PRESENT STATUS AND SCOPE OF PROTECTED AGRICULTURE TECHNOLOGY IN PAKISTAN

BY

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

<table>
<thead>
<tr>
<th>City</th>
<th>High (°C)</th>
<th>Minimum (°C)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachi</td>
<td>Avg: 26°</td>
<td>13°</td>
<td>1991</td>
</tr>
<tr>
<td></td>
<td>Rec: 31°</td>
<td>3°</td>
<td></td>
</tr>
<tr>
<td>Multan</td>
<td>Avg: 20°</td>
<td>6°</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>Rec: 28°</td>
<td>-1°</td>
<td>2008</td>
</tr>
<tr>
<td>Islamabad</td>
<td>Avg: 17°</td>
<td>5°</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>Rec: 24°</td>
<td>-7°</td>
<td>2005</td>
</tr>
<tr>
<td>Skardu</td>
<td>Avg: 5°</td>
<td>-13°</td>
<td>1999</td>
</tr>
<tr>
<td></td>
<td>Rec: 11°</td>
<td>-29°</td>
<td>2005</td>
</tr>
</tbody>
</table>
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 VEGITABLES
### RAW MATERIAL FOR COMPOSTING

<table>
<thead>
<tr>
<th>Factor</th>
<th>Acceptable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>54 – 60 °C</td>
</tr>
<tr>
<td>Carbon to Nitrogen ratio (C:N)</td>
<td>25:1 – 30:1</td>
</tr>
<tr>
<td>Aeration, percent oxygen</td>
<td>&gt; 5%</td>
</tr>
<tr>
<td>Moisture Content</td>
<td>50 – 60%</td>
</tr>
<tr>
<td>Porosity</td>
<td>30 – 36</td>
</tr>
<tr>
<td>Ph</td>
<td>6.5 – 7.5</td>
</tr>
</tbody>
</table>

### Formulas for a Mixing of Materials (COMPOST)

**C:N ratio**

\[
\text{C:N ratio} = \frac{\text{weight of C in ingredient a} + \text{weight of C in b} + \text{weight of C in c} + \ldots}{\text{weight of N in a} + \text{weight of N in b} + \text{weight of N in c} + \ldots}
\]

**Moisture content**

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

**Symbols**

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

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![Image of composting process](image-url)
POT FILLING PLANT (CAPACITY 8000/DAY)
VEGETABLES GROWN IN POTS
EPS POTS
RECOMMENDATIONS

• DEVELOPMENT OF STANDARDS AT REGIONAL LEVEL

• TRAINING TO MANUFACTURETRS ON PROTECTECTED INFRASTRUCTURE