

CURRICULUM FOR TUNNEL FARMING

6-MONTHS
(Certificate course)

National Vocational & Technical Training Commission, Islamabad (February, 2012)



CONTENTS

Training Objectives.....	1
Curriculum Salients.....	1
Skill Proficiency Details.....	2
Knowledge Proficiency Details.....	3
Curriculum Delivery Structure.....	4
Scheme of Studies.....	5
Detail of Course Contents.....	6
List of Machinery/Implements/Equipments.....	10
Employability of Pass-out.....	11
Minimum Qualification of Teacher/Instructor	11
Reference Books	12
NCRC Members.....	13

TRAINING OBJECTIVES

The major objectives are to

- Get more from less area on less expense
- Learn tunnels structure installation
- Conduct and manage all practices in tunnels right from seed bed preparation to packing of harvested produce for marketing
- Ensure record keeping of all on-going daily practices in the tunnels

CURRICULUM SALIENTS

Entry	:	Middle Pass
Capacity	:	25-Students
Duration	:	6-Month
Total Training Hours	:	800-Hours.
	:	40 Hours per week
	:	7 Hours per day (5 Hours of Friday)
Training Methodology	:	Practical 80%
		Theory 20%
Medium of Instruction	:	Urdu

SKILL PROFICIENCY DETAILS

On successful completion of this course, the students/trainees will be able to:

1. Work to increase yield/acre with less expense.
2. Prepare and practice farming under tunnel technology.
3. Perform a particular task.
4. Figure out the problems and their solution during cultivation.
5. Select good quality seed, proper use of water & fertilizer at right time in right dose.
6. Classify soil type, its preparation and its best use
7. Cultivate different vegetables under tunnel, and their maintenance to protect them from pests & diseases.
8. Calculate cost benefit ratio for comparison (Field vs. Tunnel farming)
9. Work on pressurized irrigation techniques like drip irrigation
10. Post harvest handling i.e. sorting/grading, processing and packing
11. Carry out marketing/market requirements regarding variety, quality and knowledge of regional markets
12. Keep record of various cultural practices

KNOWLEDGE PROFICIENCY DETAILS

On successful completion of this course the trainee should be able to:

1. Understand Tunnel Farming.
2. Define different Tunnel structure and successful crop growing.
3. Comprehend the innovations in Agriculture for boosting up the production per acre.
4. Describe different vegetables under tunnel and their maintenance.
5. Identify different insects/pests, their mode of damage and control under tunnel farming.
6. Elaborate marketing procedures and hindrances involved and their solution.
7. Recognize the proper time of sowing & marketing in order to achieve the main objective of tunnel farming.
8. Categorize different requirements of the vegetable crop at proper time in tunnel.

CURRICULUM DELIEVERY STRUCTURE

W E E K	CURRICULUM DELIVERY	REVISION	CO-CURRICULAR ACTIVATES	FINAL TEST	TOTAL
	1-20	21	22-25	26	26
	20	1	4	1	

SCHEME OF STUDIES

Sr. No.	Subject/Main Topic	Theory Hours.	Practical Hours.	Total Hours.
1	Introduction and Installation of Tunnels	35	148	183
2	Seed Bed Preparation and Seed Selection	13	90	103
3	Nursery Preparation and Management	23	80	103
4	Growing techniques of Potential Vegetables in Tunnels	20	120	140
5	Irrigation & Fertilizers Application	8	20	28
6	Plant Protection Measures and Weed Control	19	110	129
7	Harvesting, Post Harvest Handling & Marketing	12	70	82
8	Record Keeping	02	00	02
9	English/Communication Skills	20	00	20
10	Work Ethics	10	00	10
Total		162	638	800

DETAIL OF COURSE CONTENTS

Tunnel Farming (6 – Months Course)

Sr. No.	Detail of Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction and Installation of Tunnels 1.1. Explain the objective of the trade under learning 1.2. Importance and Economic Benefits of Tunnel Farming 1.3. Various kinds of Tunnels 1.4. Vegetable grown under these Tunnels 1.5. Installation of different types of Tunnel 1.6. Material and Equipments used 1.7. Tour to Different Farm involved in Tunnel Farming	35 01 03 04 08 12 05 06	148	183
2	Seed Bed Preparation and Seed Selection 2.1 Soil & its Types 2.2 Soil PH, Soil Organic Matter & Cultivation of Soil 2.3 Preparation of Beds and furrows 2.4 Definition and Type of Mulching and Importance of Mulching in Tunnel Farming 2.5 Different Material used for artificial Mulching	13 04 04 01 01 01	90	103

	2.6 Seeds and Impact of Seed Quality	01		
	2.7 Use of Hybrid Seeds	01		
3	Nursery Preparation	23	80	103
	3.1. Importance of Nursery Growing	01		
	3.2. How to grow for different Vegetable Nurseries	08		
	3.3. Agronomic practices required	08		
	3.4. Transplantation	06		
4.	Growing Techniques of Potential Vegetables in Tunnels	20	120	140
	4.1. Potential Vegetable crop and their production technology.	10		
	4.2. Crop Management	10		
5.	Irrigation & Fertilizers Application	8	20	28
	5.1 Kind of irrigation required for different crops	01		
	5.2 Time of application	01		
	5.3 Quantity of Water Required	01		
	5.4 Importance and Types of different Commercial fertilizers required	01		
	5.5 Proper Time and dose required	02		
	5.6 Fertilizers Deficiency Symptoms	02		

6	Plant Protection Measures and Weed Control 6.1 Identification of different insect/pest and diseases for different vegetable crops 6.2 Their life cycle and mode of damage 6.3 Pest Scouting & Threshold Level 6.4 Control 6.5 Importance of Weedicide and Pesticide 6.6 The types and nature of Weedicide and Pesticide 6.7 Their dose and time of application 6.8 How to calibration of tank, spray and type of nozzle used 6.9 Their Beneficial and harmful effect	19 03 04 02 02 01 02 02 01 02	110	129
7	Harvesting, Post Harvest Handling & Marketing 1.1 Proper Time and method of Harvesting of different vegetable 1.2 Proper Packing, Packing Material 1.3 Storage & Transportation 1.4 Hygiene During Handling 1.5 Visits of some model farms having packing facility 1.6 Visit to different markets involved in sale of vegetable	12 04 02 01 01 02 02	70	82

8	Record Keeping	02	00	02
	8.1 Need for record keeping	01		
	8.2 Record keeping methods and Formates	01		
9	English/Communication Skills	20	00	20
10	Workers Ethics	10	00	10
Total Hours		162	638	800

List of Practical

- 1- Installation of different tunnels.
- 2- To work on growing of different vegetables under these tunnel.
- 3- Preparation of soil for sowing of vegetables.
- 4- Nursery preparation for different vegetables.
- 5- Plant protection measures for different crops under tunnels.
- 6- Visit to different model farms involved in packing and storage.
- 7- Visit to the sabz mandi, for seeing how marketing of vegetable proceeds.
- 8- Identification of tools/implements used, weeds identification, insects identification, leaves and vegetables identification having attack of different insects and disease, nutrients deficiency symptoms identification.
- 9- Practical experience of irrigation and fertilizer application
- 10- Practical experience of operating tools like spray machines, tractor and other tillage implements
- 11- Practical experience of harvesting, grading and packing at farm

LIST OF MACHINERY/IMPLEMENT/EQUIPMENT

(For a Class of 25 Students)

Name of Trade	Tunnel Farming
Duration of Course	6 - Months

Sr. No.	Name of Machinery, Implement & Equipment	Quantity
1.	Tractor Fiat-480 (can be hired for cultivation)	01
2.	Cultivator	01
3.	Ridger	01
4.	Rotavator	01
5.	Spray Machines (knap sack sprayer)	05
6.	Suhaga	01
7.	Spade, Ramba,Kasola and other tillage implements	10 each
8.	Different Tunnel Structure Low Tunnel 20 x 160 sq. ft Walk- in Tunnel 20 x 160 sq. ft	1 each

- Harvesting tools like cutter/secatures, plastic bins to keep harvested produce to save it from damage
- Protective clothing (PPE) like gloves, masks, caps, water proof over-all, shoes, goggles etc
- Thermometer
- Drip Irrigation unit
- pH meter

EMPLOYABILITY OF PASS OUT

The pass outs of this course may find job / employment opportunities in the following sectors / areas:

1. Private sector
2. Self Business
3. Different NGO's relevant to Agriculture

MINIMUM QUALIFICATION OF TEACHER/INSTRUCTOR

The qualification of teacher/instructor for this course should be

M.Sc. (Hons) Agri with major subject Agronomy/ Horticulture / Soil Science

Or

B.Sc. (Hons) Agri with major subject Agronomy/ Horticulture / Soil Science

REFERENCE BOOKS

1. Crop production by Dr.Shafi Naazir
2. Subzian ki kasht by Dr. Muhammad Aslam Perwaiz, Ch. Muhammad Ayoub, Dr. Mumtaz Akhtar cheema
3. A Book on Horticulture (Urdu) by Sher Muhammad, UAF, Faisalabad.

NATIONAL CURRICULUM REVIEW COMMITTEE MEMBERS

Sr. No.	Name	Designation	Organization	Contact No.	Email Address
1	Mr. Hafizullah Khan	Director Cotton	Agriculture Research Instt. Quetta	0333-7872130	hafizullahk@yahoo.com
2	Mr. Ghulam Ishaq (Convener)	Agri Auditor	Bureau Veritas	0333-8973294	gishaqtayab786@yahoo.com
3	Mr. Saleem Haider	Agriculture Officer	PGICA TEVAT, Multan	0333-6464789	Sfukhry2002@yahoo.com
4	Mr. Muhamad Ejaz	Dy. Director	Agriculture Research Instt. Quetta	0333-7803231	mmejaz@msn.com
5	Mr. Muhammad Shakeel	Director Post Harvest Technology	Agriculture Research Instt. Quetta	0300-9389432	shakeel_ipms@hotmail.com
6	Mr. Muhammad Ayub	Dy. Controller Examinations	PBTEL	0333-4900949	rnd@pbte.edu.pk

