

SKILL DEVELOPMENT PROGRAMMES

Chaudhary Charan Singh
Haryana Agricultural University, Hisar



In Affiliation with



Agriculture Skill Council of India



COLLEGE OF AGRICULTURE, BAWAL

Foundation stone laid by

SH. MANOHAR LAL

HON'BLE CHIEF MINISTER, HARYANA
ON FEBRUARY 25, 2017

In the august presence of

RAO INDERJIT SINGH

Union Minister of State of Planning
(Independent charge) Urban Development,
Housing and Urban Poverty Alleviation.

SH. O.P. DHANKAR

Cabinet Minister of Agriculture, Development
& Panchayats, Mines & Geology, Animal
Husbandry & Dairying and Fisheries, Govt. of
Haryana.

DR. BANWARI LAL

State Minister of Public Health Engineering
& Renewable Energy.

PROF. K.P. SINGH

Vice-Chancellor, CCS HAU, Hisar

**Saina Nehwal Institute of Agricultural
Technology, Training & Education**

Directorate of Extension Education

Chaudhary Charan Singh Haryana Agricultural University, Hisar

CCS HAU PUB#

Citation : Singh K. P., Hooda, R. S. Dahiya, M., and Singh, S. (2018). Skill Development Programme - A course Document prepared by Chaudhary Charan Singh Haryana Agricultural University, Hisar and Agriculture Skill Council of India, pp. 101.

TECHNICAL SUPPORT

Dr. R. S. Hooda, Director Extension Education, CCSHAU, Hisar

Dr. S. K. Sehrawat Director of Research, CCSHAU, Hisar

Dr. K. S. Grewal, Dean, COA, CCSHAU, Hisar

Dr. R. K. Jhorar, Dean, COA&E, CCSHAU, Hisar

Dr. B. R. Kamboj, Registrar, CCSHAU, Hisar

Dr. Atul Dhingra, Comptroller, CCSHAU, Hisar

Dr. Satender Arya, CEO, ASCI

Col. Kamal Sodhi, Director North, ASCI

Col. P.S. Gupta, ASCI

ToMT's of the Respective Job Roles, COA, COA&E, CCS HAU, Hisar

Ms Vatsala Aggarwal, SPOC: Affiliation, ASCI

Sh. Rajesh Kumar, DTP Operator, University Press, CCSHAU, Hisar

Sh. Kuldeep Kumar, Graphic Designer, University Press, CCSHAU, Hisar

ACKNOWLEDGEMENTS

Words can never express the valuable suggestions, guidance and kind cooperation by Professor K. P. Singh, Worthy Vice Chancellor, CCSHAU, Hisar who helped us to conceptualize the Skill Development Programme in affiliation with Agriculture Skill Council of India. We acknowledge Col. Kamal Sodhi, Director North, ASCI for providing necessary information regarding the Skill Development Job Roles.

Special Thanks to ToMT's of the respective job roles in the preparation of course content for the Skill Development Programme

We also take the opportunity to thank each and every individual who helped in the Skill Development Job roles

DISCLAIMER

The designation employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of CCS Haryana Agricultural University, Hisar or Agriculture Skill Council of India, concerning the legal status of any country, person, territory, city or area, or its authorities, or concerning the delimitations of its frontiers or boundaries. Where trade/proprietary names are used, this does not constitute endorsement of or discrimination against any product by the CCSHAU, Hisar.

INDEX

Sr. No.	Content	Page No.
1	About CCSHAU Hisar	1
2	About SNIATTE	2
3	About Agriculture Skill Council of India	3
4	Appendix - I List of Job Roles Approved by ASCI	6
	Course Contents :	
	➤ Bee Keeper	8
	➤ Gardener	13
	➤ Floriculturist - Open Cultivation	19
	➤ Floriculturist - Protected Cultivation	22
	➤ Bulb Crop Cultivator	26
	➤ Wheat Cultivator	32
	➤ Mushroom Grower	41
	➤ Pesticide and Fertilizer Applicator	46
	➤ Quality Seed Grower	50
	➤ Seed Processing Worker	55
	➤ Tractor Operator	60
	➤ Tractor Mechanic	64
	➤ Organic Grower	69
	➤ Solanaceous Crop Cultivator	76
	➤ Soil and Water Testing Lab. Analyst	81
	➤ Micro Irrigation Technician	89
5	Appendix - II Memorandum	93
6	Appendix - III Certificate of Provisional Affiliation	98
7	Appendix - IV Profile of ToMT's	101
8	Appendix - V Registration by ToMT's	105
9	Appendix - VI Financial Liabilities	107
10	Appendix - VII Application Form	109
11	Appendix - VIII Certificate	111
12	Appendix - IX Training Partners	113



Prof. K. P. Singh

Vice-Chancellor
CCS Haryana Agricultural University
Hisar- 125004 (India)



PREAMBLE

A large number of people live in villages and are dependent upon agriculture for their livelihood. In the last decade, the Indian economy has witnessed a structural transformation from agricultural activities to manufacturing and services oriented activities. A distinct feature of this transition has been a substantial decline in the absolute number of people employed in agriculture. However, according to the Planning Commission, a crucial factor in the migration of the labor force from rural to urban areas is its temporary nature and occurrence only in lean agricultural seasons. Besides, this large chunk of labour force is not available to participate in the manufacturing or the services oriented activities due to severe lack of appropriate skill sets. According to the Commission, the latter reflects rural distress, driven by the fact, that more than eighty percent of India's farming households are small and marginal, tilling only less than 2.5 acres of land.

More than 700 million people are estimated to be of working age (24-59 years) in the India by 2020. This indeed is a 'demographic dividend' that will also lead to a low dependency ratio compared to the rest of the world. Of these, approximately 500 million workers (including those who temporarily migrate from rural to urban areas in lean agricultural seasons) will require some kind of vocational/skill training. Besides, about 50 to 70 million jobs to be created over the next five years (with more than 75% failing largely in the unorganized and informal stream), will too require capacity building in basic expertise. The Government is, therefore, making efforts to provide all possible facilities to the farmers, rural unemployed youth and women to increase the agricultural production and

improvement in the skills with a view to ameliorate their standards of living. Skills and knowledge are the driving forces of economic growth and social development for any country. Presently, the country faces a demand-supply mismatch, as the economy needs more 'skilled' workforce due to change in demographic profile of the country, with 54% of its population under 25 years of age, rising aspiration of the youth seeking better jobs and growing expectation of an employer for an efficient, well trained work force to contribute to the economy of young India. The success of a nation always depends on the success of its youth and Skill India is certain to bring a lot of advantage and opportunities for these young Indians. The time is not far when India will evolve into a skilled society where there is prosperity and dignity for all. Memorandum of Understanding (MoU) was signed between Agriculture Skill Council of India and Haryana Agricultural University, Hisar. Under this agreement training will be conducted by CCS HAU, Hisar as per National Skill Qualification Framework (NSQF) in the areas of farm mechanization, horticulture, seed production crop production etc. The knowledge gained in trainings will help farmers, women and unemployed youth, especially those young people who cannot complete their studies, start their own small business and get employment.

The Saina Nehwal Institute of Agricultural Technology, Training & Education, Directorate of Extension Education, CCSHAU, Hisar is working hard in this direction by acting as a bridge between the research scientists and farmers and other beneficiaries in the transfer of technology.

I am sure that the Training Institute will continue to work hard for making all-round efforts for development of agriculture skills, which intern will help in curbing the problem of unemployment among the youth of the State. I render my wishes for the success of the Training Institute.

(Prof. K. P Singh)



Dr. R. S. Hudda

Director Extension Education
CCS Haryana Agricultural University
Hisar- 125004 (India)



FOREWORD

The technology generated by the University will not be of much use unless transferred to its ultimate users. Training, a human resource development process is a crucial component for the success of agricultural development programme. The Institute of Agricultural Technology, Training & Education and Directorate of Extension Education is responsible for disseminating the latest technical know-how to the different categories of clientele through trainings. Approximately 12350 trainings ranging from 1-90 days duration have been conducted in various disciplines since 1965. The guidance, co-operation and facilities extended by the various departments of different colleges proved very useful in achieving our targets and to run the training programmes efficiently. The Institute/Directorate is thankful to all of them and not only hope but is sure that they would be extending every possible help, in future also.

All the faculty members specially Dr. Manju Dahiya, Associate Director Training of the Saina Nehwal Institute of Agricultural Technology, Training & Education deserve appreciation for their untiring efforts in ameliorating the standard of rural and unemployed youth, farmers, women by making them skilled in various agriculture oriented areas by collaborating with ASCI. The untiring efforts of Dr. Surender Singh and Dr. Bhupender Singh are also appreciated who accepted the challenge to startup the trainings in collaboration with Agriculture Skill Council of India. The faculty has put in good efforts in bringing out related literature from time to time for the benefit of field functionaries and farmers. The supporting staff of the Institute has also extended useful co-operation and assistance in the organization of various training programmes. The sincere efforts of all who contributed in smooth and efficient running to training programmes are highly appreciable. I look forward for the success and progress of the training institute.

(Dr. R. S. Hudda)

**CHAUDHARY CHARAN SINGH
HARYANA AGRICULTURAL UNIVERSITY**

“If agriculture fails, everything else will fail”

— M. S. Swaminathan

Chaudhary Charan Singh Haryana Agricultural University is one of the biggest Agricultural University in Asia, established on February 2, 1970 and located at Hisar in the Indian state of Haryana. It is one of the biggest agricultural universities in Asia. It is named after India’s seventh Prime Minister, Chaudhary Charan Singh. It located about 2 km from the bus station along the National Highway 9; (Old NH 10) 1 km from the town center; 100 meter from Mahabir Stadium; 1 km from Hisar Junction Railway Station; 6 km from the Hisar Airport; 167 km from the Indira Gandhi International Airport; 180 km from the New Delhi Railway Station; and 235 km from the Chandigarh International Airport.

It is working with all its dedication to produce high quality human resources through multi-disciplinary approach that we could become a part to serve the nation in the areas of agriculture and allied fields. Significantly, we have contributed to Green Revolution in India in the 1960’s and 70s. Now we have become a trademark/flagship in India and very well known for the excellent teaching, research and extension activities among national and international communities. We have experts who travel time to time across the globe to master and guzzle the best practices so that we can give a solid foundation for learning. The institute offers undergraduate, postgraduate and Ph.D. courses under multiple specializations. It is affiliated by UGC and ICAR. It covers around 7219 acres of area and has a very well planned infrastructure.

Agricultural Extension Centres (AEC)

The CCSHAU Directorate of Extension Education started establishing Krishi Gyan Kendra (Agricultural Extension Centres) in districts of the state of Haryana from 1966, with funding from Indian Council of Agricultural Research (ICAR). In 1989, the new extension centres were named as Krishi Vigyan Kendra (Farm Service Centres) and since then one Krishi Vigyan Kendra (KVK) was established in each district of Haryana, to disseminate information and to provide vocational training in the relevant technologies among farmers, rural youth and rural development agencies. There are a total of 19 KVKs.

The first Kisan Sewa Kendra (Agricultural Technology Information Centre) was established at the university main campus in 2002, and currently there are a total of three Kisan Sewa Kendra (KSKs) with Toll-free helpline agricultural services for

the farmers. Seeds/Plants of various crops, fruits, vegetables, fertilizers etc. are provided to farmers at subsidized rates through these centres.

Saina Nehwal Institute of Agricultural Technology, Training and Education

The institute came into existence as Junior Staff School after bifurcation of the University, though trainings have been started in 1965. In 1973, the school was renamed as Institute of Agricultural Technology, Training and Education and in 2013, it was further renamed as Saina Nehwal Institute of Agricultural Technology, Training and Education. This institute disseminate the latest technical knowhow through various training programmes to farming community and field extension personnel like officers of State Agriculture Department, Semi-Govt. and Co-operative organizations like IFFCO, KRIBHCCO, and probationers/Asst. Commissioners (under training) and HCS Probationers (under training) etc.

Extension education is one of the three major functions of the CCS Haryana Agricultural University, Hisar. The responsibility for planning, organizing, conducting and coordinating the extension education activities of the university in the Haryana State lies with the Directorate of Extension Education. Its main aim is to transfer the well proven/tested technology to the farmers (males and females), rural youth, field staff of State Agriculture and other personnel engaged in developmental and professional agencies in the sphere of agriculture, horticulture, home agencies and other allied areas through its well planned, skill-oriented and need based programmes. An excellent collaboration/linkage is maintained with the Haryana State Govt. Department of Agriculture, Horticulture, Social Welfare (Woman and Child Development) etc. and non-government organization so that technologies may reach to the beneficiaries at their door steps. The approach is educational with major emphasis on whole farm and family development. Since its inception the university has conceived and implemented a unique system of extension education for transfer of technology to its ultimate users. The Directorate acts as bridge between the research scientist and the farmers and other beneficiaries to provide feedback, therefore, the role of the Directorate is two fold, *i.e.*, transfer of technologies from scientists to the ultimate clients through field functionaries and to find out the problems of the field to be passed on to various research departments for working on a solution to the problem.

Associated Institutions

- Academy of Agricultural Research and Education Management.
- Haryana Space Applications Centre, Hisar, a nodal agency of the Department of Science and Technology, Government of Haryana, for Remote Sensing and GIS applications.
- Centre on Plant Biotechnology, Hisar.

Agriculture Skill Council of India (ASCI)

Skill India is an initiative of the Government of India which has been launched to empower the youth of the country with skill sets which make them more employable and more productive in their work environment. Our National Skill Mission is chaired by the Hon'ble Prime Minister, Shri Narendra Modi himself. India is a country today with 65% of its youth in the working age group. If ever there is a way to reap this demographic advantage, it has to be through skill development of the youth so that they add not only to their personal growth, but to the country's economic growth as well.

For the first time since India's independence, a Ministry for Skill Development & Entrepreneurship (MSDE) has been formed to focus on enhancing employability of the youth through skill development. The skill ecosystem in India, is seeing some great reforms and policy interventions which is reinvigorating and re-energising the country's workforce today; and is preparing the youth for job and growth opportunities in the international market.

The Skill Mission launched by the Prime Minister on 15 July 2015, has gathered tremendous steam under the guidance of Shri Dharmendra Pradhan, Minister for Skill Development and Entrepreneurship and Shri Anant Kumar Hegde, Minister of State, MSDE. More than one crore youth join the Skill India mission annually. The Hon'ble Prime Minister's flagship scheme, Pradhan Mantri Kaushal Vikas Yojana (PMKVY) alone, has till date seen close to 50 lakh people get skilled and prepared for a new successful India.

Skill India offers courses across 40 sectors in the country which are aligned to the standards recognised by both, the industry and the government under the National Skill Qualification Framework. The courses help a person focus on practical delivery of work and help him enhance his technical expertise so that he is ready for day one of his job and companies don't have to invest into training him for his job profile.

Skill India is no more just limited to the domestic market but is actively engaging with countries across the world to promote cross geographical exposure and opportunities in the international market. India is a young nation and a skilled workforce will be able to certainly cater to not only the market demand within the country but also the global market demands. The success of a nation always depends on the success of its youth and Skill India is certain to bring a lot of advantage and opportunities for these young Indians. The time is not far when India will evolve into a skilled society where there is prosperity and dignity for all.

Agriculture Skill Council of India (ASCI) is not for profit concern working under the aegis of Ministry of Skill Development & Entrepreneurship (MSDE). ASCI works towards capacity building by bridging gaps and upgrade skills of farmers,

wage workers, self-employed and extension workers engaged in organized/unorganized segment of Agriculture & Allied Sectors.

ASCI is contributing to nation building through Skill Development in Agriculture especially at the times w country's agriculture is experiencing stagnant growth, exodus of quality manpower to other sectors, changing with increased variability in production parameters and transformations in international agriculture markets that especially too much subsidized challenging the competitiveness of Indian agriculture. Agriculture Skill Council of India (ASCI) has taken upon itself the responsibility of transforming Indian Agriculture through developing the skill country's manpower in emerging areas of agriculture. With the development of 157 Qualification Packs, ASCI covered segments: Farm Mechanization and Precision Farming, Agri-Information Management, Dairy Farm Management, Poultry Farm Management, Fisheries, Animal Husbandry, Post-Harvest Supply Chain Management, Forestry and Agro Forestry, Watershed Management, Amenity Horticulture and Landscaping, Production Horticulture, Seeds Industry, Soil Health Management Commodity Management, Agri-Entrepreneurship & Rural Enterprises, and other Allied

There is hardly any knowledge transfer through traditional modes. Some are the days when kids used to spend time with their parents in the fields to learn how sowing is done, how harvesting is done, how things move from farms to mandies. It is a known fact that the Indian agriculture system has been able to reach only 6% of the targeted segment. There is no exposure to the new systems being used and getting skilled is becoming more important and critical.

Educating youth in farming practices is a global challenge. One of the ways to make it aspiration particularly for rural youth is to blend it with technology, perhaps through farm mechanization techniques. The youth can also explore entrepreneurship as not all the people can be absorbed in wage jobs in India. It is better to be earning Rs. 10,000 to Rs. 15000 per month in a familiar environment than migrating and earning Rs. 20,000 per month in an unknown area.

The challenge is to create awareness that agriculture is a highly skilled profession. People involved in this sector are partially skilled and they need up skilling and knowledge enhancement. Activities likes sowing, irrigation, harvesting and post-harvesting are very scientific. Its' not as simple as taking a handful urea or pesticide and sprinkling it, and the consumers are becoming aware of healthy food options.

The Memorandum of Understanding (MOU) is made on 6th day of December, 2016 between CCSHAU, Hisar and Agriculture Skill Council of India.

Saina Nehwal Institute of Agricultural Technology Training & Education of Chaudhary Charan Singh Haryana Agricultural University has been made an authorized centre of Agriculture Skill Council of India (ASCI). **The centre (SNIATTE) has been**

registered by ASCI SDMS Reg. No: NSDC-REG. No. 16670 and has been allotted as training centre ID: 107787 to award Certificate/Diploma of skill development in 19 different disciplines.

APPENDIX-I

SKILL DEVELOPMENT PROGRAMMES

LIST OF JOB ROLES APPROVED BY ASCI

Sr No	Job Roles	Education	NSQF level	QP Reference ID	Duration (hrs.)
1	Bee Keeper	No formal education	4	HAU/AGR/Q5301	200
2	Gardener	5 th std	4	HAU/AGR/Q0801	300
3	Assistant Gardener	5 th std	3	HAU/AGR/Q0804	200
4	Nursery Worker	5 th std	3	HAU/AGR/Q0807	200
5	Floriculturist–Open Cultivation	5 th std	4	HAU/AGR/Q0701	180
6	Floriculturist–Protected Cultivation	5 th std	4	HAU/AGR/Q0702	200
7	Bulb Crop Cultivator	5 th std	4	HAU/AGR/Q0401	200
8	Wheat Cultivator	5 th std	4	HAU/AGR/Q0102	200
9	Mushroom Grower	8 th std	4	HAU/AGR/Q7803	200
10	Pesticide and Fertilizer Applicator	8 th std	3	HAU/AGR/Q1202	200
11	Quality Seed Grower	5 th std	4	HAU/AGR/Q7101	200
12	Seed Processing Worker	No entry barrier	3	HAU/AGR/Q7102	130
13	Tractor Operator	10 th std	4	HAU/AGR/Q1101	200
14	Tractor Mechanic	10 th std	4	HAU/AGR/Q1108	220
15	Organic Grower	5 th std	4	HAU/AGR/Q1201	200
16	Solanaceous Crop Cultivator	5 th std	4	HAU/AGR/Q0402	180
17	Soil Sampler/Collector	8 th std	3	HAU/AGR/Q8104	200
18	Soil and Water Testing Lab Analyst	5 th std (B Sc Ag. Preferred)	4	HAU/AGR/Q0102	200
19	Ag. Ext. Service Provider	12th	4	HAU/AGR/Q7601	200

Registration Fees for each course will be Rs. 1000/-

Course Content for Bee Keeper

QUALIFICATION PACK – BEEKEEPER

Sector	Agriculture & Allied
Sub-Sector	Agriculture Allied Activity
Occupation	Beekeeping
Applicable National Occupational Standards(NOS)	AGR/N5301: Understand bee biology and behaviour AGR/N5302: Handle bee-keeping system and bee-keeping tools AGR/N5303: Beehive/Honey bee colony Management AGR/N5304: Manage insects, diseases and nuisances in beehive AGR/N5305: Harvest, process and market the produce
Brief Job Description	The person can manage honey bee colonies throughout the year in different climatic seasons and able to harvest the honey and other beekeeping products, their processing and marketing.

COURSE CONTENT

➤ **Understand bee biology and behaviour**

Theory

- Understand the different types of honey bees and their nature
- Understand the role played by different types of honey bees
- Understand the life cycle of different types of honey bees
- Study the bee behavior (communication, swarming, absconding, robbing etc.)

Practical

- Identify the different species and sub-species of honey bees
- Study the life cycle of different types of honey bees particularly *Apis mellifera*
- Study the working behavior of different castes of honey bee, *Apis mellifera* in the hive and in the field

➤ **Handle bee-keeping system and bee-keeping tools**

Theory

- Understand the difference between traditional and modern beekeeping system
- Study the tools/equipments required for beekeeping

Practical

- Visit of different apiaries to study different types of beekeeping systems i.e. traditional as well as modern
- Identification and use of different tools/equipments required for beekeeping

➤ **Beehive/Honey bee colony management**

Theory

- Understand the factors to be considered during site selection for the successful establishment of apiary
- Study of factors to be considered for the proper installation of bee hives in the apiary
- Study of important plants/flora with source of nectar or pollen or both
- Study of factors affecting nectar and pollen production in bee flora

Practical

- Installation of bee hives
- Inspection of honey bee colonies and their record keeping
- Field visit for identification of bee flora
- Seasonal management of honey bee colonies
- Migration of honey bee colonies

➤ **Manage insects, diseases and nuisances in beehive/honey bee colony**

Theory

- Study of different types of insect pests infesting honey bee colonies and their management.
- Study of different types of diseases infecting honey bee colonies and their management

Practical

- Identification and use of different types of tools/equipments/chemicals required for management of enemies of honey bee colonies
- Identification of different types of insect pests infesting honey bee colonies, their nature of damage and management
- Identification of different types of diseases infecting honey bee colonies, their symptoms and management

➤ **Harvest, process and market the produce**

Theory

- Study of factors to be considered during harvesting/extraction of honey bee products i.e., honey, royal jelly, propolis, bee wax, bee venom and pollen.
- Study of tools/equipments required for harvesting/extraction of honey bee products
- Study of factors affecting the quality of bee products.
- Identify the suitable market platform for honey bee products.

Practical

- Identification and use of different tools/equipments for harvesting/extraction of bee products.
- Proper methods of harvesting/extraction of honey and other honey bee products, their processing, packaging and storage.

BEE KEEPER

Apiculture or Beekeeping is the art and science of managing honey bee colonies scientifically to harness direct and indirect benefits of bee activities. Beekeeping is an ideal activity which provides supplementary income to a large number of rural, hilly and tribal populations in India. Keeping in view the availability of rich flora available in abundance, there is vast potential and scope of apiculture in the country.

Besides honey, it offers scope for production and marketing of other bee products like bee pollen, bee propolis, bee wax, bee venom and royal jelly. Honey bees can also be managed as and when required for pollination of field & horticultural crops as well as for hybrid seed production in vegetables & other bee pollinated crops. Any beginner who wants to start beekeeping should know some of the aspects of bee keeping i.e. beehives, beekeeping equipments, requirements for successful establishment of apiary, bee flora, bee diseases & enemies and their management, production and marketing of bee products etc.

Therefore, unemployed youth and farmers can be trained to create entrepreneurs in beekeeping. No big investment and higher qualification is required to start this profession and it can provide full time employment opportunity.



Course Content for Gardener

QUALIFICATION PACK- GARDENER

AGR/N0801 Nursery Management and Propagation of Plant Material

Theory

- Nursery, its status & importance and selection of site
- Basic botany
- Water, media & nutrition
- Growth & propagation techniques
- Planting and potting techniques
- Manures and fertilizers
- Propagation methods and types
- Mother plants
- Propagation by specialized parts
- Irrigation
- Methods/ procedures for resource (water & chemicals) conservation
- Pest & disease management
- Safety methods in pesticides use and disposal
- Use of garden tools and implements
- Maintaining cleanliness in nursery by sweeping trashes and pulling out dead plant parts etc.
- How to develop approaches for implementing an idea
- Plan and prioritize work to be done
- How to make use of exposure visits to model farm
- How to build rapport with experts and discuss possible solution with them

Practical

- Physical infrastructure-shade house, mist chamber, irrigation system
- Preparation of soil mixtures
- Preparation of seed beds
- Transplantation of seedlings
- Potting of seedlings
- High Tech Nursery
- Hardening of seedlings
- Identification and use of proper rootstock and scion for propagation
- Propagation of plants through cuttings
- Practice of layering and stooling (guava)
- Practice of grafting (mango)
- Practice of budding in rose and citrus

- Raising rootstocks for grafting and budding
- Plastics use for nursery operations
- Identification and growing of indoor plants of their basic requirements
- Layout nursery area

AGR/N0802 Designing of Garden Components

Theory

- Effective working relationships and how to work effectively with others in the gardening contexts
- Types of gardens Formal, informal, landscape, institutions, public gardens, parks, Hindu, Mughal, Japanese and English gardens etc.
- Basic landscaping and designs for the beautification of gardens like making gate, lawn, shrubbery, flower beds, borders, paths, hedges, edges, steps, statues, fountains, bird baths, streams, pools, waterfalls, rockery, arches, pergolas, hanging pots, bird paths (features of gardening) etc.

Practical

- Design various components of garden like hedge, edge, shrubbery, pergolas, flower bed, lawn, etc.
- Visualise various components according to actual field
- Use of various components available in the garden area
- Designing of different types of gardens
- To utilise the available space effectively for different type of gardens
- To measure area for layout of garden components
- Layout for components of garden in the field
- Plan field design
- Maintain the plants according to design

AGR/N0803 Plantation, Maintenance and Care of Garden

Theory

- Methods of planting and cultivation
- Procedures of garden maintenance
- Methods & advantages of integrated nutrient management
- Principles of Nutrient Management
- Floral display methods & procedures
- Training & Pruning methods, their advantages & limitations
- Pest & disease management

- Laying & maintenance of drip & sprinkler
- Integrated pest & Disease Management
- Types of chemicals & fertilizers available causes and effects
- Natural pesticides -causes & effects
- Marketing

Practical

Maintain lawn and turf

- Mowing
- Fertilizing
- Weeding
- Irrigation
- Aeration
- Renovation

Plant and culture trees

- Tree selection- type of tree based on location
- Pit digging
- Tree placement- use of crane & mechanical methods
- Backfilling
- Staking
- Incubation for planting
- Fertilization
- Irrigation
- Shaping and pruning
- Tree protection- pest and diseases, cattle, animals

Plant and culture trees, shrubs and plant covers

- General plant maintenance and care
- General planting procedures
- Maintain soil texture and structure
- Take care of water and water movement
- Take up soil nutrient management
- Control soil erosion
- Plan and prepare bed
- Plant & culture annuals, bulbs etc.
- Recommended plant spacing
- Dehead flowers as per the recommended procedures
- Prune and trim trees, shrubs, and hedges, using shears, pruners or chainsaw etc.

- Use techniques to shape trees and shrubs as per the recommended procedures
- Drip and sprinkler system as per the design
- Clean filters & drips for optimum flow
- Understand water requirements of different plants
- Use watering appliances like drip & sprinklers, water can, seedling water can, bucket, syring and garden hose etc. as per the need and procedure
- Identify pest and diseases
- Manage pest and diseases
- Use chemical & non-chemical methods of pest & disease control
- Plant woody plants, bulbs and bedding plants, shrubbery, hedges and edges etc. as per procedures
- Identify and grow indoor plants as per the design layout
- Practice in making bonsai
- Prepare potting mixture, potting and reporting.
- Plant various fruits /crops as per the design and layout

AGR/N0804 Maintain Health and Safety at the Work Place

Theory

- Maintain clean and efficient workplace
- Render appropriate emergency procedure

Practical

- Practice general safety and first aid

GARDENER

Horticulture based cropping system facilitate in creating environment ecologically sustainable and socially equitable, meeting the basic needs- food fruit, fuel, fodder and timber for shelter, besides providing employment and sustaining a range of products and byproducts industries. Genuine planting material of improved varieties in inadequate quantities is undisputedly the major reason for slow growth and low productivity of horticulture in India. Genuine and disease free plants material certainly boosts productivity. The information on various aspects of nursery production is fragmentary and scattered at diverse sources. A great difficulty has been and is being experienced by all those concerned with horticulture in getting a wholesome knowledge at one source.

Nursery raising is highly remunerative commercial venture. The problem of unemployment in the country to some extent can be tackled by adoption of gardening as an occupation.



Course Content for Floriculturist- Open Cultivation

FLORICULTURIST OPEN FIELD

AGR /N 0701: Preparatory Flower Cultivation

Theory:

Importance of Floriculture and floriculturist, classification of flower crops based on different criteria, Nursery raising, site selection criteria, preparation of land for nursery, media preparation, soil testing, nutrient management, IPM in nursery, Basics of flower Propagation nursery (tools and implements), use of growth regulators in seed and vegetative propagation, selection and maintenance of mother trees, collection of scion wood stick, scion-stock relationship, and their influences, techniques of propagation through specialized organs, corm, runners, suckers, Plant protection, Hi Tech nursery, Protection from inclement weather, Identify the available resources, Crop Selection with Pest resistance, High Yielding varieties, drought Tolerance , Land Preparation and transplanting, Marketing feasibility .

Practical

Identification of different type of flower, Soil testing, Media for propagation of plants in nursery beds, .Nursery Layout, Preparation of nursery beds and sowing of seeds. Practice different types of cuttings, layering, grafting and budding etc. Layout of field, carrying out land Preparation, Transplanting of Seedling in field, Market Survey .

AGR /N0702 Crop Cultivation in Flower Crops

Theory

Types of flowers for cultivation, Crop spacing, border crops, time of planting, Seed rate, Integrated nutrient management , specialized practices such as pruning pinching, disbudding, netting etc., Irrigation Management, Pest and Disease Management

Practical

Estimate nutrient requirement, calculation of dosage, Procure inputs, method of application of fertilizers, practicing training/pruning, Frequency, time and Methods of irrigation, Drainage practices, identify pest and their infestation, application of pesticides and under taking precautions, identify disease symptoms, identify sources for disease apply chemicals to prevent/curb disease,

AGR /N 0703 Harvest and Post Harvest Management in Floriculture

Theory

Methods of harvesting of flower crops, stage and time of harvesting, Handling Harvested flowers, Grading of flowers, Use of Chemicals for enhancing Vase Life of flower . Value addition of flowers, packing of flowers, Storage, transportation

Practical

Practicing Flower Harvesting, Identify Harvesting stage, Receiving, Handling of Harvested Flower, grading of different flower crops, use packing material and packing of flowers, tools for flower harvesting, Transportation and storage infrastructure

AGR /N 9903 Maintain Health and Safety at the Work Place

Theory

- Health Hazards at work place
- Safety Checks
- Maintain Clean and efficient work place
- Render appropriate emergency procedure

Practical

- Practice general safety and first aid
- Identify the use of equipment and materials safely

**Course Content
for
Floriculturist–
Protected
Cultivation**

FLORICULTURIST –PROTECTED CULTIVATION

AGR /N 0704 Pre Cultivation Operation in Green House

Theory:

Importance of Protected Cultivation, Site Selection for Green House, Green House Designs, Identify the available resources, Crop Selection with Pest resistance, High Yielding varieties, drought Tolerance, Land Preparation and transplanting, Marketing feasibility .

Practical

Identification of different design of green houses, Soil testing, Water testing Layout of green houses, carrying out Green House Land Preparation, Transplanting of Seedling in field, Market Survey .

AGR /N0705 Cultivation Operation in Green House

Theory

Types of flowers for cultivation, Crop spacing, time of planting, Seed rate, Fertilizer /Manure , specialized practices such as pruning pinching, disbudding, netting etc., Irrigation Management, Drip irrigation system Pest and Disease Management

Practical

Estimate nutrient requirement, calculation of dosage, Procure inputs, method and dosage of application of fertilizers, practicing training/pruning, Frequency, Frequency and time irrigation, Drip irrigation layout and its maintenance, Drainage practices, identify pest and their infestation, application of pesticides and under taking precautions, identify disease symptoms, identify sources for disease apply chemicals to prevent/curb disease .

AGR /N0703 Harvest and Post Harvest Management in Floriculture

Theory

Methods of harvesting of flower crops, stage and time of harvesting, Handling Harvested flowers, Grading of flowers, Use of Chemicals for enhancing Vase Life of flower . Value addition of flowers, packing of flowers, Storage, transportation

Practical

Practicing Flower Harvesting, Identify Harvesting stage, Receiving, Handling of Harvested Flower, grading of different flower crops, use packing material and packing of flowers, tools for flower harvesting, Transportation and storage infrastructure

AGR /N 9903 Maintain Health and Safety at the Work Place

Theory

- Health Hazards at work place
- Safety Checks
- Maintain Clean and efficient work place
- Render appropriate emergency procedure

Practical

- Practice general safety and first aid
- Identify the use of equipment and materials safely

FLORICULTURIST

In India, floriculture is emerging as an important commercial crop. A lot of importance has been given to this sector due to its multiple uses, satisfying the aesthetic needs of the people, creating more employment, ensuring higher rate of returns to rural people and facilitating earning more foreign exchange. More specifically, they are being used as raw materials in the manufacture of essence, perfumes, medicines and confectioneries for direct consumption by the society.

Importance of flowers is not restricted upto the beautification, decoration or preparation of Gajra, Garland, Veni or Bouquets but also have the industrial importance too. Some flowers like Rose, Jasmines, Tuberose, Kevda, Bakul are used for extraction of essential oils which is base for preparation of perfumes, scents or attar. From rose Gulkand, Rose water etc. products are also prepared.

The production of flowers is an age-old occupation. Until last decade, the growing and selling of flowers was confined to a few families. Now, different farmers are growing different flowers both for domestic market and export purposes. The flowers were, until 1960s, confined to domestic markets. These flowers are now moving long distances due to the availability of airfreight and hi-tech cooling systems. The cultivation and export of floricultural products have received considerable interest in recent years from the policy makers, researchers, agricultural and horticultural planners due to the sector's potential in employment, income and export generation.

Floriculture may be a bright and colourful career. Floriculture, or flower farming, is a horticultural discipline. A Floriculturist focuses on the cultivation of flowering and ornamental plants for gardens, floral industry and for export. They also develop new varieties. A proportion of flower farming takes place in greenhouses, but most are produced outdoors eg herbaceous plants, flowers and cut flowers.

Floriculture may provide an interesting and exciting career for those seeking outdoor work involving growing, harvesting and preparing flowers and foliage for sale.



Course Content for Bulb Crop Cultivator

BULB CROP CULTIVATION

AGR/B401 Selection of bulb crops variety for cultivation as per season

Theory

- Identification of appropriate variety of bulb crop as soil & climatic conditions
- Identification of variety as per market demand
- Identify varieties as per day length requirement
- Select appropriate varieties which has higher market demand and can have maximum yield
- Select the variety which is resistant to insect pest and disease
- Select the variety which is draught tolerant
- Select the right quality and quantity of seed
- Identify various certified seed vendors/suppliers (including government nurseries /department)
- Procure the seed and prepare the nursery

Practical

- Survey of different bulb crop variety seed available in that area
- Identification should be according to market demand and consumer preference
- Identification of the variety should be as per farmer feedback of that area
- Classify the variety based on season requirement i.e. rabi or kharif
- Physical shape and size of the bulb variety should be attractive
- Select the variety having higher self life
- Select the variety which is most suitable according to soil condition
- Study about various seed agencies
- Procured the seed from an authentic and approved govt. organization like NSC
- Check that the seed label for seed viability and germination%
- Please demand for an receipt while procuring the seed from the agencies

AGR/B402 Soil preparation and plantation of bulb crops

Theory

- Identify soil types and it should be tested in state govt. approved laboratory
- Plough the main field for achieving recommended tilth
- Requirement of seed per ha
- Prepare nursery bed for seedling preparation
- Proper size and number of nursery bed required for one hectare
- Seed and soil treatment before sowing

- NPK requirement in nursery bed
- Seedling size, age and stage for transplanting
- Kharif onion grown through setts
- Proper size and quantity of sett required per ha (how much)
- Prepare seed bed for plantation
- Treatment before sowing (setts)
- Identify the most suitable time for planting bulb crop
- Plant the bulb crop with appropriate method
- Perform plantation of bulb crop at proper spacing (R-R and P-P)
- Transplanting of seedling in main fields

Practical

- How to select the site from where to take the sample
- How much deep dug the soil and how to take the sample
- How to mix the soil sample and take one composite sample
- Identification labeling of the soil sample
- Layout of the seed bed according to field condition
- Suitable size and length of seedling for plantation
- Suitable planting time for nursery plantation
- Seed sowing in nursery and aftercare
- Insect-pest and disease management of nursery
- Irrigation and fertilization in the nursery
- Hardening of the seedling
- Uprooting and transplanting of seedling

AGR/B403 Soil nutrient management in bulb crops

Theory

- Select appropriate organic fertilizer including farm yard manure for its application
- Apply organic and inorganic fertilizer in correct dosage and apt time
- Apply vermi compost and interaction with its expert
- NPK requirement of bulb crop as per package & practices for Haryana
- Method of fertilizer application
- Stages of application of fertilizer
- Application of foliar spray of fertilization
- Application of sulfur fertilizer in bulb crop
- Maintain the record of fertilizer application

Practical

- Time of application of FYM in the soil

- How much quantity of organic and inorganic fertilizer are applied and when
- Method of fertilizer application broadcasting or ant other
- Optimum stages of fertilizer application
- How to apply the foliar fertilizer with NPK
- Quantity of NPK required per litre for foliar fertilizer application
- Keep the record of each manure and fertilizer application

AGR/B404 Weed control and management in bulb crops

Theory

- Identify the types of weeds found in bulb crop
- Maintain records of the weed and share it with experts
- List them as per broad leaf and narrow leaf weed
- Control weeds during physically or chemically
- Undertake weeding process at appropriate time to avoid crop damage
- Use herbicides for weed control wherever feasible
- Use new & innovative methods of soil solarization & mulching
- Use mechanized weed control equipment wherever available and applicable
- Optimum stages of weed control i.e. pre emergence or post emergence

Practical

- Identification of the weeds found in the bulb crop
- Categorize the weeds based on their leaf habit
- Application of herbicide as per recommendation
- The right stages regarding hoeing and weeding in bulb crop
- Follow crop rotation for control of weeds
- Proper stages for herbicide application and the amount required/ha

AGR/B405 Irrigation management in bulb vegetable crops

Theory

- Requirement of pre sowing irrigation
- Irrigation after transplanting
- As per climatic condition
- Irrigation methods
- Apply irrigation as per soil characteristic
- Depth of irrigation and critical stages of irrigation
- Effect of irrigation on bulb quality
- Effect of irrigation on storage quality
- Stop irrigation before final harvesting
- Irrigation scheduling

Practical

- Time of pre sowing irrigation
- Requirement of irrigation after transplanting
- Level of water should stands in the field after irrigation
- Time of application of the irrigation in the field
- Prepare the irrigation scheduling as per season and climatic requirement
- Maintain the optimum moisture level
- Avoid over flooding of the bulb crop

AGR/B406 Integrated pests and disease management in bulb crops

Theory

- Identify stages of crop for pest and disease incidence
- Diagnose symptoms and extent of damage
- Major insect-pest and diseases and their management through insecticides
- Repeat the spray as per demand
- Precaution during spraying of insecticide
- Perform proper ploughing and pre irrigation for breaking down of residue (if any)
- Use of different insect traps for control of pest
- Identify early symptoms of various types of diseases
- Understand the different mode of transmissions of disease such implements, vectors, water, rain etc.
- Use of resistant varieties
- Undertake pruning of plant if affected by diseases (if need arises)
- Critically observe the crop

Practical

- Identification of the damage at the initial level
- Visit the field regularly and observe the plant critically
- Use of resistant varieties and follow crop rotation
- Soil solarization
- Maintain the proper moisture condition
- Control the insect-pest and disease by integrated approach
- Seed treatment
- Avoid heavy nitrogenous fertilization

AGR/B407 Harvest and post harvest management in bulb crops

Theory

- Stoppage of irrigation 15 days prior to digging
- Harvesting stage of onion crop in field
- Diagnosis of harvesting based on leaf colour
- Diagnosis of harvesting based on neck falling
- Implements used in harvesting
- Cutting of extra leaf length
- Curing of bulb

- Sorting and grading of the bulb
- Fill the bulb the perforated nylon bags for proper ventilation
- Use of chemical for increasing post harvest treatment shelf life
- Storage of onion in dark and proper ventilated place
- Monitoring the stored onion after every 15 days

Practical

- Identification of the proper stages of harvesting
- Arrangement of digging implement
- Cured the bulb in shade before storage
- Stored them in ventilated dark storage
- Avoid overcrowded stacking
- Monitoring the bulb in the storage

AGR/B408 Assimilating Market Information

Theory

- Identification of suitable market for sale of bulb
- Collect the market information from reliable source
- Take right decision at right time for sale of the bulb
- Analyse the previous year rate of bulb crop
- Close monitoring of the various platform for rate update like :
 - Through SMS
 - Through Newspaper/TV/Radio

Practical

- Survey of different bulb mandis or market for price
- Monitoring the bulb rate on various newspaper of news channel

AGR/B409 Basic farm management

Theory

- Calculate the cost of production of bulb crop
- Practice various farm management:
 - Soil testing, selection of crop variety, time of sowing, crop rotation, intercropping, schedule for fertilizer, pesticide/chemical application, irrigation scheduling and harvesting etc.
- Maintain record of investment and expenditure
- Identification of near market for sale of bulb

Practical

- Maintain the record of bulb crop from sowing to selling of the bulb
- Estimate the cost benefit ratio

Course Content for Wheat Cultivator

WHEAT CULTIVATOR

Sector	Agriculture and Allied
Sub-Sector	Agriculture Crop Production
Occupation	Field Crop Cultivation (Food Crops)
Qualification Pack Code	AGR/Q0102
Applicable National Occupational Standards (NOS)	<ol style="list-style-type: none"> 1. AGR/NO 112 Selection of varieties for wheat cultivation 2. AGR/NO 113 Agronomic practices 3. AGR/NO 108 Integrated nutrients/fertilizer management 4. AGR/NO 109 Integrated weed management 5. AGR/NO 111 Irrigation management 6. AGR/NO 110 Integrated protection management 7. AGR/NO 115 Abiotic stress management 8. AGR/NO 116 Quality seed production 9. AGR/NO 114 Harvesting, threshing and post harvest management 10. AGR/N9901 Basic farm management 11. AGR/N9902 Assimilating market information 12. AGR/N9903 Maintain health and safety at workplace
Brief Job Description	The job of the wheat cultivator involves cultivation of wheat as per the package of practices recommended for a particular agro climatic zone, type of soil, rainfall pattern and climatic condition to achieve the yield as per the genetic potential of given variety and sell the produce as per the competitive market prices without distress sale.

AGR/NO 112 Selection of Varieties for Wheat Cultivation

Theory

- Brief introduction, classification and status of wheat
- Importance of different types of wheat and their status
- Selection of varieties
- Identification of sources of quality seed
- Information about market rate
- Purchase of variety
- Store the variety

Practical:

- Selection of varieties on the basis of locality, yield potential and prevailing incidence of insect-pest and diseases
- Identification of sources of quality seed: Govt./Semi Govt./Private seed agencies
- Information about prevailing market rate for the variety to be purchased
- Purchase of variety in appropriate quantity and quality
- Store the variety as per recommended procedure if there is time for sowing

AGR/NO 113 Agronomic Practices

Theory

- Types of soil
- Testing of soil status
- Pre sowing irrigation
- Preparation of land
- Seed rate
- Seed treatment
- Sowing time and methods of sowing

Practical:

- Knowledge about different types of soil
- Testing of soil status for various nutrients at authorized soil testing centres
- Application of pre sowing irrigation
- Leveling and preparation of land for sowing
- Planking the field after each ploughing
- Seed rate according to sowing time: Normal/Late sown/Very late sown
- Procedure and precautions for seed treatment for control of termite/seed and soil borne diseases
- Sowing time and different methods of sowing

AGR/NO 108 Integrated Nutrients/Fertilizer Management

Theory

- Soil sampling procedure
- Preparation of soil samples
- Submission of soil samples for analysis
- Collection of soil testing reports
- Application of organic and inorganic fertilizers
- Seed treatment with Biofertilizer

Practical:

- Procedures of soil sampling for nutrient analysis
- Preparation of soil samples for testing in laboratory
- Procedure of submission of soil samples for analysis in laboratory
- Collection and understanding the soil testing reports for application of organic and inorganic fertilizers
- Application of recommended dose of organic and inorganic fertilizers at appropriate time and intervals of crop stage
- Procedure and precautions for treatment of seed with Biofertilizer for N and P availability
- Visit to soil testing laboratory

AGR/NO 109 Integrated Weed Management

Theory

- Weeds and its types
- Knowledge about the chemicals/herbicides
- Pre emergence weed control
- Post emergence weed control

Practical:

- Identification of different types of weeds that affect wheat crop and their status
- Information about the chemicals/herbicides effective in controlling the weeds
- Spray techniques: Procedure and precautions
- Precautions and procedure to control pre emergence weeds with appropriate herbicides
- Post emergence weed control:
Mechanical control: Application of mechanical weeding equipments such as hoes *etc.*
Chemical control: Type of weeds (Broad/Narrow)
Time of application
Control measure according to weed type

AGR/NO 111 Irrigation Management

Theory

- Requirement and availability of water
- Critical stages of crop growth for irrigations

- Number of irrigations
- Irrigation system
- Micro irrigation system

Practical:

- Requirement and availability of water for irrigation based on soil moisture and climate of the region
- Identification of critical stages of crop growth for irrigation
- Appropriate irrigation system based on soil type
- Micro irrigation system wherever possible and applicable

AGR/NO 110 Integrated Protection Management

Theory

- Various biotic factors that affect the crop such as insects, diseases and nematodes
- Stages of crop growth when it is vulnerable
- Symptoms caused by insects, diseases and nematodes
- Integrated control measures
- Use of resistant varieties

Practical:

- Identification of various insects, diseases and nematodes that affect the crop
- Identification of crop growth stages when it is vulnerable to the attack of insects, diseases and nematodes
- Identification of part of crop where infestation occurs
- Identification of symptoms on the plants due to the attack of various insects, diseases and nematodes
- Appropriate integrated control measures (Mechanical & chemicals) at right crop growth stage and in recommended dose
- Use of recommended insects, diseases and nematode resistant varieties
- Visit to entomology/pathology/nematology laboratories

AGR/NO 115 Abiotic Stress Management

Theory

- Various abiotic factors like moisture stress, temperature, salt *etc.*
- Symptoms due to abiotic stresses

Practical:

- Identification of symptoms due to various abiotic stresses
- Preventive control measures for abiotic stresses
- Selection and use of recommended resistant /tolerant varieties

AGR/NO 116 Quality Seed Production

Theory

- Classification of seeds
- Quality parameters of wheat seed
- Procedure for quality seed production

Practical:

- Visit to seed testing laboratories and processing plants
- Identification of various classes of seeds
- Procedure and precautions for quality seed production
 - Proper isolation distance
 - Techniques of roughing
 - Various field inspections
 - Processing and bagging *etc.*

AGR/NO 114 Harvesting, Threshing and Post Harvest Management

Theory

- Crop stage for harvesting
- Harvesting methods
- Proper drying of crop before threshing
- Precautions while threshing
- Proper packaging of crop produce
- Maintenance of proper moisture
- Disinfestations of store
- Fumigation of store

Practical:

- Identification of appropriate crop stage for harvesting on the basis of colour and moisture content
- Suitable harvesting methods
- Proper drying of crop before threshing

- Precautions while threshing and separate threshing of different varieties to avoid mechanical mixture
- Proper packaging of crop produce in clean and disinfected bags
- Maintenance of proper moisture content before storage
- Disinfestations of store before storage of produce
- Fumigation of store to avoid infection from stored grain pests

AGR/N9901 Basic Farm Management

Theory

- Interaction with agriculture experts
- Maintenance of crop record
- Maintenance of crop calendars
- Awareness about government schemes

Practical:

- Interaction with agriculture/extension experts at KVKs, Kisan Melas, field days *etc.*
- Maintain record of crop production, investment and expenditure
- Maintain crop calendars of weed, insect pest and diseases
- Awareness about government schemes for subsidy on farm implements, fertilizers, seed *etc.*

AGR/N9902 Assimilating Market Information

Theory

- Reliable source of information for marketing
- Precautions before marketing the produce
- Information about price fluctuation in market

Practical:

- Source of information at village and market level for marketing the produce
- Identification of reliable source for marketing
- Proper drying, grading, bagging and transportation of produce for marketing
- Information about price fluctuation in market and take appropriate decision

AGR/N9903 Maintain Health and Safety at Workplace

Theory:

- Basic safety checks
- Appropriate protective cloth and equipments
- Understanding the health hazards
- Recommended safe practices
- Dispose of waste material
- Instructions to minimizes environmental damage
- Reporting of mishappening
- First aid equipments

Practical:

- Basic safety checks before operating vehicles and all other machinery
- Identification and arrangement of protective clothing and equipments according to the duty to be performed at workplace
- Understanding the health hazards by the use of herbicides/pesticides/fumigants *etc.*
- Assess the risks in performing job and adoption of recommended safe practices
- Dispose the waste material safely and correctly in a designed area
- Instructions to work in such a way to minimizes environmental damage
- Immediately reporting if there any accident or incidences to an appropriate person and take necessary decision
- Arrange and store first aid equipments properly

WHEAT CULTIVATOR

Ensuring food security is a matter of prime importance for any country and is often defined in terms of food production, food access and food utilization. Among food grains, wheat is the largest cultivated crop across countries having around 219 million hectares (mha). In India, wheat has been under cultivation in 29.72 mha during 2017-18 *rabi* season. Wheat production has made another record and hallmark level output of 98.61 mt in 2017-18 with an average national all time highest productivity of 3318 kg/ha.

It is an important staple food of many countries in the world and occupies a unique position as it is used for the preparation of a wide range of food stuffs. Wheat attains unique prominent position in agriculture and economic perspective of our country because of being second most important food crop after rice. Our country has witnessed spectacular growth in production and productivity, which has made country not only self sufficient but also for exporting surplus wheat. There is need to further increase in production to fulfill requirement of exploding population, maintenance of adequate buffer stock and to meet out demand for processing industries.

It is a challenging task before the breeders to enhance the present level of production as the growing population of the country will require much more food as compared to the present day requirement. It is not possible to increase the area under production. Hence, only alternative is left to increase the productivity by evolving superior varieties and better management of crop production to cope up with increasing demands of food. A major cause of concern to a plant breeder is the constant improvement of the best available genotypes for further enhancement in their yield potential either directly or through improvement of various factors which contribute indirectly to high yield.



Course Content for Mushroom Grower

SKILL DEVELOPMENT PROGRAMMES

MUSHROOM GROWERS

Unit Title: Introduction and requirements for growing mushrooms			
Unit Code: HM 1 200hrs			
Elements		Th. hrs	Pract. hrs
Introduction	Mushrooms- An agri business	2	
	Status of Mushroom cultivation in India	1	
	Status of mushroom cultivation in Haryana	2	
	Nutritional and medicinal value of mushrooms	2	
	Benefits of different mushrooms	1	
	Poisonous Mushrooms	1	
Requirement	Composting of button mushroom	1	1
	Infra structure for button mushroom	1	2
	Spawning	1	1
	Spawning unit	1	2
	Casing	1	2
	Harvesting and Packing Instruments	1	2
Unit Title: Compost preparations for button mushroom			
Unit Code: HM2			
Elements			
Long method	Long method of composting	2	4
	Ingredients	1	
	Benefits	1	
Short method	Short method of composting	1	4
	Ingredients	1	
	Pasteurization of compost	1	2
	Benefits	1	
Unit Title: Spawn Production for different kind of mushrooms			
Unit Code:HM3			
Elements			
Identification and preparation of culture	Different type of media preparation for raising cultures	2	4
	Instruments required for the spawn Production	1	2
	Methods of sterilization	2	2
	Single spore culture	2	2
	Multi spore cultures	2	4
	Ingredients of spawn production of button mushroom	1	2
	Isolation of pure culture of different mushrooms	1	4
	Production of mother spawn/master spawn	1	2
	Production of commercial spawn of different mushrooms	1	2
	Qualities of good spawn	1	2

SKILL DEVELOPMENT PROGRAMMES

Unit Title: Development of Infrastructure for button mushroom			
Unit Code:HM4			
Elements			
Low cost mushroom house (Seasonal)	Temporary/ Kaccha shed	1	2
	Permanent/ Puccka shed	1	2
	Fabrication of low cost mushroom house	1	2
Hi Tech. Mushroom house	Growing of mushroom throughout the year	2	2
Unit Title: Spawning and casing			
Unit Code: HM 5			
Elements			
Spawning and casing	Transfer of Compost in composting room	1	2
	Different methods of spawning	1	2
	Casing material	1	2
	Care and maintenance of mushroom house	1	2
Unit Title: Biotic and abiotic stresses			
Unit Code: HM 6			
Elements			
Diseases of mushroom	Symptomatology and Management of fungal diseases.	2	2
	Symptomatology and Management of bacterial and viral diseases	1	2
Insects of mushrooms	Identifications of insects and their managements	1	2
Nematodes of mushroom	Symptomatology of nematodes and their managements	1	2
Abiotic stress	Disorders of the mushrooms	1	2
Unit Title: Post harvest processing of mushroom			
Unit Code: HM7			
Elements			
Processing	Post harvest care of mushroom	1	
	Processing methods of mushrooms	1	2
	Preparations of different products of mushrooms	1	2
	Packaging of mushrooms	1	2
Spent mushroom	Uses of spent mushroom	1	
	Spent mushroom for disease control	1	
Unit Title: Cultivation of different mushroom			
Unit Code: HM8			
Elements			
Cultivation of oyster mushroom	Formulation in compost preparation for oyster mushroom	1	4

SKILL DEVELOPMENT PROGRAMMES

	Cultivation methods of oyster mushroom	2	2
	Maintenance of environment for oyster mushroom	1	
	Insect pest and disease management in oyster mushroom	1	
Cultivation of milky mushroom	Formulation in compost preparation for milky mushroom	1	4
	Cultivation methods of milky mushroom	2	2
	Maintenance of environment for milky mushroom	1	
	Insect, pest and disease management in milky mushroom	1	
Cultivation of paddy straw mushroom	Formulation in compost preparation for paddy mushroom	1	4
	Cultivation methods of paddy straw mushroom	2	2
	Maintenance of environment for paddy straw mushroom	1	
Cultivation of paddy straw mushroom	Formulation in compost preparation for paddy mushroom	1	4
	Cultivation methods of shiitake mushroom	2	2
	Maintenance of environment for paddy straw mushroom	1	
Unit Title: Economics			
Unit code: HM 9			
Elements			
Economics of different mushrooms	Economics of button mushroom cultivation	2	
	Economics of oyster mushroom cultivation	1	
	Economics of milky mushroom cultivation	1	
	Economics of paddy straw mushroom cultivation	1	
	Economics of Shiitake mushroom cultivation	1	
Unit Title: Exposure Visits			
Unit code: HM 10			
Elements			
Visits	Visit to Murthal (HAIC)		6
	Visit to High Tech. Mushroom house		6
	Visit to Solan		6

MUSHROOM GROWERS

There has been significant increase in production of mushrooms in the last few years, especially of the oyster and paddy straw mushrooms in India. The country's production in 2010 was 1.00 lakh metric tons, of which button mushroom accounted for 89% of the total production, followed by oyster (6%), milky (1%) and others (4%). In India, there are five mushroom species viz., white button mushroom (*Agaricusbisporus*), oyster (*Pleurotus*spp.), paddy straw (*Volvariellavolvacea*), milky (*Calocybeindica*) and shiitake (*Lentinulaedodes*) are in commercial cultivation. Even though, cultivation technologies of many exotic were standardized, the commercial markets are still dominated by *Agaricusbisporus*, *Pleurotus*spp. and *Volvariellavolvacea*. These three mushrooms are contributing about 96% of total mushroom produced in India. Milky However, the commercial cultivation is restricted to south Indian states only and contributing up to 3% to the total mushroom production. Production of paddy straw mushroom became more popular in the states of Odisha and Chhattisgarh and its production was registered at 7% to the total mushroom production. However, the markets are dominating by the dried mushrooms imported from China and Taiwan. In North Eastern states, Uttharakhand and Chhattisgarh states, oyster mushroom cultivation is emerging as one of the leading cottage industry. In north Indian states like Punjab, Haryana, Himachal Pradesh white button mushroom is cultivated over more than 90 per cent in protected as well as seasonal cultivation. There is a vast scope of mushroom cultivation in protective cultivation alongwith spawn production and compost preparation.



Course Content for Pesticide and Fertilizer Applicator

PESTICIDE & FERTILIZER APPLICATOR

Sector	Agriculture & Allied
Sub-Sector	Agriculture Crop Production
Occupation	Farm Management
Applicable National Occupational Standards(NOS)	AGR/N1210: Understand major pests of area specific crop along with their fertilizer need AGR/N1211: Use different plant protection chemicals & equipment AGR/N9903: Maintain health & safety at the work place
Brief Job Description	Pesticide and fertilizer applicator will be responsible for proper application of pesticides and fertilizer on various crops and also responsible for monitoring of pests in the crops and take appropriate measure for not only the protection of crops but also increase the yields

➤ **Understand major pests of area specific crops along with their fertilizer need**

Theory

- Understanding the different cropping pattern of the area and associated pests
- Identification of major insect pest and disease infesting crops in the area
- Identify the factor that determine the occurrence the insect pest and disease
- Understanding the fertilizer requirement of different crops as per cropping pattern

Practical

- Conduct field observation for insect pests judging the intensity of occurrence
- Collect samples of insect pests and damaged crops
- Ascertain the weed flora of regions
- Understand the importance and application of different types of fertilizers
- Determine the requirement of plants as per the cropping pattern and soil conditions

➤ **Use different plant protection chemicals & equipments**

Theory

- Understand the use of important pesticides and their application
- Understand the mode of action of different pesticides.
- Preparation of spray solution.

- Understand the use of different plant protection tool and equipments
- Understand the proper application technology available for pesticide and fertilizer in various crop
- Select most appropriate control measure or combination of measure for specific conditions

Practical

- Identify different plant protection equipments, dusters, sprayers, nozzles etc and their practical uses in field.
- Prepare stock solution and solution of pesticides and fertilizers, calibrate the quantity
- Use personal protective equipment during work, and maintain personal hygiene
- Use antidotes and first aid treatment in case pesticide poisoning

➤ Maintain health & safety at the work place

Theory

- Understand the personal protective equipments and clothing during application of pesticides
- Understand the safe disposal method of pesticide waste
- Understand the use of equipment in accordance with manufactures

Practical

- Identified the protective clothing or equipment during application
- Read and understand the hazards of use and contamination mentioned on the labels of pesticides
- Follow emergency procedure to company standard

PESTICIDE AND FERTILIZER APPLICATOR

Government of India has taken several measures for proper use of pesticides by the farmers in the country. The pesticide residue data generated under the “Monitoring of Pesticide Residues at National Level” are shared with State Governments and concerned Ministries/Organizations to initiate the corrective action for judicious and proper use of pesticides on crops with an Integrated Pest Management approach and to generate awareness amongst farmers. Farmers will learn about agrochemicals especially the classification, chemistry, mode of action, regulatory implications. Farmers will also be trained on the safe handling of pesticides and their implications to health. The training will emphasize that proper use of pesticides combined with Integrated Pest Management system and Integrated Nutrient Management will prolong the efficacy of pesticides and fertilizers and will not create imbalance in the environment as well as soil health resulting in lowering cost of cultivation with higher returns. At the same time, it will not be a risk to the consumer if properly used and followed its label requirements. *Safe and Effective Use of Pesticides* provides detailed information for selecting, using, handling, storing, and disposing of pesticides. It will emphasize worker protection, prevention of groundwater contamination, protection of endangered species and wildlife, and reduction of environmental problems. Farmers will learn about identification of nutritional deficiency symptoms in field crops and their management through foliar spray, preparation of spray solution and spraying techniques of insecticides, formulations of fungicides and their spraying techniques, different types of spray nozzles for application of herbicides. Integrated Weed Management in crops and spraying techniques of weedicides, major insect pest and diseases and their management, importance of knowledge of pesticide labels, leaflets information, protective clothing for spraying of agro-chemicals, safe and judicious use of pesticides.



Method Demonstration on seed treatment

Course Content for Quality Seed Grower

SKILL DEVELOPMENT PROGRAMMES

QUALITY SEED GROWERS-QSG-1			
Sr. No.	Module	Key learning outcomes	Equipments required
1	Introduction to quality seed Theory duration (hh:mm) = 05:00 Practical duration (hh:mm)= 00:00	<ul style="list-style-type: none"> • General instructions of the course to the trainee • Introduction to seed and seed structure • Understand the role of quality seed in agriculture • Understand the role of seed growers • Understand the scopes and opportunities in the seed industries and knowledge about various seed producing organisations 	Laptop, white board, marker and projector
2	Principles of seed production Theory duration (hh:mm) = 15:00 Practical duration (hh:mm)= 10:00	<ul style="list-style-type: none"> • Genetic and agronomic principles of seed production • Understand about site selection, season, land requirement, isolation, seed rate, planting ratio, synchronisation, roguing • Understanding the important steps for hybrid seed production • Understand the testing, release, notification and maintenance of varieties/hybrids • Understand the Indian Minimum Seed Certification Standards • Study the seed certification system, seed act and rules to maintain the seed quality 	Laptop, white board, marker, projector and book
3	Seed production management in fields Theory duration (hh:mm) = 15:00 Practical	<ul style="list-style-type: none"> • Understand field history and field selection & preparation • Selection of suitable area for quality seed production • Record keeping, documentation and estimation of input required, received, output produced, sold quantity, profit and loss • Soil sampling for soil testing 	Laptop, white board, marker, projector and record keeping book, receipt and voucher, soil testing kit,

SKILL DEVELOPMENT PROGRAMMES

	duration (hh:mm)= 20:00	<ul style="list-style-type: none"> • Identification of equipments used in seed production • Understand and perform different methods of tillage, seed sowing techniques and other field management practices • Understand and perform rouging, weeding and field inspections at various growth stages of seed crop • Seed production technology of various field crops 	plastic bags, label, plough, seed drill, leveller, tractor
4	Seed health management Theory duration (hh:mm) = 15:00 Practical duration (hh:mm)= 20:00	<ul style="list-style-type: none"> • Perform management practices like nutrients/manure/weeds/irrigation/growth regulators/pesticide spraying/fertilizers doses/pollination practices/other management in seed production • Understand the need based application of pesticides/fungicides • Study the various diseases and insect pests and their infestation in seed production • Understand the seed treatments and judicious use of insecticides/fungicides and bio fertilizers. • Understand various seed borne diseases and their management 	Laptop, white board, marker, projector, sprayer, fertilizers, crop protection chemicals, irrigation tools and equipments, disposable bottles
5	Seed harvesting and threshing management Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 15:00	<ul style="list-style-type: none"> • Understanding the proper stages of crop maturity during seed production • Understand the role of seed moisture during harvesting and threshing of seed crops • Understand the causes of mechanical mixture during harvesting and threshing • Understanding the various methods of harvesting and threshing and handling of harvested and threshed produce. • Impart knowledge on seed contaminants during harvesting and threshing 	Laptop, white board, marker, projector, thresher, harvesting tools, equipments and containers, tractors, trolley

SKILL DEVELOPMENT PROGRAMMES

6	<p>Post harvest management of seeds</p> <p>Theory duration (hh:mm) = 10:00</p> <p>Practical duration (hh:mm)= 15:00</p>	<ul style="list-style-type: none"> • Post harvest management: farm storage/seed drying/conditioning/pre-cleaning and cleaning/grading/ seed treatment/packing and bagging. • Ideal seed storage (when, how, where), different factors influence the storage, type of storage structures, warehouse and different conventional and advanced seed storage structures. • Perform fumigation and seed treatments in seed stores • Understand storage pests and diseases and their management • Practice seed quality enhancement techniques- priming, coating, pelleting etc. 	<p>Laptop, white board, marker, projector, containers, storage infrastructure, cool chamber, crate, polythene bags, fungicides, insecticide, fumigants, sprayers etc.</p>
7	<p>Seed quality testing</p> <p>Theory duration (hh:mm) = 10:00</p> <p>Practical duration (hh:mm)= 20:00</p>	<ul style="list-style-type: none"> • Understand the concept of seed quality • Seed testing and its role in crop management • Understand seed sampling in seed stores and labs • Moisture estimation, germination testing and physical purity analysis in various seed crops • Determination of genetic purity in lab and field. • Estimation of seed viability and vigour in different types of seeds • Seed health testing for seed borne diseases and insect pests 	<p>Laptop, white board, marker, projector and record keeping book, Germinator, moisture meter, oven, physical purity working board, seed counter, chemicals, equipments and other material for seed testing</p>
8	<p>Maintain health and safety during</p>	<ul style="list-style-type: none"> • Perform general safety rules • Gain knowledge of various health hazards relevant to work place and basic 	<p>Laptop, white board, marker,</p>

SKILL DEVELOPMENT PROGRAMMES

	seed production, processing and storage Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 10:00	first aid training <ul style="list-style-type: none"> • Understand the basic safety checks and other common reported hazards before all operations at field and stores. • Understand, identify and study the use of equipments, processing machines and materials safely and correctly • Understand and handle the emergency situation in field and store operations 	projector, nose masks, first aid kit
	Total Duration Theory duration (hh:mm) = 90:00 Practical duration (hh:mm)= 110:00	Unique equipments required: Laptop, white board, marker, projector and record keeping book, receipt and voucher, soil testing kit, plastic bags, label, plough, seed drill, leveller, tractor, sprayer, fertilizers, crop protection chemicals, irrigation tools and equipments, disposable bottles, thresher, harvesting tools, equipments and containers, trolley, containers, storage infrastructure, cool chamber, crate, polythene bags, fungicides, insecticide, fumigants, sprayers etc. Germinator, moisture meter, oven, physical purity working board, seed counter, chemicals, nose masks, first aid kit	
Grand total duration: 200 Hours			

Course Content for Seed Processing Worker

SKILL DEVELOPMENT PROGRAMMES

SEED PROCESSING WORKER-SPW-1			
Sr. No.	Module	Key learning outcomes	Equipments required
1	Introduction to quality seed Theory duration (hh:mm) = 05:00 Practical duration (hh:mm)= 00:00	<ul style="list-style-type: none"> • General instructions of the course to the trainee • Introduction to seed and seed structure • Understand the role of seed processing in agriculture • Understand the role of seed processing workers • Understand the scopes and opportunities in the seed industries and knowledge about various seed producing organisations • Learn basic reading capabilities to enable reading of signs, notices and cautions at sites. 	Laptop, white board, marker and projector
2	Processing of seed Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 15:00	<ul style="list-style-type: none"> • Study the seed drying principles and different methods of seed drying • Understand the relationship between seed moisture with different drying methods • Understand the basic principles of seed processing and various machines used in processing • Understand the components of physical purity • Understand the grading process and seed quality standards • Study the different types of screens 	Laptop, white board, marker, projector, seed processing machines
3	Seed treatment Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 20:00	<ul style="list-style-type: none"> • Understand the importance of seed treatments and types of seed treatments by various methods • Study the phases of seed enhancement techniques • Knowledge of various chemicals/bio fertilizers for seed treatment • Preparation and application of various chemicals/botanicals for seed treatments. 	Laptop, white board, marker, projector, gloves, fungicides, insecticides, bio fertilizers etc.
4	Seed packaging and labelling Theory duration (hh:mm) =	<ul style="list-style-type: none"> • Understand different types of seed packaging material and containers • Gain knowledge about moisture vapour 	Laptop, white board, marker, projector, packing

SKILL DEVELOPMENT PROGRAMMES

	10:00 Practical duration (hh:mm)= 20:00	<p>permeable, moisture resistant and moisture vapour proof containers for seed packaging</p> <ul style="list-style-type: none"> • Learn the labelling and tagging procedure and their informations • Study the effect of seed moisture, temperature and relative humidity on packaged seeds • Practise bulk seed packing and packaging techniques 	materials, weighing balance, packing machine and labels/tags
5	Seed Storage Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 10:00	<ul style="list-style-type: none"> • Study the principles of seed storage-Harrington's thumb rules • Safe seed storage (when, how, where), different factors influence the storage, type of storage structures, warehouse and different conventional and advanced seed storage structures. • Perform fumigation in seed stores • Understand storage pests and diseases and their management • Storage behaviour of orthodox and recalcitrant seeds 	Laptop, white board, marker, projector, thresher, harvesting tools, equipments and containers, tractors, trolley
6	Seed quality testing Theory duration (hh:mm) = 10:00 Practical duration (hh:mm)= 20:00	<ul style="list-style-type: none"> • Understand the concept of seed quality • Seed testing and its role in crop management • Understand seed sampling in seed stores and labs • Moisture estimation, germination testing and physical purity analysis in various seed crops • Determination of genetic purity in lab and field. • Estimation of seed viability and vigour in different types of seeds • Seed health testing for seed borne diseases and insect pests 	Laptop, white board, marker, projector and record keeping book, Germinator, moisture meter, oven, physical purity working board, seed counter, chemicals, equipments and other material for seed testing
7	Maintain health and safety during processing and storage Theory duration (hh:mm) =	<ul style="list-style-type: none"> • Perform general safety rules • Gain knowledge of various health hazards relevant to work place and basic first aid training • Understand the basic safety checks and other common reported hazards before all operations at field and stores. 	Laptop, white board, marker, projector, nose masks, first aid kit

SKILL DEVELOPMENT PROGRAMMES

	10:00 Practical duration (hh:mm)= 10:00	<ul style="list-style-type: none"> • Understand, identify and study the use of equipments, processing machines and materials safely and correctly • Understand and handle the emergency situation in field and store operations 	
	Total Duration Theory duration (hh:mm) = 65:00 Practical duration (hh:mm)= 95:00	Unique equipments required: Laptop, white board, marker, projector, seed processing machines, gloves, fungicides, insecticides, bio fertilizers, packing materials, weighing balance, packing machine and labels/tags, record keeping book, Germinator, moisture meter, oven, physical purity working board, seed counter, chemicals, equipments and other material for seed testing, nose masks, first aid kit	
Grand total duration: 160 Hours			

QUALITY SEED GROWER & SEED PROCESSING WORKER

Seed is the most important and vital input for agricultural production. In fact, it is the most cost efficient means of increasing agricultural production and productivity. Efficacy of other agricultural inputs in enhancing productivity and production, such as fertilizers, pesticides and irrigation is largely determined by the quality of seed. Quality of seed accounts for twenty to twenty five percent of productivity. It is, therefore, important that quality seeds are made available to the farmers of the country.

Adequate supply of improved quality seeds is a prerequisite for enhancing agriculture production. Seed has been described as an essential, strategic, and relatively inexpensive input that often determines the upper limit of crop yields and the productivity of all other agricultural inputs. Given the critical role that seed play in agricultural production, a key question is how to facilitate the development of a seed system that is capable of generating, producing and distributing new seed varieties that meet the needs of all farmers, in a cost-effective way given the critical role that improved varieties play in increasing agricultural production

Keeping in view the importance of quality seed in agriculture, there is need to trained the unemployed youth and farmers as entrepreneurs in respect of Quality Seed Grower and Seed Processing Worker to make available the quality seed at the doorstep of farmers in the villages and increase in productivity and profitability of the Indian farmer.



Course Content for Tractor Operator

TRACTOR OPERATOR

SECTOR	AGRICULTURE AND ALLIED
SUB-SECTOR	Agriculture Crop Production
OCCUPATION	Farm Machinery and Equipment Operation and Maintenance
Applicable National Occupational Standards (NOS)	1. AGR/N1101: Operation of the tractor 2. AGR/N1102: Tractor Maintenance 3. AGR/N9903: Maintain health & Safety at the work place
Brief Job Description	The person continuously keeps the vehicle free of any complaints, takes up basic repairs wherever feasible and are necessary and also would take up various agriculture activities as per the needs of the farmers.

Operation of the Tractor

Theory

- Do the daily checks
- Ballasting importance and process
- PC and DC levers
- Gear and RPM selection
- Implements and Trailer
- Land preparation requirement and do the land opening

Practical

- Use of implement for tractor
- Operate PC & DC levers as per the need
- Adjusting Tractor Implements- hitching & unhitching, lateral & horizontal adjustments
- Operate the Tractor with and without implement

Tractor Maintenance

Theory

- Study and follow of owner's manual
- Obtaining certified tools
- Check and maintain fluids regularly/ lubrication points
- Ensure right tyre pressure
- Check belts and hoses
- Brake and clutch adjustment
- Check working of all the electrical systems and gauges

- Avoid overloading
- Attachment and detachment of Implements

Practical

- Apply grease to parts through nipple
- Clean/replace air cleaner filter, oil filter and fuel filters
- Brake and clutch adjustment
- Check and maintain fluids regularly/ lubrication points

Maintain health and safety at the workplace

Theory

- Maintain a clean and efficient workplace
- Render appropriate emergency procedures

Practical

Practice General safety and first aid

TRACTOR MECHANIC

A Tractor Mechanic diagnoses mechanical failures and repairs tractors and tractor components according to manuals, factory specifications, and knowledge of engine performances, using hand tools, power tools, and testing instruments: Attaches compression, ignition, and timing test instruments to certain parts of tractor, using clamps and hand tools. Starts engine dials and reads meters and gauges of testing equipment to diagnose engine malfunction. Removes and disassembles engine, transmission, and clutches, using hoists, jacks, and mechanic's hand tools. Inspects parts for damage, and verifies dimensions and clearances of parts for conformance to factory specifications, using gauges, for example calipers, and micrometers. Replaces or repairs worn or damaged parts. Grinds valves, relines and adjusts brakes, tightens body bolts, aligns wheels, and tunes engine. May also weld defective body or frame parts.



Course Content for Tractor Mechanic

TRACTOR MECHANIC

SECTOR	AGRICULTURE AND ALLIED
SUB-SECTOR	Agriculture Crop Production
OCCUPATION	Farm Machinery, Equipment Operation and Maintenance
Applicable National Occupational Standards (NOS)	<ol style="list-style-type: none"> 1. AGR/N1126: Prepare for carrying out tractor repair and maintenance 2. AGR/N1127: Perform necessary routine checks and maintenance of the tractor 3. AGR/N1128: Carry out overhauling and repair of engine parts 4. AGR/N1129: Carry out overhauling and repair of transmission, hydraulic and tractor-electrical systems 5. AGR/N1130: Carry out assembly of repaired and serviced parts 6. AGR/N9903: Maintain health and safety at the workplace
Brief Job Description	A Tractor Mechanic performs routine checks, carries out overhauling and repair of engine parts and assembly of repaired and serviced parts, assesses transmission, hydraulic and auto-electrical systems, etc.

Preparation for carrying out tractor repair and maintenance

Theory

- Identify and study the different parts of a tractor
- Identify and study different implements and attachments and their usage
- Identify tools and measuring instruments required

Practical

- Operate the tractor & all the controls -Especially Hydraulic levers & PTO lever
- Operate different controls -Gear levers, Hydraulic levers, PTO lever, Differential lock,3 point linkage, Hand and foot throttle, clutch pedal, brake pedal etc.,
- Recognize the different gauges & its purpose in Instrument cluster (Dash board) - Fuel gauge, Temperature gauge, Engine oil pressure gauge, Battery

charging indicator, RPM meter, hour meter, Air filter choke indicator (In Dry Air filter engine), 4WD engagement indicator etc.,

Perform necessary routine checks and maintenance of the tractor

Theory

- Carry out routine maintenance of tractor
- Perform fluid and lubricant checks
- Check the working of all gauges

Practical

- Test the tractor by Road test to check working of the engine, clutch, gears, brakes and steering
- Check the function of all the gauges & lights.
- Operate the all control and levers along with tractor operation for adjustment.

Carry out overhauling and repair of engine parts

Theory

- Dismantle engine parts and check their working
- Assess the wear and tear of engine components and carry out troubleshooting

Practical

- Inspection of different engine parts i.e. Cylinder Bore Diameter, Maximum permissible cylinder liner wear, Maximum permissible ovality cylinder, Taper of cylinder bore, Cylinder liner protrusion, Cylinder block surface flatness, Skirt to cylinder wall clearance, Grading diameter of the piston, Protrusion of the piston, Ring clearance -Land clearance & End clearance of all rings, TAPPETS-Tappet diameter, Permissible tappet guiding portion cylindricity, Tappet bore using measuring tools etc.
- Trouble shoot the engine for different complaints like Engine is not starting, Low Oil Pressure, High Oil Consumption, High fuel consumption, Lack of Power Overheating etc.

Carryout overhauling and repair of transmission, hydraulic and tractor-electrical systems

Theory

- Diagnose, dismantle, check and repair transmission system
- Diagnose, dismantle, check and repair hydraulics system
- Diagnose, dismantle, check and repair tractor-electrical system

Practical

- Dismantle the clutch assembly from fly wheel and asses the Fly wheel, Clutch disc, pressure plate, Clutch spring & cover assembly for wear limit and to check for abnormality

- Recognize Types, construction, working principles of Steering -Mechanical steering -Recirculating ball type & Worm and roller type; Power steering - hydrostatic steering.
- Recognize different electrical parts & its working principle- Alternator, Starting motor, Fuses, Battery, Lights, Switches & wiring harness

Carry out assembly of repaired and serviced parts

Theory

- Clean and lubricate the parts
- Assemble parts
- Perform pre start checks

Practical

- Check for any leakages and tighten loose parts if any is detected
- Carry out the pre-start check in the tractor & aggregates
- Start the engine and observe functioning of all aggregates for a certain period of time

Maintain health and safety at the workplace

Theory

- Maintain a clean and efficient workplace
- Render appropriate emergency procedures

Practical

- Practice general safety and first aid

TRACTOR OPERATOR

Tractor and Operator is responsible for the operation of the tractors for agriculture purposes and also is responsible for the maintenance of the same. The person continuously keeps the vehicle free of any complaints, takes up basic repairs wherever feasible and is necessary and also would take up various agriculture activities as per the needs of the farmers. The operator works independently, remain sensitive to farmer's needs and have the ability to take up maintenance and repairs (minor) of the tractor as and when necessary. Tractor operator possesses basic understanding and acumen towards crop cultivation.



Course Content for Organic Grower

ORGANIC GROWER

Course Duration: 200 hours (6 hours/day= 34 day)

Sr. No.	Topic	Duration (hh:mm)
	Registration and Inauguration, Preliminary evaluation of participants, Need of organic farming in India	5:00
	AGR/N1201 Undertake planning for Organic Farming	
	Theory	
	Seasonality of various crops, appropriate time for planting by taking soil, climatic conditions, advantages of crop rotation, advantages and disadvantages of intercropping and types of plant to be intercropped, compatibility of different crops, the effects of specific chemicals on health and environment, characteristics of Good Agricultural Practices (G.A.P), Natural Farming, Organic Farming, Zero Till Farming, benefits and trade-offs in organic farming, common methods of preparation of organic farming inputs, basic financial plan for organic farming breakeven, common transition practices being followed, steps needed to implement organic principles, natural resource use planning	10:00
	Practical	
	Different Crop identification, organic farm visit, agronomy farm visit	10:00
	AGR/N1202 Seed Selection & Treatment under Organic Farming	
	Theory	
	Various seed treatment inputs available for organic farming and their benefits. Methodology for preparation of inputs. Quantity of process of applying seed treatment. Various characteristics of seed with their suitability to the location. Suitability of seeds to organic farming practices. Demand of various varieties in the market. Characteristics of seed with their suitability to the location. Suitability of seeds to organic farming practices. Resistance of varieties to pests and diseases. Availability and procurement of off-farm inputs as per need.	10:00
	Practical	
	Seed identification, Methodology for seed treatment, Organic formulation for seed treatment, biofertilizerpreparation procedure	10:00
	AGR/N1203 Soil Nutrient Management under Organic Farming	
	Theory	
	Autorized soil testing centers, soil test reports and analyzing nutrient	10:00

SKILL DEVELOPMENT PROGRAMMES

needs, types of inputs needed in what quantity at different crop stages, methods of application, timing and doses of different inputs, various organic soil enhancement methods and their effects, authentic vendors for soil enhancers, production methodologies for different types of composts and other inputs, proper application process and schedule, various soil activating inputs (jeevamrut, farmyard manure etc.), authentic vendors for soil activating agents, preparation methodology for soil activating agents, proper application process and schedule for soil activating agents, planning for green manuring and biomass recycling methods and strategies, calculating nutrient needs based on soil test reports, making nutrient packages with available resources, planning for the need of off-farm inputs and their procurement	
Practical	
Soil analysis, different type of compost preparation, different type of organic formulation preparation, vermicompost technology	10:00
AGR/N1204 Weed control under Organic Farming	
Theory	
Various types of weed, use of different methods to control weeds such as plastic mulch, advantages and disadvantages of different types of weeding methods, critical stages of weed control	10:00
Practical	
Weed Identification, mechanical and cultural weed control, bio-herbicide use	10:00
AGR/N1205 Irrigation Management under Organic Farming	
Theory	
Timing and method of irrigation appropriate for a given soil type & climatic conditions, quantity of water required for the specific crop and its affect on its yield, frequency of irrigation required at various stage of plant growth, different types of irrigation system available, relative advantages and disadvantages of irrigation equipments	5:00
Practical	
Identification various types of micro irrigation equipments to be used (mistors, drippers, sprinklers, foggers, etc)	10:00
AGR/N1206 Integrated Pest and Disease Management under organic farming	
Theory	

SKILL DEVELOPMENT PROGRAMMES

Mixed cropping techniques and trap crops for pests, natural enemies of pests, various mechanical control (traps, sticky plates etc), advantages of biological control of insects, pest & diseases, bio-pesticides, preparation and application, record keeping system, safety measures and first aid, handling tools and equipment	10:00
Practical	
Visit biocontrol lab, identification of different pest and disease in field, preparation of natural bio-pesticide, gurukulkurukshetra farm visit	20:00
AGR/N1207 Harvest and Post-harvest management under Organic Farming	
Theory	
Harvesting based on demand of type in the market, ideal time of harvest (climatic conditions, distance from the market), proper harvesting methods, grading of crop based on size, color and quality, packaging of crop with appropriate material and method, ideal storage condition (temperature, moisture, etc), market rates of the crop	5:00
Practical	
Grading of crop based on size, color and quality, packaging of crop with appropriate material and method, ideal storage condition (temperature, moisture, etc)	10:00
AGR/N1208 Undertake Quality Assurance and Certification in Organic Farming	
Theory	
Systems of TPC and PGS, organic production standards, procedures in TPC and PGS, benefits and limitations of TPC and PGS, documentation and external audit, certification and traceability, procedures and applicability, peer appraisal, certification and traceability	10:00
Practical	
Documentation, PGS system, quality analysis procedure	20:00
AGR/N1209 Undertake Business of Organic Farming	
Theory	
Items of cost in organic farming, revenue trends in organic farming, breakeven analysis, list of govt. schemes, Market trends and consumers choices, Market intelligence based strategy modifications, Connecting consumers with long term planning, Disseminating the benefits of organic food, organic produce market demand and prices, major branding methods of organic produce, major retailers, wholesalers and	10:00

SKILL DEVELOPMENT PROGRAMMES

online marketplaces for organic produce, individual vs group marketing long term benefits	
Practical	
Direct and online marketing	10:00
AGR/N9903 Maintain Health & Safety at the workplace	
Theory	
Undertake basic safety checks before operation of all machinery and vehicles and hazards are reported to the appropriate supervisor, farm machinery and equipment use	5:00
Practical	
Understand the basic safety checks and other common reported hazards before all farm operation Understand, identify and study the use of equipment, materials safety, handling the emergency situation in workplace and during any farm operation	5:00

ORGANIC GROWER/ VERMI-COMPOST PRODUCER

Organic agriculture, a holistic system that focuses on improvement of soil health, use of local inputs, and relatively high-intensity use of local labour. In India's pre-independence era (before the 1950s), agriculture was a system of harnessing nature for the sustenance of human beings, similar to the presently defined organic farming. Organic agriculture is indeed being pursued in India; the National Programme of Organic Products (NPOP) was launched in 2000. Organic agriculture is currently practiced in 170 countries in 43.1 million hectares with annual market of US \$ 72 billion. In India too, the cultivated area under certified organic farming has grown almost 17 fold (42,000 ha in 2003-04 to 7.23 lakh ha in 2013-14) in last one decade. The Government of India is also keen to promote organic animal husbandry through focused attention on native breeds and local practices. In XII plan. The GOI has launched *Paramparagat Krishi Vikas Yojana (PKVY)*, under which Rs. 300 Crores (Union Budget 2015-16) have been allocated to promote organic agriculture. Organic agriculture is a viable alternative because of its added benefits like improved soil fertility and water quality prevention of soil erosion, enhanced soil biological activity. As a result farmers are encouraged to convert their existing farms into organic farms to sustain their productivity and better livelihood. Many of the practices of organic agriculture were the only option for farmers before the advent of chemically synthesized fertilizers, pesticides, biocides, medicines, mechanization and fossil fuels that allow industrial agriculture to function. Without recourse to such technologies, farmers had no option but to work within biological and ecological systems. Therefore, a colossal need is felt to motivate and provide knowledge to the farmers about organic farming prospective and opportunities, components of organic farming and their method of preparation, bio-fertilizers and their method of application, bio-pesticides and bio-fungicides and their uses in agriculture, Natural Farming, organic certifications and marketing.

ORGANIC GROWER

Organic farming treats the soil as a living entity to support the plants in an eco-friendly manner and maintains soil biological diversity and productivity on sustainable basis. This is a production system in which all agricultural products involving grains, vegetables, meat, dairy, eggs and fibers such as cotton, flowers and processed food are produced organically. Organic farming excludes the use of synthetic/chemical fertilizers, pesticides, growth regulators and livestock feed additives. This system of farming involves the use of organic sources for plant nutrition *i.e.* farm yard manure (FYM), vermicompost, rice straw compost, green manuring, crop residues incorporation and need based applications of natural minerals like rock phosphate and gypsum as soil amendments etc. So, this is a method of farming that works at grass root level preserving the reproductive and

regenerative capacity of the soil, good plant nutrition and sound soil management, produces nutritious food rich in vitality which has resistance to diseases. Now a days due to increase in awareness and health consciousness, people are increasingly looking for organic food, which is considered safe and nutritious. Moreover, the price of organic foods is more lucrative and remunerative. Organic farming improves soil health in a sustainable manner and enhances the nutritive value of products. Due to no use of health harming chemicals such as fertilizers and pesticides, the products are poison free and taste better as compared to conventional products. The shelf life of organic products is more because of no or less infestation of diseases and pests. Organic farming system is more profitable due to reduction in cost of cultivation and more value of organic quality produce as the ultimate consumers are willing to pay more prices for healthy/organic products. Therefore, adoption of the organic farming could be beneficial tool for doubling farmers' income by 2022 to make the dream true of our Worthy Prime Minister.



Method Demonstration on methods of preparation of vermi-compost pit

Course Content for Solanaceous Crop Cultivator

AGR/Q0402 Solanaceous Crops Cultivator

Solanaceous Crops Cultivator

Theory

- Introduction of solanaceous vegetable crops and their classification (potato, tomato, brinjal and chilli)

Potato

- Introduction, botany and brief history of potato
- Distribution, food value and uses of potato
- Improved varieties of potato
- Sources of potato seed tuber
- Soil, climate and field preparation
- Planting time, method, seed rate, spacing and potato seed tuber treatment
- Manure and fertilizers requirement
- Irrigation management in potato crops
- Weed control and earthing of potato
- Major physiological disorders, insect pests and diseases in potato and their management
- Harvesting, yield, post harvest management and marketing of potato crops

Practical

- Selection and identification of potato seed tuber and their varieties
- Field preparation
- Potato seed tuber treatment before planting
- Planting methods of potato seed tuber and aftercare
- Manures, fertilizers application and earthing up
- Time and stages of irrigations
- Cultural operations and weed control
- Identification of major disorders, insect pests and diseases in potato and their management
- Haulm killing and harvesting
- Post harvest operations like sorting, grading, packaging of potato

Theory

Tomato, Brinjal and Chilli

- Introduction, botany and brief history of tomato, brinjal and chilli
- Distribution, food value and uses of tomato, brinjal and chilli
- Improved varieties of tomato, brinjal and chilli
- Sources of seed
- Soil, climate and field preparation
- Sowing time, method, seed rate and seed treatment

- Nursery bed preparation for tomato, brinjal and chilli seedling
- Innovative techniques of preparation of seedling (Seedlings raised in plastic trays in polyhouse)
- Transplanting and spacing
- Manure and fertilizers requirement for tomato, brinjal and chilli
- Irrigation management in tomato, brinjal and chilli
- Weed control and earthing of tomato, brinjal and chilli
- Training, pruning and staking
- Major physiological disorders, insect pests and diseases in tomato, brinjal and chilli
- Harvesting, fruit yield, post harvest management and their marketing

Practical

- Selection and identification of tomato, brinjal and chilli seed and their respective varieties
- Field preparation
- Seed treatment before sowing
- Nursery preparation, transplanting of tomato, brinjal and chilli seedlings and aftercare
- Manures and fertilizers application stages and methods
- Time and stages of irrigation
- Cultural operations and weed control
- Identification of major disorders, insect pests and diseases in tomato, brinjal and chilli and their management
- Harvesting
- Post harvest operations like sorting, grading, packaging

SOLANACEOUS VEGETABLE CROP CULTIVATION

Solanaceous vegetable crops group includes important vegetables namely potato, tomato, eggplant, chilli and sweet pepper which are commercial grow and being consumed worldwide. In India, these all solanaceous vegetable crops having top ranking in area and production of vegetable crops. It is impossible to think about vegetable without this group by means of production and meal in India. Vegetables of solanaceous group almost cooked by frying individually and mix with potato. These all solanaceous vegetable crops except potato which are raised through transplanting; their seeds are first sown in the nursery and seedlings after attaining appropriate size are then transplanted in thoroughly well prepared field. Seedlings become ready for transplanting in 4-6 weeks after sowing seeds in nursery. Potato is multiply by tubers.

The potato is one of the four major food crops of the world and rank fourth after rice, wheat and maize. It is grown in almost all states of India. It is an integral part of every vegetable culinary preparation. It is processed into a variety of products such as chips, flakes, French fries, flour and starch etc. There are different season and time to grow the potato in different region of India but in Haryana it is cool season crop and grown in the month of October. It is almost 120 days crops depends on variety.

Tomato is one of the most popular protective foods because of its high lycopene content, and widely grown vegetable in the world ranking second in importance to potato in many countries. It is a very good source of income to small and marginal farmers and provides nutrients to the consumers. Tomato tops the list of canned vegetables. It adds taste, color, and flavor to cooked vegetables, and it is used in large quantity for preparing various products, *i.e.*, juice, ketchup, paste, pickles, powder, puree, salad, sauces, soup, and many other products. It is a very good appetizer and remedy for the patients suffering from constipation if used as soup. Its fruits consumed raw as salad, supply vitamin A, and C in sufficient quantity. In north India, two crops are taken. For autumn-winter crop, the seeds are sown in June-July in raised nursery beds. Seedlings become ready for transplanting in 4 weeks after sowing seeds in nursery. For spring summer crop, seeds are sown in November-December in sunken nursery beds. Seedlings become ready for transplanting in 8-10 weeks after sowing seeds in nursery.

Brinjal is commonly grown in every part of the country but commercially grown only in Northern parts of India. Its immature tender fruits are used as staple food in some of the countries. However, in India brinjal is used for the preparation of vegetable dishes and for making pickles. Contrary to the common belief, brinjal is quite rich in nutrients, and considered a fairly good source of carbohydrates, calcium, phosphorus, iron and vitamins A and particularly B group. Brinjals are considered as a poor source of vitamin C, but its content in fruits varies from variety to variety. In general, dark purple fruits contain more vitamin C than white ones. On an average,

oblong brinjals are rich in total water-soluble sugars, whereas, long brinjals contain a large amount of free reducing sugars and amide proteins. Brinjal can be grown under a wide range of climatic conditions. The brinjal crop can be taken in following seasons. For Autumn-winter crop, seeds are sown in June, and seedlings are transplanted in July. For spring-summer crop, seeds are sown in early November, and seedlings are transplanted in January. For Rainy season crop, seeds are sown in March, and seedlings are transplanted in April.

Chilli, also known as hot pepper, is an important vegetable as well as spice crop grown widely in tropical and subtropical parts of the world. It is an indispensable spice of every kitchen in tropics and subtropics and mainly used in culinary to add flavor, color and pungency to foodstuffs. The fresh green chilli fruits are rich in vitamin A and C, Sweet pepper is comparatively high in ascorbic acid.



**Course Content
for
Soil and Water
Testing Lab
Analyst**

SOIL AND WATER TESTING LAB ANALYST

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction Theory duration (hh:mm) 5:00 Practical duration (hh:mm) 10:00 Corresponding NOS code bridge module	<ul style="list-style-type: none"> • Preliminary evaluation of participants • Understand general discipline in the class room (Do's & Don'ts) • Get acquainted with definition and significance of soil science, different types of soils and soil profile • Get acquainted with macro and micro nutrients present in soil required for plant growth • Importance of soil and water testing in India • Understand the importance of integrated nutrient management • Soil fertility, mineral nutrition: classification of essential nutrients • Understand the role of a soil and water lab analyst 	Laptop, white board, marker and projector
2	Adhere to sanitation safety guidelines of the lab Theory duration (hh:mm) 5:00 Practical duration (hh:mm) 15:00 Corresponding NOS code AGR/N8101	<ul style="list-style-type: none"> • Get familiarized with the requirements and working of different chambers of the lab-soil sample process room, soil storeroom, freezer room, physical and chemical room, water analysis room, instruments room, digestion chamber etc. • Understand the use and 	Laptop, white board, marker, projector, Audio-visual aids, Personal protective equipments like apron, safety gloves, safety mask, first aid kit, bandages, betadine, solution, pain relief spray,

SKILL DEVELOPMENT PROGRAMMES

		<p>working of different equipments, lab wares and chemicals</p> <ul style="list-style-type: none"> • Use personal protective equipments • Comply with occupational and safety requirements for controlling operational risks • Maintain the required personal hygiene and lab sanitation • Use first aid kit and fire extinguisher • Adhere to lab practices\ • Selection of soil sampling unit, collection of soil and water samples • Sending of soil and water samples to the laboratory, handling preparation of soil samples for analysis in the laboratory • Identification of glassware's for soil and water testing 	<p>antiseptic liquid, phone directory search lights and fire extinguisher, spade/khurpi/augers, plastic/steel buckets, plastic bottles, electronic balance, and required chemicals</p>
3	<p>Conduct soil physical and chemical analysis</p> <p>Theory duration (hh:mm) 15:00</p> <p>Practical duration (hh:mm) 50:00</p> <p>Corresponding NOS code AGR/N8108</p>	<ul style="list-style-type: none"> • Determination of soil texture and its importance in crop production • Understand different principles involved and reagents required for conducting various soil and physical test • Prepare standard solutions for different test • Calibrate equipments and do the required instruments setting for various soil test • Operate & maintain various lab equipments/apparatus 	<p>Laptop, white board, marker, projector, Audio-visual aids, pH meter, EC meter, flame photometer and spectrophotometer, Atomic absorption spectrophotometer, burette, soil moisture meter, pipette and other glass ware</p>

SKILL DEVELOPMENT PROGRAMMES

		<ul style="list-style-type: none"> • Conduct physical analysis for soil texture, moisture percentage and content, density, hydraulic conductivity • Conduct soil chemical test for macro nutrients and determine soil pH, EC, N, P, K, Ca, Mg and S • Conduct soil test for determination of various micronutrients- Zn, Cu, Fe, Mn, B and CEC and Na • Determination of gypsum requirement for reclamation of alkali soils • Use mini soil kits and AAS for analysis of macro and micro nutrients • Determination of soil pH and EC and their interpretation • Soil organic carbon, soil organic matter and its role, C:N ratio and its significance in organic matter decomposition • Determination of soil organic carbon, its significance and interpretation • Critical limits of soil organic carbon, available, macro and micro nutrients in soil and their significance in fertilizer recommendation 	
4	Conduct water sample analysis Theory duration	<ul style="list-style-type: none"> • Water quality in Haryana • Understand different principles involved and 	Laptop, white board, marker, projector, Audio-

SKILL DEVELOPMENT PROGRAMMES

<p>(hh:mm) 5:00 Practical duration (hh:mm) 15:00 Corresponding NOS code AGR/N8109</p>	<p>reagents required for conducting various test</p> <ul style="list-style-type: none"> • Prepare standard solutions for different test • Calibrate equipments and do the required instruments setting for various soil test • Operate and maintain various lab equipments/apparatus • Conduct water test for determination of water pH, EC, total dissolved and total suspended solids • Conduct water test for determination of carbonates and bicarbonates in irrigation water and interpretation of results • Determination of sodium, calcium and magnesium in irrigation water and their interpretation of results • Water quality parameters: EC, RSC SAR and their classification criteria • Determination of EC and chloride in irrigation water and their interpretation • Quality of irrigation water and its management for sustainable production and maintenance of soil health • Calculation of RSC and gypsum requirement based on soil and water test reports for water quality classification 	<p>visual aids, water hardness meter, turbidity meter, COD analyser, photochlorimeter, chlorine meter, TDS meter, photometer and spectrophotometer</p>
---	---	--

SKILL DEVELOPMENT PROGRAMMES

5	<p>Prepare soil and water health card Theory duration (hh:mm) 10:00</p> <p>Practical duration (hh:mm) 20:00</p> <p>Corresponding NOS code AGR/N8110</p>	<ul style="list-style-type: none"> • Get acquainted with GPS and GIS and their utility for mapping and interpretations of data for soil mapping • Concept of soil fertility, Soil health and its management • Understand various soil amendments and crop residue management • Understand the concept of water management • Get acquainted with various formulas, conversion factors etc for calculation of nutrients required • Fertilizers recommendation and calculation based on soil test reports • Recommended integrated nutrient management practices to be adopted • Prepare and upload the soil and water health card on the portal • Prepare soil fertility map using GIS • Soil test report and its interpretation for recommendation • Classification of fertilizers, their nutrient contents, identification of different fertilizers • Biofertilizers and their role in soil health and visit to bio-fertilizers lab • Manures: their advantages, preparation of good quality FYM and manures 	<p>GIS software and GPS, Laptop, white board, marker, projector, audio-visual aids, pen paper, computer, calculator and printer</p>
---	---	---	---

SKILL DEVELOPMENT PROGRAMMES

		<p>recommendation and calculation based on soil test reports</p> <ul style="list-style-type: none"> • Compost, vermi-compost, green manure and types of green manuring and method of preparation of vermi-compost • Identification of nutrient deficiency symptoms in different crops and their amelioration • Management strategies and guidelines for brackish, saline and sodic water use in agriculture • Organic farming: Need of the hour- visit to the organic farming sites 	
6	<p>Supervise and train lab assistant in good lab practices</p> <p>Theory duration (hh:mm) 5:00</p> <p>Practical duration (hh:mm) 10:00</p> <p>Corresponding NOS code AGR/N8111</p>	<ul style="list-style-type: none"> • Train lab assistant in good lab practices-calibrate equipments, prepare standard solution, take observation post-experiments etc • Guide the lab assistant to adhere to safety and sanitations guidelines of the lab, proper disposal of waste • Oversee the data entry work under taken by the assistant • Oversee smooth execution of sample registration and timely upload and dispatch of soil and water health card • Role of extension workers in soil and water testing services 	<p>Laptop, white board, marker and projector</p>

SKILL DEVELOPMENT PROGRAMMES

		<ul style="list-style-type: none"> • Soil Health Cards and government policy on soil testing • Exposure visit cum educational tour to NFL Plant, Panipat 	
7	<p>Soft skills/computer literacy/financial literacy</p> <p>Theory duration (hh:mm) 15:00</p> <p>Practical duration (hh:mm) 20:00</p> <p>Corresponding NOS code A</p>	<ul style="list-style-type: none"> • Basic communication skills • Basic organization skills • Basic computer skills • Various types of documents and their uses-birth certificate, 10th certificate, ration card, voter Id card, Aadhar card, PAN card, driving license, passbook etc • Various types of loan/credit available (relevant to the trainees requirement) and the process to avail the same • Post evaluation of participants 	<p>Computer, Audio-visual aids and Projector</p>
	<p>Theory duration (hh:mm) 60:00</p> <p>Practical duration (hh:mm) 140:00</p> <p>Practical duration</p>	<p>Unique Equipment Required: Laptop, white board, marker, projector, audio-visual aids, personal protective equipments like apron, safety gloves, safety mask, first aid kit, bandages, betadine, solution, pain relief spray, antiseptic liquid, search lights and fire extinguisher, spade/khurpi/augers, plastic/steel buckets, plastic bottles, electronic balance, GIS software, GPS and required chemicals, pH meter, EC meter, flame photometer and spectrophotometer, Atomic absorption spectrophotometer, burette, soil moisture meter, pipette and other glass ware, water hardness meter, turbidity meter, COD analyzer, photochlorimeter, chlorine meter, TDS meter, photometer and spectrophotometer, pen paper, calculator, Computer, and printer</p>	

Grand Total Course Duration: 200 Hours, 0 Minutes

Course Content for Micro Irrigation Technician

MICRO IRRIGATION TECHNICIAN

Sr. No.	Module	Theory	Practical
1	General Introduction <ul style="list-style-type: none"> • Understand General Discipline in the class room (Do's & Don'ts) • Study the Scope of Micro Irrigation in India • Understand Role of a Micro Irrigation Technician • Learn Basic skills of communication • Learn Basic reading capabilities to enable reading of signs, notices and/or cautions at site 	5 hr	5 hr
2	Sprinkler Irrigation System <ul style="list-style-type: none"> • What is sprinkler irrigation? • Benefits of sprinkler irrigation • Limitations of sprinkler irrigation • Components of sprinkler irrigation system • Types of sprinkler irrigation systems • Operational requirements for sprinkler irrigation system 	5 hr	5 hr
3	Drip Irrigation System <ul style="list-style-type: none"> • What is drip irrigation? • Benefits of drip irrigation • Limitations of drip irrigation • Components of drip irrigation system • Types of drip irrigation systems • Operational requirements drip irrigation system • 	5 hr	5 hr
4	Designing and layout of Micro Irrigation System <ul style="list-style-type: none"> • Study the basics of crop cultivation such as spacing, water requirement, spacing of the crop stand, nature of rooting etc. • Familiarize with Sprinklers, Foggers & Misters • Familiarize with the Principles of Micro Irrigation System • Design Micro Irrigation system • Plan the layout for Micro Irrigation System • Handle the site deviation • 	20 hr	35 hr

SKILL DEVELOPMENT PROGRAMMES

5	<p>Installation of Micro Irrigation Systems</p> <ul style="list-style-type: none"> • Identify, select, use the appropriate tools for Installation • Identify, select and use the Micro Irrigation Components for installation • Install the error free Micro Irrigation System • Check the whole system after installation • Guide and train the farmers on installation of the system • Guide Farmers on how to retrieve the system after harvest and again laying the pipelines. • Gain knowledge about Sprinklers, micro sprinklers and its components • Study the different components of MIS and its uses 	20 hr	40 hr
6	<p>Maintenance of Micro Irrigation System</p> <ul style="list-style-type: none"> • Check and identify the trouble shooting problems occur in the farmer's field. • Maintaining the micro irrigation system. • Address the common problems that occur in the process • System cleaning as per the field situation. • Fixing of clogging problems in system. • Understand the measures to cleaning of micro irrigation system. • Establish the effective working relationship 	20 hr	20 hr
7	<p>Maintain Health & Safety at the work place</p> <ul style="list-style-type: none"> • Maintain a clean & efficient workplace • Render appropriate emergency procedures • Reporting time to time to appropriate person. • Practice General safety and first aid 	15 hr	

MICRO IRRIGATION TECHNICIAN

Water is the most vital input in agriculture and has made a significant contribution in providing stability to food grain production and self-sufficiency. Water is supplied to agricultural land through rainfall and artificial application of irrigation water. Irrigation is continuous and a reliable water supply to the different crops in accordance with their needs. In other way irrigation is an artificial application of water to soil by supplying sufficient soil moisture to the crop for proper growth, as the timing of rainfall is not adequate to meet the water requirement of crops. Efficient irrigation results in increased crop yields, with soil fertility maintained and water utilized economically. Whatever is the method of water application; it is essential that the system is designed to apply the right amount of water at the right time and apply it uniformly to raise the level of soil moisture in the crop root zone to its field capacity. Soil texture affects water movement. Emitter flow rate, spacing, and line spacing must be adjusted to compensate. The table below provides general guidelines. When unsure about the exact classification, use the tighter spacing. Even if the application rate exceeds a soil's expected intake rate, proper application of water can be achieved through scheduling.

APPENDIX-II



This **MEMORANDUM OF UNDERSTANDING (MOU)** is made on 6th day of December, 2016 AT HISAR, HARYANA.

BETWEEN

Chaudhary Charan Singh Agricultural University, Hisar which was established as a university by Haryana and Punjab Agricultural Universities Act, ratified 2 February 1970 and was named as Haryana Agricultural University on 31 October 1991, it was renamed as Chaudhary Charan Singh Haryana Agricultural University hereinafter referred to as "**CCSHAU**" represented by its Vice Chancellor which expression shall where the context so admits, be deemed to include its successors, and permitted assigns of the ONE PART.

AND

Agriculture Skill Council of India (ASCI), a not for profit company under Section 25 of the Companies Act 1956, functioning under the aegis of National Skill Development Corporation (NSDC), Ministry of Skill Development & Entrepreneurship, Government of India having its office at Bestech Chambers, B-Block, Shushant Lok-1, Gurgaon, Haryana – 122002, represented by its Chief Executive Officer which expression shall where the context so admits, be deemed to include its successors, executors and administrators of the OTHER PART

Q
6-12-16 S.S. Anyg.

Q
6-12-16
S.S. Anyg

Q
6-12-16
S.S. Anyg

CCSHAU and ASCI shall hereafter be collectively referred to as "Parties" and reference to "Party" shall mean ASCI or CCSHAU, as the case may be.

WHEREAS:

"CCSHAU" aims at imparting education in agriculture, agricultural engineering, home science and other allied sciences; furthering the advancement of learning and research, particularly in agriculture and allied sciences; and undertaking the extension of such sciences to the rural people.

AND WHEREAS:

ASCI is a Sector Skill Council for the Agriculture Sector supported by leading Industry players in India with an aim to create an eco-system for quality vocation education in Agriculture and allied sector. It aims to meet the entire value chain's requirements of trained manpower (in both quantity and quality terms) across all levels on a sustained and evolving basis.

This MOU is intended to outline the general framework for collaboration between the Parties. The initial goal of this collaboration is to outline and describe certain of the respective goals, strategies and objectives, as the case may be, as well as the intent of the Parties to conduct collaborative activities to establish and promote a mutually beneficial relationship. As such, the actual details of each specific collaboration and/or transaction will be determined by mutual agreement of the Parties.

R
6-12-16
S.S. Any

R
6-12-16
S.S. Any

BOTH PARTIES mutually agree to conduct the following activities:

A. Training programs as per National Skill Qualification Framework

CCSHAU will align its training programs with ASCI developed Qualification Packs as per National Skill Qualification Framework.

B. Assessment & Certification

ASCI will conduct Assessment of trainees trained under CCSHAU short term training programs. Successful trainees would be certified by ASCI as per NSQF levels.

R
6-12-16
S.S. Any

C. Train the Trainer

ASCI will organise Train the trainer program for CCSHAU, other Universities / Institutions and ASCI affiliated training providers. CCSHAU will provide technical and infrastructure support to ASCI in organising Train the trainer programs.

D. Skill Development Centre/ Training Institutes:

CCSHAU and ASCI can join hands in creating skill development centres for training & capacity building across various segments of agriculture. i.e: Farm Mechanization, Horticulture, Seed, Crop Production etc. If need arises, the Parties will jointly request for grant from state governments.

E. Manpower & infrastructure required

The existing infrastructure and manpower of the Parties will be used for the implementation of the collaborative activities to the extent agreed by each Party. CCSHAU will nominate a Liaison Officer for coordinating the collaborative activities with ASCI.

Q
6-12-16
SS Amg

F. Recognition of Prior Learning (RPL)

ASCI and CCSHAU can jointly organise RPL programme where CCSHAU can mobilise skilled & semi-skilled farmers/workers which can be assessed and certified by ASCI as per NSQF.

Q
6-12-16
SS Amg

I. Development of Occupational Standards, Curriculum & Learning materials


ASCI do development of National Occupational standards, Qualification Packs, Curriculum & Course Content for the various segments of agriculture. CCSHAU will support ASCI in development of the same in terms of the technical knowhow, Validations and other as per the requirement.

Both the parties have set their hand in presence of the witness on the 6th day of the month December and the year 2016 as mentioned above and will be effective up to five years beyond the date of signing the MOU.

Q
6-12-16
SS Amg

SKILL DEVELOPMENT PROGRAMMES

For CCSHAU:



6-12-2016

Dr. A.K. Goel
Director,
Human Resource Management

Address:

Chaudhary Charan Singh Haryana
Agriculture University,
Hisar, Haryana - 125004
Tel No.: 01662 231640
Email: dhrmccshau@gmail.com

For ASCI:



Dr. Satender Singh Arya
Chief Executive Officer,
Agriculture Skill Council of India

Address:

3rd Floor, Bestech Chambers, B-Block,
Shushant Lok-1, Gurgaon, Haryana -
122002
Tel No.: (+91) 124-4288322
Email: ceo@asci-india.com

Witness:

1.



Dr. Nishi Sethi
Assoc. Director, Training
CCSHAU, Hisar.

2.



Kausal Sodhi
Director
ASC1

APPENDIX-III



Certificate of Provisional Affiliation

Date of Issue: 5th June 2018

Registration No.: ASCI/GN/G/614/18-01

Based on the application and subsequent evaluation by Agriculture Skill Council of India (ASCI), this is to certify that **Chaudhary Charan Singh Haryana Agricultural University, Hisar** registered at Hisar, Haryana - 125004 is authorized for training of students in below mentioned Job roles as per ASCI guidelines. This certificate is valid till 31st March, 2019.

Job Roles	Level	QP Reference ID
Beekeeper	4	AGR/Q5301
Gardener	4	AGR/Q0801
Assistant Gardener	3	AGR/Q0804
Nursery Worker	3	AGR/Q0807
Floriculturist – Open Cultivation	4	AGR/Q0701
Floriculturist – Protected Cultivation	4	AGR/Q0702
Bulb Crop Cultivator	4	AGR/Q0401
Wheat Cultivator	4	AGR/Q0102
Mushroom Grower	4	AGR/Q7803
Pesticide & Fertilizer Applicator	3	AGR/Q1202
Quality Seed Grower	4	AGR/Q7101
Seed Processing Worker	3	AGR/Q7102
Tractor Operator	4	AGR/Q1101
Tractor Mechanic	4	AGR/Q1108
Organic Grower	4	AGR/Q1201
Solanaceous Crop Cultivator	4	AGR/Q0402

(Vatsala Aggarwal)
Authorized Signatory



Certificate of Provisional Affiliation

Date of Issue: 11th July 2018

Registration No.: ASCI/GN/G/614/18-02

Based on the application and subsequent evaluation by Agriculture Skill Council of India (ASCI), this is to certify that **Chaudhary Charan Singh Haryana Agricultural University, Hisar** registered at Hisar, Haryana - 125004 is authorized for training of students in below mentioned Job roles as per ASCI guidelines. This certificate is valid till 31st March, 2019.

Job Roles	Level	QP Reference ID
Agriculture Extension Service Provider	4	AGR/Q7601
Soil Sampler/ Collector	3	AGR/Q8104
Soil & Water Testing Lab Analyst	5	AGR/Q8103

(Vatsala Aggarwal)
Authorized Signatory

APPENDIX-IV

Profiles of ToMT's



Dr. Surender Singh

Saina Nehwal Institute of Agricultural
Technology, Training & Education
CCSHAU, Hisar
Mob.: 9416607750



Dr. Bhupender Singh

Asst. Director (Entomology),
SNIATTE, CCSHAU, Hisar
Mob.: 9896475737



Er. Mukesh Jain

Assistant Professor cum Testing Incharge
Department of Farm Machinery and Power
Engineering
College of Agricultural Engineering and
Technology
ChaudaryCharan Singh Haryana Agricultural
University, Hisar-125 004 (Haryana)



Dr. Yogender Kumar

Wheat and Barley Section
Department of Genetics and Plant Breeding
CCSHAU, Hisar -125004
Mob. 9416320888



Dr. Rakesh Kumar

Asst. Scientist
Plant Pathology
CCSHAU, Hisar -125004
Mob.: 9466728844



Dr. V. K. Malik

Asst. Plant Pathologist
Bajra Section
CCSHAU, Hisar
Mob.: 8295100390

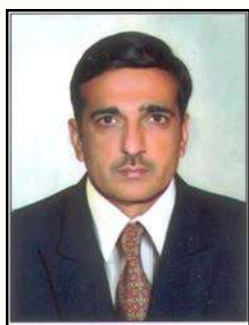
SKILL DEVELOPMENT PROGRAMMES



Dr. V. S. Mor
Assistant Scientist
Department of Seed Science & Technology
CCSHAU, Hisar, Haryana -125 004
Mob.: 9468337001



Dr. Harish Kumar
Asstt. Scientist
Dept. of Entomology
CCSHAU, Hisar, Haryana-125004
Mob.: 9466441120



Dr. Axay Bhuker
Assit. Scientist
Seed Science and Technology
CCSHAU, Hisar
Mob.: 9812375695



Dr. Satyajeet
Deptt. Of Agronomy
CCSHAU, Hisar
Mob.: 9416333778



Dr. Sunita Yadav
Deptt. of Entomology
CCSHAU, Hisar
Mob.: 9467209480



Dr. Vijaypal Pal Panghal
Asst. Scientist,
Department of Vegetable Sciences
9416694724

SKILL DEVELOPMENT PROGRAMMES



Dr. Dharambir Duhan
Asst. Scientist,
Department of Vegetable Sciences
9416397542



Dr. Satpal Baloda
Asst. Scientist,
Department of Horticulture
9416543950



Dr. Arvind Malik
Asstt. Horticulturist
RDS Seed Farm
CCSHAU, Hisar



Dr. Balbir Singh
DES Entomology
KVK, Bawal
Mob. : 9468017203



Dr. Dhram Parkash
Asstt. Scientist (Soil)
CCSHAU, Hisar
Mob. : 8572806372



Dr. Ashish Shivran
Asstt. Director Agonomy
DDUCOE, CCSHAU, Hisar
Ph. : 8239398626



Er. Bharat Patel
Asstt. Director, FPM
DDUCOE, CCSHAU, Hisar
Ph. : 9592754472



Dr. Rohtash Singh
Asstt. Scientist (Soil)
CCSHAU, Hisar
Mob. : 8901243098

APPENDIX-V

REGISTRATION BY ToMT'S

Plz use the link for the Takshahila: <https://nsdcindia.org/national-portal-trainers-and-assessors>

You can go through the user manual and watch demo video via following Link before registering in the portal to know the steps. Plz refer manual while filling the required credentials in the portal and steps thereof:

User

manual: <https://totandtoa.nsdindia.org/assets/User%20Manual%20for%20Trainers.pdf>

Demo

Video: <https://totandtoa.nsdindia.org/assets/Videos/TAKSHASHILA%20National%20Portal%20for%20Trainers.mp4>

If issue is not resolved by manual and video plz write mail to tot@nsdcindia.org

APPENDIX-VI

SKILL DEVELOPMENT PROGRAMMES

FINANCIAL LIBALITY FOR 200 HOURS COURSES FOR 50 PARTICIPANTS

Sr. No.	Activities	Amount (Rs.)
1	Registration@Rs.500	25000
2	Honorarium (Course Director, Coordinator, Resource Person and Supporting Staff)	110000
3	Boarding Charges 50*240*40	500000
4	Lodging Charges 25*60*40	60000
5	POL/TA	25000
6	Miscellaneous	30000
7	Project Assistant	10000
	Total	760000

FINANCIAL LIBALITY FOR 300 HOURS COURSES FOR 50 PARTICIPANTS

Sr. No.	Activities	Amount (Rs.)
1	Registration@Rs.500	25000
2	Honorarium (Course Director, Coordinator, Resource Person and Supporting Staff)	160000
3	Boarding Charges 50*240*60	750000
4	Lodging Charges 25*60*60	90000
5	POL/TA	25000
6	Miscellaneous	35000
7	Project Assistant	15000
	Total	1100000

APPENDIX-VII

APPLICATION FORM

Skill Training of Rural Youth

Personal Details (to be filled by the applicant)

1. Full Name: _____
2. Date of Birth: _____
3. Age: _____ (Photo ID like ration card/passport/election card/UID/Driving License etc)
4. Gender Male: Female:
5. Qualification: _____
6. Nationality: _____
7. Postal Address with Pincode: _____

8. Caste (SC/ST/OBC/GEN/Others) _____
9. Residential Address: _____

10. Contact details:
 Mobile: _____ Email: _____
11. Occupation _____
12. Registration Number (for registered Candidates):

(Signature of the Applicant)

Date: _____

APPENDIX-VIII

क्रमांक.....

सायना नेहवाल कृषि प्रौद्योगिकी प्रशिक्षण एवं शिक्षा संस्थान
विस्तार शिक्षा निदेशालय



चौ. चरण सिंह हरियाणा कृषि विश्वविद्यालय, हिसार

प्रमाण पत्र

प्रमाणित किया जाता है कि श्रीमान / श्रीमति / कुमारी.....

..... पुत्र / पुत्री / पत्नी श्री.....

निवासी..... ने दिनांक

से तक..... पर आयोजित

प्रशिक्षण सफलतापूर्वक पूरा किया।

प्रशिक्षण संयोजक सह-निदेशक (प्रशिक्षण) विस्तार शिक्षा निदेशक

APPENDIX-IX



This MEMORANDUM OF UNDERSTANDING (MOU) is made on 6th day of December, 2016 AT HISAR, HARYANA.

BETWEEN

6-12-16
S.S. Arora

Chaudhary Charan Singh Agricultural University, Hisar which was established as a university by Haryana and Punjab Agricultural Universities Act, ratified 2 February 1970 and was named as Haryana Agricultural University on 31 October 1991, it was renamed as Chaudhary Charan Singh Haryana Agricultural University hereinafter referred to as "**CCSHAU**" represented by its Vice Chancellor which expression shall where the context so admits, be deemed to include its successors, and permitted assigns of the ONE PART.

AND

Agriculture Skill Council of India (ASCI), a not for profit company under Section 25 of the Companies Act 1956, functioning under the aegis of National Skill Development Corporation (NSDC), Ministry of Skill Development & Entrepreneurship, Government of India having its office at Bestech Chambers, B-Block, Shushant Lok-1, Gurgaon, Haryana - 122002, represented by its Chief Executive Officer which expression shall where the context so admits, be deemed to include its successors, executors and administrators of the OTHER PART

6-12-16
S.S. Arora

CCSHAU and ASCI shall hereafter be collectively referred to as "Parties" and reference to "Party" shall mean ASCI or CCSHAU, as the case may be.

WHEREAS:

"CCSHAU" aims at imparting education in agriculture, agricultural engineering, home science and other allied sciences; furthering the advancement of learning and research, particularly in agriculture and allied sciences; and undertaking the extension of such sciences to the rural people.

AND WHEREAS:

ASCI is a Sector Skill Council for the Agriculture Sector supported by leading Industry players in India with an aim to create an eco-system for quality vocation education in Agriculture and allied sector. It aims to meet the entire value chain's requirements of trained manpower (in both quantity and quality terms) across all levels on a sustained and evolving basis.

This MOU is intended to outline the general framework for collaboration between the Parties. The initial goal of this collaboration is to outline and describe certain of the respective goals, strategies and objectives, as the case may be, as well as the intent of the Parties to conduct collaborative activities to establish and promote a mutually beneficial relationship. As such, the actual details of each specific collaboration and/or transaction will be determined by mutual agreement of the Parties.

BOTH PARTIES mutually agree to conduct the following activities:

A. Training programs as per National Skill Qualification Framework

CCSHAU will align its training programs with ASCI developed Qualification Packs as per National Skill Qualification Framework.

B. Assessment & Certification

ASCI will conduct Assessment of trainees trained under CCSHAU short term training programs. Successful trainees would be certified by ASCI as per NSQF levels.

Q
6-12-16
S.S. Argy

Q
6-12-16
S.S. Argy

Q
6-12-16
S.S. Argy

C. Train the Trainer

ASCI will organise Train the trainer program for CCSHAU, other Universities / Institutions and ASCI affiliated training providers. CCSHAU will provide technical and infrastructure support to ASCI in organising Train the trainer programs.

D. Skill Development Centre/ Training Institutes:

CCSHAU and ASCI can join hands in creating skill development centres for training & capacity building across various segments of agriculture. i.e: Farm Mechanization, Horticulture, Seed, Crop Production etc. If need arises, the Parties will jointly request for grant from state governments.

E. Manpower & infrastructure required

The existing infrastructure and manpower of the Parties will be used for the implementation of the collaborative activities to the extent agreed by each Party. CCSHAU will nominate a Liaison Officer for coordinating the collaborative activities with ASCI.

F. Recognition to Prior Learning (RPL)

ASCI and CCSHAU can jointly organise RPL programme where CCSHAU can mobilise skilled & semi-skilled farmers/workers which can be assessed and certified by ASCI as per NSQF.


I. Development of Occupational Standards, Curriculum & Learning materials

ASCI do development of National Occupational standards, Qualification Packs, Curriculum & Course Content for the various segments of agriculture. CCSHAU will support ASCI in development of the same in terms of the technical knowhow, Validations and other as per the requirement.

Both the parties have set their hand in presence of the witness on the 6th day of the month December and the year 2016 as mentioned above and will be effective up to five years beyond the date of signing the MOU.

Q
6-12-16
S.S. Anyg

For CCSHAU:


6-12-2016

Dr. A.K. Goel
Director,
Human Resource Management

Address:

Chaudhary Charan Singh Haryana
Agriculture University,
Hisar, Haryana - 125004
Tel No.: 01662 231640
Email: dhrmccshau@gmail.com

For ASCI:



Dr. Satender Singh Arya
Chief Executive Officer,
Agriculture Skill Council of India

Address:

3rd Floor, Bestech Chambers, B-Block,
Shushant Lok-1, Gurgaon, Haryana -
122002
Tel No.: (+91) 124-4288322
Email: ceo@asci-india.com

Witness:

1.



Dr. Nishi Sethi
Assoc. Director, Training
CCSHAU, Hisar.

2.



Kausal Sodhi
Director
ASC 1



Patron in Chief

Prof. K. P. Singh

Vice-Chancellor, CCS HAU, Hisar
Chairman Skill Development Programme

Dr. R. S. Hooda

Director, Extension Education, CCS HAU, Hisar
Convenor, Skill Development Programme

Dr. Manju Dahiya

Associate Director (Training)
SNIATTE, CCS HAU, Hisar

Dr. Surender Singh

Assistant Director (Horticulture)
SNIATTE, CCS HAU, Hisar





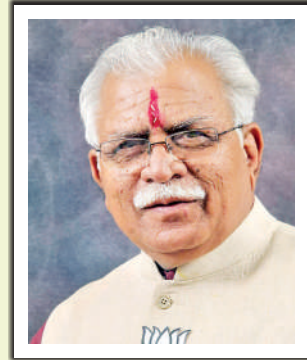
Sh. Narendra Modi

Prime Minister of India



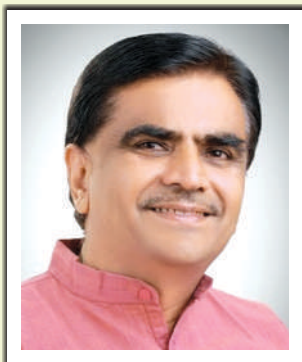
Sh. Satyadev Narayan Arya

Governor of Haryana



Sh. Manohar Lal

Chief Minister, Haryana



Sh. O.P. Dhankhar

Minister of Agriculture &
Farmers Welfare



Mr Vipul Goel

Industrial Training and
Skill Development Minister

