

**PRESENT STATUS AND SCOPE OF
PROTECTED AGRICULTURE
TECHNOLOGY IN
PAKISTAN**

BY

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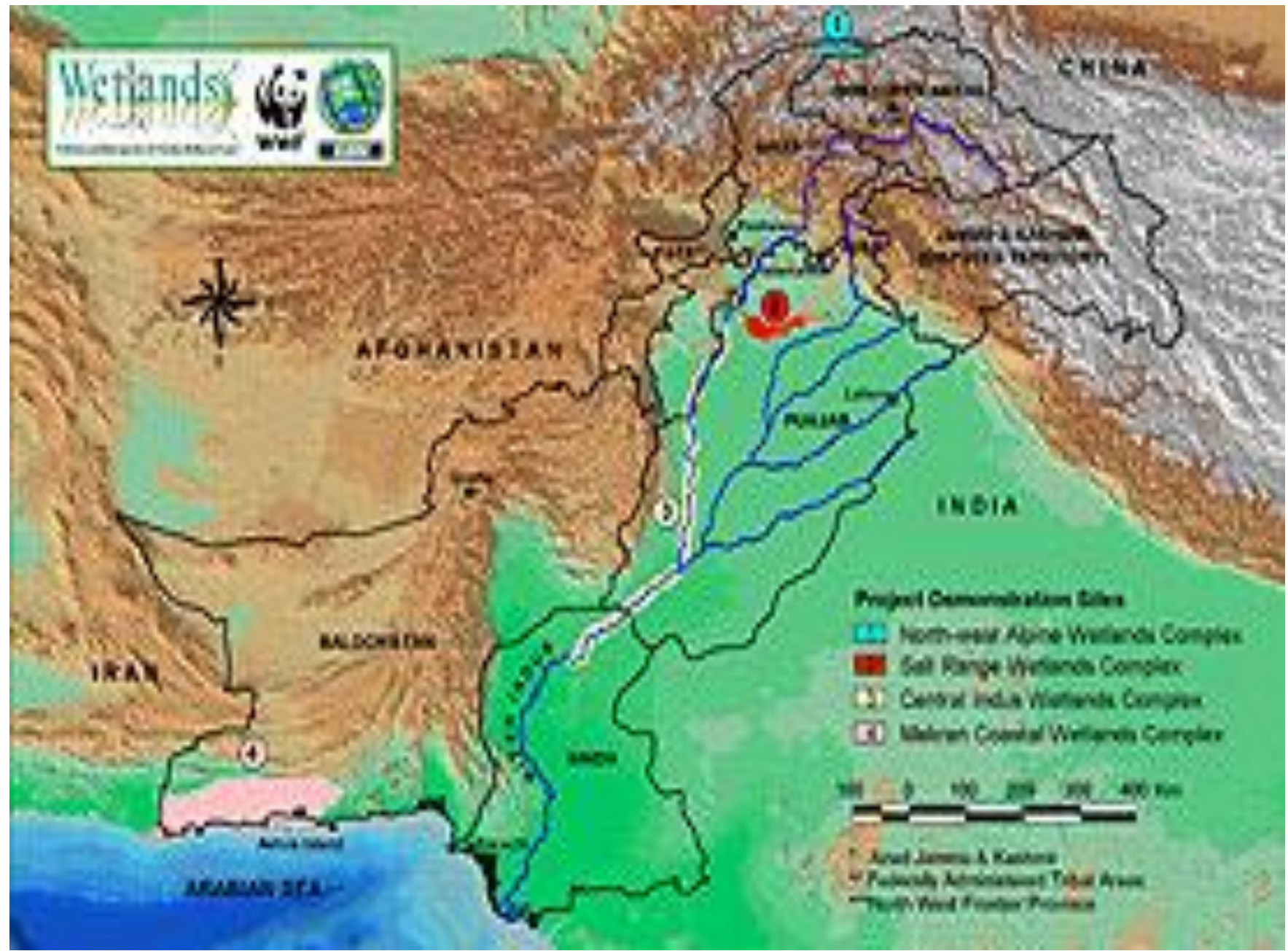
PRINCIPAL ENGINEER/PRINCIPAL SCIENTIFIC OFFICER

AGRICULTURAL ENGINEERING INSTITUTE

PAKISTAN AGRICULTURAL RESEARCH COUNCIL

AT

Regional Training on Protected Agriculture Technology in Asian Countries
from 22-29 January 2018 at Shanghai and Nanjing, China,.



- Project Demarcation Sites**
- North-west Alpine Wetlands Complex
 - Salt Range Wetlands Complex
 - Central Indus Wetlands Complex
 - Malir Coastal Wetlands Complex

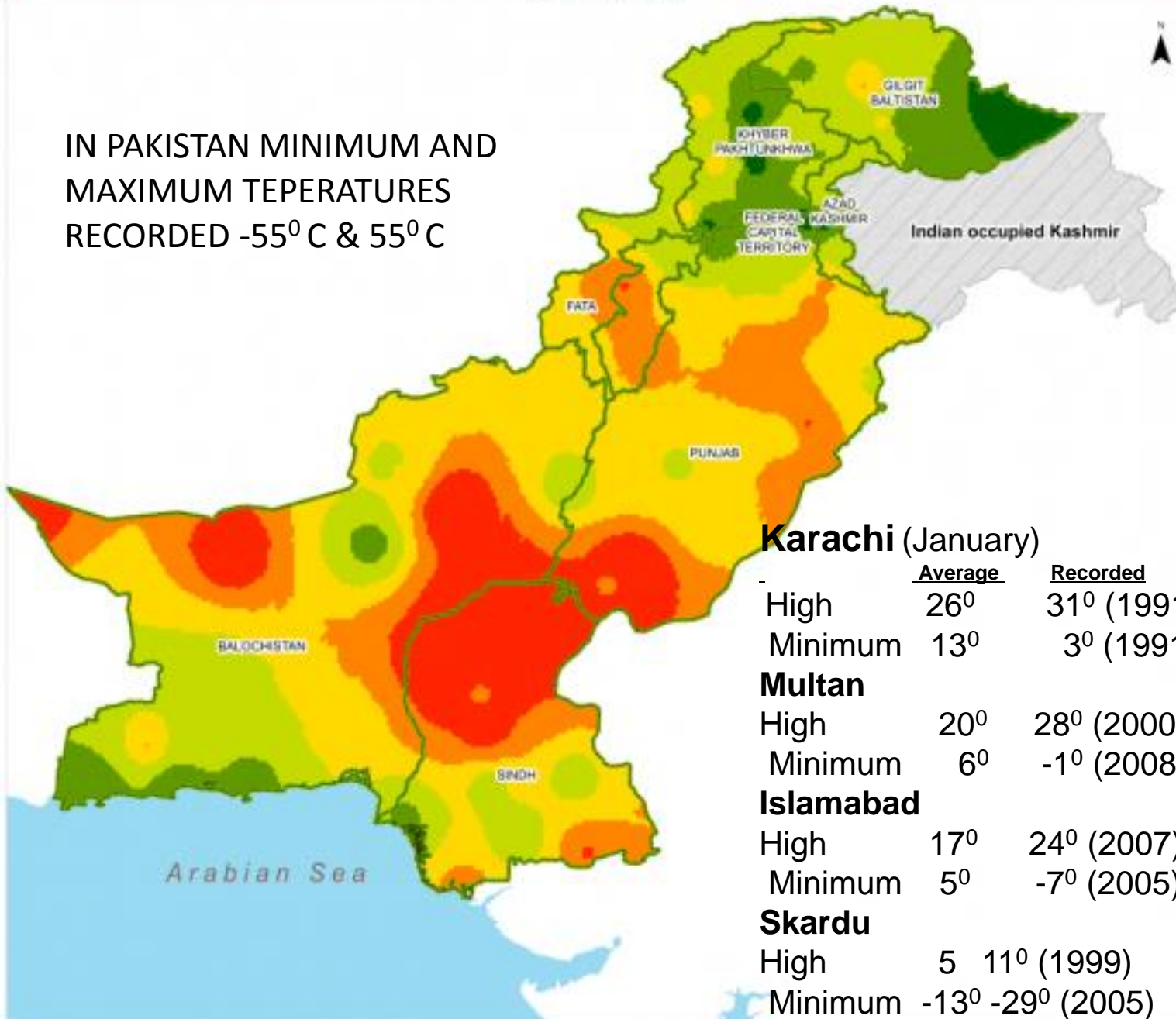


- Aral James & Kashmir
- Federally Administered Tribal Areas
- North West Frontier Province

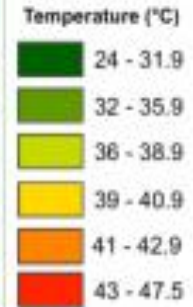
Maximum Temperature Map of Pakistan

As of July 4, 2015

IN PAKISTAN MINIMUM AND
MAXIMUM TEMPERATURES
RECORDED -55°C & 55°C



Legend



Creation Date: July 5, 2015
Projection/Datum: WGS 84 Geographic
Page Size: A3

SCALE 1:620,000

0 75 150 300 KM



Map data source(s):
Pakistan Meteorological Department

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Karachi (January)

	<u>Average</u>	<u>Recorded</u>
High	26°	31° (1991)
Minimum	13°	3° (1991)

Multan

High	20°	28° (2000)
Minimum	6°	-1° (2008)

Islamabad

High	17°	24° (2007)
Minimum	5°	-7° (2005)

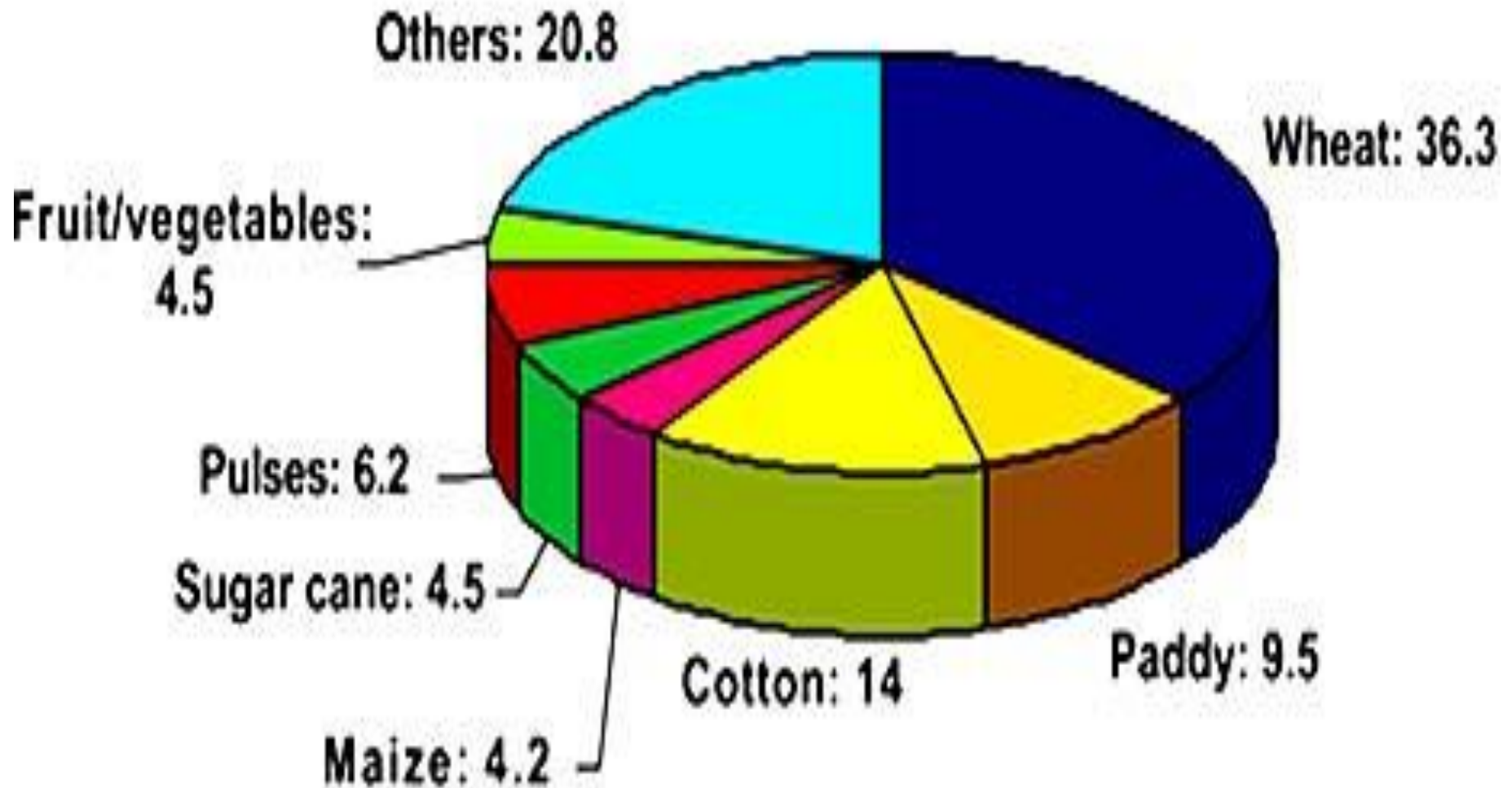
Skardu

High	5	11° (1999)
Minimum	-13°	-29° (2005)



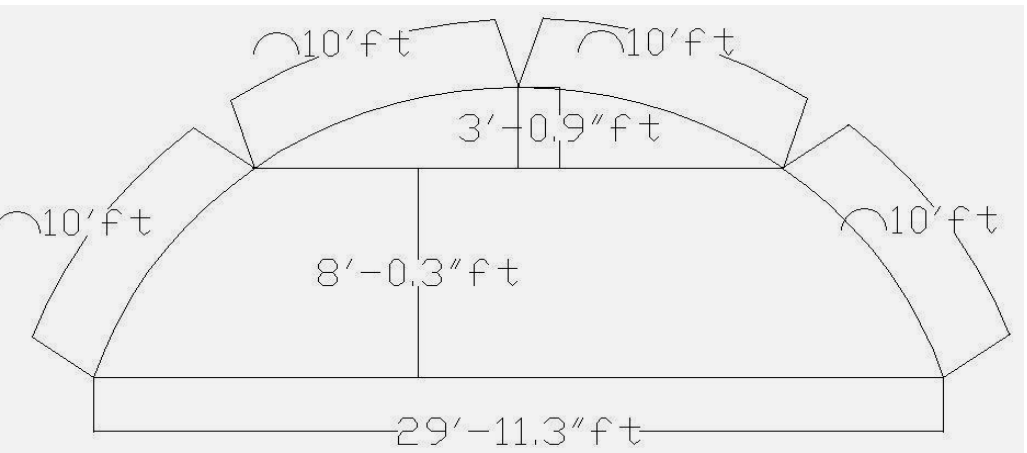
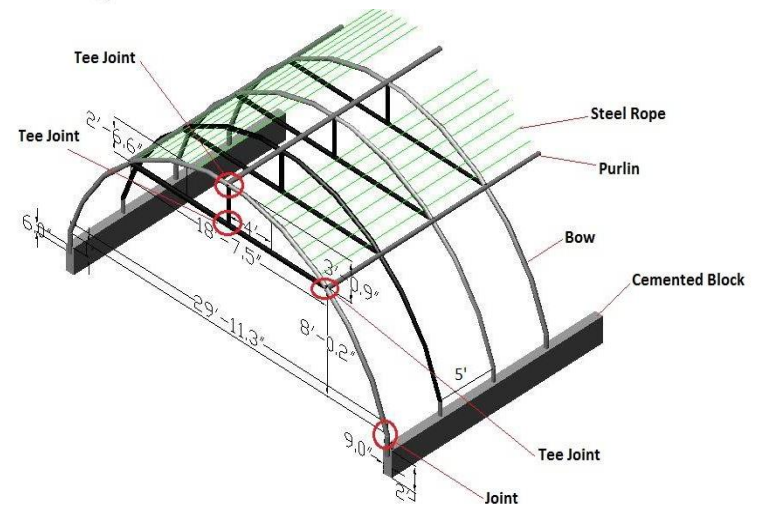
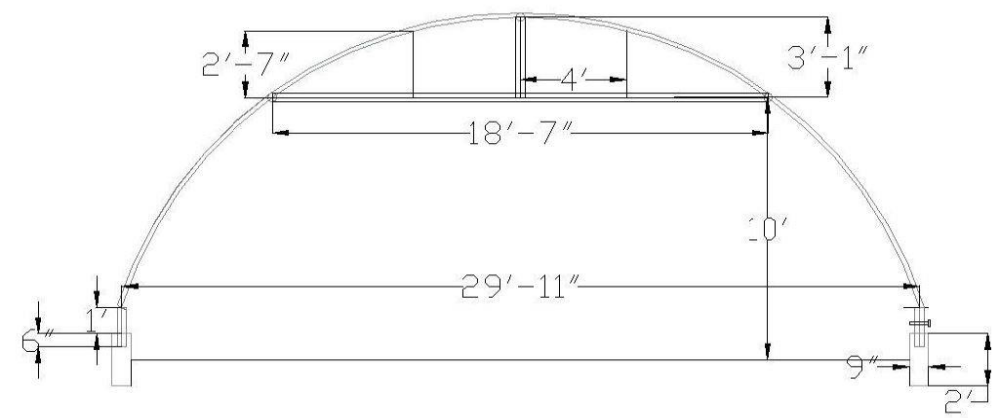
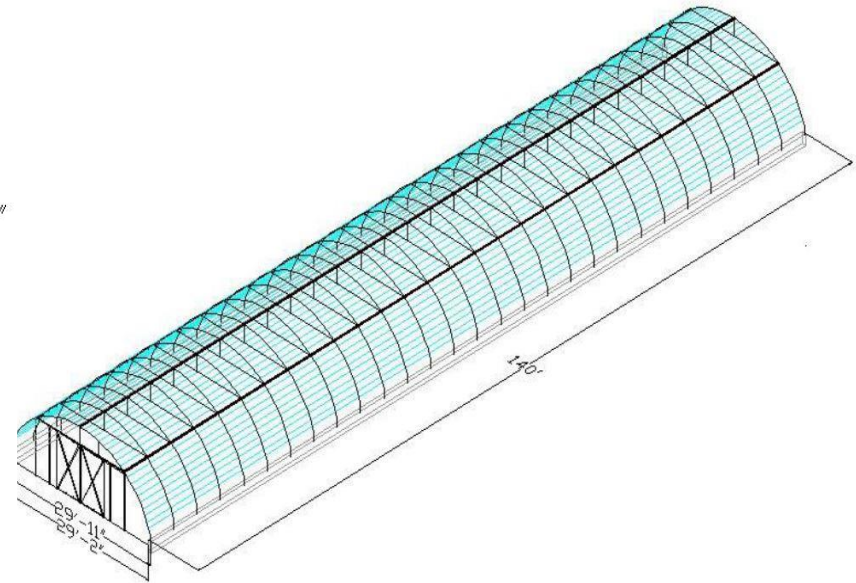
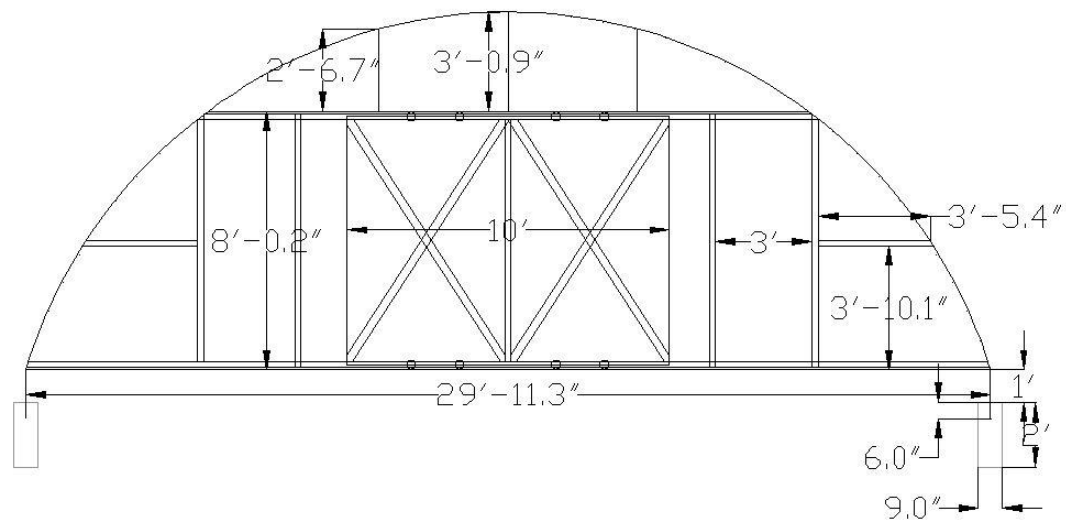
Total Geographical area 80 mha

Total Area under Agriculture 22.2mha (25% of total area)



BASIC DATA

- In Pakistan the total area for vegetable cultivation is about 385,578 hectare
- with total production 3,116,808 tons (2017).
- Area covered under protected agriculture > 80,000 Ha (20% of total area)



TUNNEL STANDARD DIMENSIONS

TUNNEL/POLY HOUSE LOW COST STRUCTURAL MATERIAL





VEGETABLES GROWN UNDER TUNNEL



NEW INITIATIVES

**LARGE SCALE COMPOSTING
AND**

POTS FILLING PLANT FOR VEGETABLES

RAW MATERIAL FOR COMPOSTING

Factor	Acceptable Range
Temperature	54 – 60 °C
Carbon to Nitrogen ratio (C:N)	25:1 – 30:1
Aeration, percent oxygen	> 5%
Moisture Content	50 – 60%
Porosity	30 – 36
Ph	6.5 – 7.5

Formulas for a Mixing of Materials (COMPOST)

$$\text{C:N ratio} = \frac{\text{weight of C in ingredient a} + \text{weight of C in b} + \text{weight of C in c} + \dots}{\text{weight of N in a} + \text{weight of N in b} + \text{weight of N in c} + \dots}$$

$$\text{C:N ratio} = \frac{[\%Ca \times a \times (1-Ma)] + [\%Cb \times b \times (1-Mb)] + [\%Cc \times c \times (1-Mc)]}{[\%Na \times a \times (1-Ma)] + [\%Nb \times b \times (1-Mb)] + [\%Nc \times c \times (1-Mc)]}$$

$$\text{Moisture content} = \frac{\text{weight of water in ingredient a} + \text{weight of water in b} + \text{weight of water in c} + \dots}{\text{total weight of all ingredients}}$$

$$\text{Moisture content} = \frac{(a \times Ma) + (b \times Mb) + (c \times Mc) \dots}{a + b + c + \dots}$$

Symbols

- a = total weight of ingredient a
- b = total weight of ingredient b
- c = total weight of ingredient c
- M = desired mix moisture content
- Ma, Mb, Mc... = moisture content of ingredients a, b, c
- %Ca, %Cb, %Cc... = % carbon of ingredients a, b, c... (on dry weight basis)
- %Na, %Nb, %Nc... = % nitrogen of ingredients a, b, c... (on dry weight basis)
- R = desired C:N ratio of mix
- Ra, Rb = C:N ratio of ingredients a, b, c





COMPST GRINDING, SEIVING ANF GRADING PLANT



POT FILLING PLANT (CAPACITY 8000/DAY)





VEGITABLES GROWN IN POTS



EPS POTS



RECOMMENDATIONS

- DEVELOPMENT OF STANDARDS AT REGIONAL LEVEL
- TRAINING TO MANUFACTURERS ON PROTECTED INFRASTRUCTURE