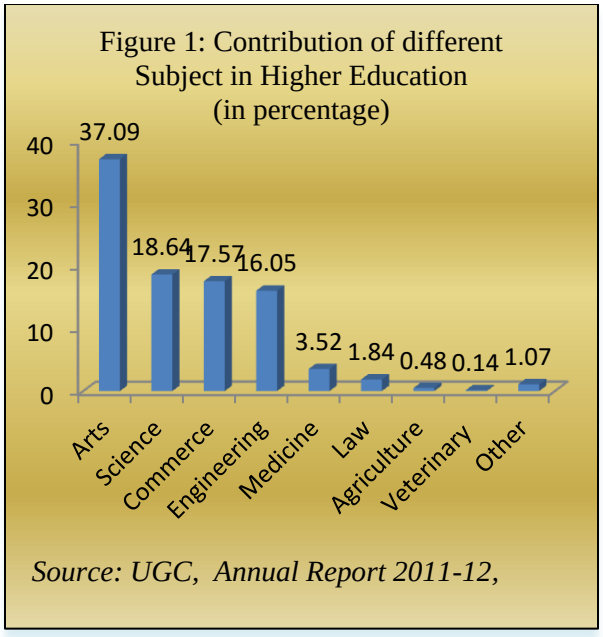
Table 8: Agriculture based Vocational courses by CBSE

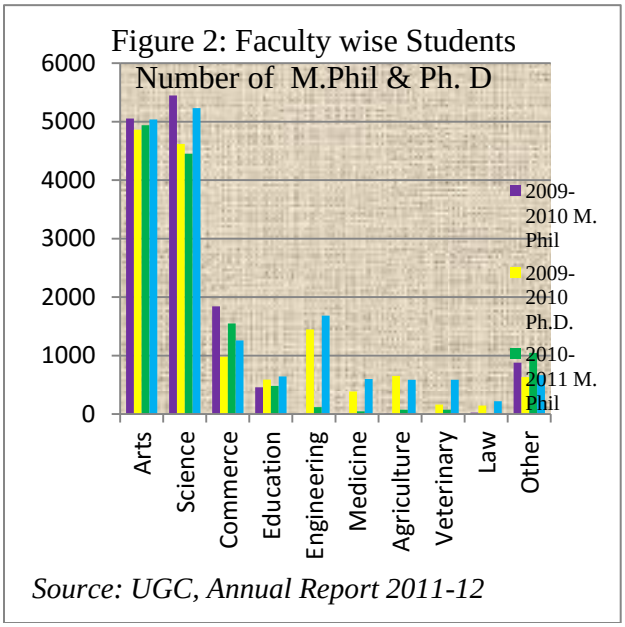
Sr. No.	**Vocational Courses/ Subjects**
1	**Horticulture**
a	Vegetable Culture
b	Floriculture
c	Post Harvest Technology and Preservation
2	**Dairying**
a	Milk and Milk Products
b	Milk Production, Transport and Milk Cooperatives
c	Dairy Plant Instrumentation
3	**Poultry Farming**
a	Poultry Nutrition & Physiology
b	Poultry Products Technology
c	Poultry Diseases & their control
Source: http://www.cbse.gov.in	

4.3 Status of education at tertiary/higher level in agriculture

Fig 1 and 2 indicates that agriculture is still not a very attractive career option at higher education level. It is a pity that inspite of being an agrarian country scenarios have still not been favorable for motivating young boys and girls to take up agriculture as a choice of their

study. This may be for market linkage issues which again may be as a result of improper course curricula, mismatch between the requirements and the skill that exists.





4.3 Open and Distance Learning Interventions

Open & Distance Learning has established its credibility which can respond appropriately to many challenges which exist in our conventional education System. A phenomenal growth is being witnessed in the development and use of Open and Distance Learning (ODL) for the last five to six years.

The Indira Gandhi National Open University (IGNOU) has also undertaken skill development programs by establishing school of vocational education. It offers various courses as reflected in Table 9.

Table 9. Various programmes offered by IGNOU in agriculture

Programme	Course	Eligibility
Ph.D	Dairy Science and Technology (PhDDR)	Master Degree in Dairy Science, Food Science/ Food Technology, M.V.Sc. , M.Sc. Agriculture (Dairy Science/ Dairy Technology .
	Doctor of Philosophy in Agriculture Extension (PHDAGE)	Master Degree in any agriculture or related subject
PG and Advance Diploma	Post-Graduate Diploma In Plantation Management (PGDPM)	Graduation in any discipline
	Post-Graduate Diploma in Food Safety and Quality Management (PGDFSQM)	Graduates in Science/ Arts/ Commerce with
Diploma	Diploma in Value-added Products from Cereals, Pulses and Oilseeds (DPVCPO)	10+2 Senior secondary pass outs , Bachelor Preparatory Programme (BPP) , 10th pass may enroll simultaneously for the BPP and Diploma Programme
	Diploma in Dairy Technology (DDT)	10+2 Senior secondary pass outs , BPP (under IGNOU/OLS mode) , 10th pass may enroll simultaneously for the BPP and Diploma Programme

	Diploma in Value Added Products from Fruits and Vegetables (DVAPFV)	10+2 Senior secondary pass outs , BPP
	Diploma in Fish Products Technology (DFPT)	10+2 Senior Secondary pass outs , BPP
	Diploma in Watershed Management (DWM)	10+2 Senior secondary pass outs , BPP (under IGNOU/OLS mode)
	Diploma in Meat Technology (DMT)	10+2 Senior secondary pass outs , BPP
Certificate	Certificate in Bee Keeping (CIB)	8th pass
	Certificate in Sericulture (CIS)	10th pass out or Non-10th pass-out, having 2 years experience in the field of Sericulture.
	Certificate in Poultry Farming (CPF)	8th pass
	Certificate in Water Harvesting and Management (CWHM)	10th pass , BPP.
	Certificate in Organic Farming (COF)	10+2 pass-outs / BPP
Non-Credit Programmes	Awareness Programme on Value Added Products from Fruits and Vegetables (APVPFV)	Any 8th standard pass-out , Progressive farmer or good producer of the fruits and vegetables,
	Training Programme on Betel Vine for farmers (Two Weeks) (TPBV)	No fixed criteria
	Certificate in Integrated Pest Management Technology in Potato Cultivation (CIPMT)	No fixed criteria
	Awareness Programme on Dairy Farming for Rural Farmers (APDF	No Formal Qualification

The ODL system in the country has been witnessing around 20% growth-rate in the students' enrolment and is envisaged to cover about 40% of the total enrolment of the Higher Education system. Its impact on the educational system in the next five years is going to be more pronounced and visible since `learning throughout the life' and 'technology-based teaching/learning' have been recognized as the new portals of education. This could prove to be an effective tool for skill development of women in the agriculture sector.

5. Conclusion:

Described above is an attempt to map the Institutional Arrangements in the area of Education and Training for agriculture and to understand how these efforts could enhance the skilling in agriculture with the given present structure and to take further lead to improve the vocational education and training with a promising certification system with the implementation of proposed NVEQF and the courses for agricultural sector in particular as mentioned above. Emerging areas of skill development, like green food production, hi-tech floriculture, precision farming, protected cultivation, post harvest management & value addition food processing is indicative more so for the development of vocational & entrepreneurial skills among the farmers and rural youth. With the national level interventions like Rashtriya Krishi Vikas Yojana (RKVY) and National Food Security Mission (NFSM) aiming at holistic development of agriculture which recognizes skills of people employed in farm and non-farm sector (non-farm sector sector alone caters employment to 41.89 million rural people and would necessarily require induction of new skills) in rural areas to be one of the important components to be addressed. But all such initiatives require synergy with the National Skill Development Mission in effective implementation of programmes like MGREGA which could ensure job opportunities for pass outs. It has been observed that there are very few schemes and programs for skill development for women in agriculture and in some cases where there are separate women training schemes the percentage for agriculture related skilling is very low. This paper would therefore like to draw attention on some of the following important issues which require immediate attention and should be taken seriously by the concerned agencies, such as (a) different institutes impart vocational training but they do not have coordination amongst themselves. There is a significant need to review the activities on skill development under various institutes/ministries and enhancing their coordination, (b) a network mapping of various stakeholders should be done

to bring synergy to the demand and supply of skilled manpower,(c) the structure of the job market is changing, therefore the structuring of courses should be demand driven specially for emerging occupations, (d) financing of vocational institutes to be done in structured manner, based on the performance of institutions to motivate the drive for innovation and excellence,(e) tracer studies should be conducted to provide feedback on the capability and capacity building of the present VET infrastructure and last but not least,(f) there is a dire need for a comprehensive approach towards gender equality ie, to imbibe the mindset and adopt wide gender responsive approach in S&T services and agricultural educational institutions.

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