

## Answer Key

**Directions:** Complete the outline using the fact sheet provided.

### I. Types of Greenhouses

Freestanding (single) - The freestanding style is often a Quonset, which will accommodate many growing situations but presents height restrictions near the side walls. Another freestanding style is the single gable greenhouse and its many variations.

Ridge and Furrow (gutter connected) - The ridge and furrow or gutter connected greenhouses are joined at the eave by a common gutter.

A. Commercial greenhouse structures (draw pictures for each)

1. Gutter connected
2. Quonset
3. Single gable

### II. Foundations

- A. Foundation must resist overturning and vertical pressure from structural loads and snow and should extend below the frost line.
- B. Concrete is the most appropriate material for permanent structures.

### III. Structural Components

- A. Major vertical support is provided by rafters placed on two to four foot centers, depending on the strength needed.
- B. Purlins are arranged horizontally and connect the rafters.
- C. Side posts and columns are vertical supports that dictate the height of the production area.

## IV. Framing Materials

- A. Aluminum is the most economical material for constructing the greenhouse frame.
1. Has the longest life span.
  2. Allows for light reflectance.
- B. Steel is commonly used but must be painted or galvanized to resist high moisture conditions within the greenhouse.
1. Needs more maintenance than aluminum.
  2. Heavier requiring additional support.
- C. Wood was once a common framing material.
1. Main disadvantage is that it deteriorates over time.
  2. If wood is used, pressure treated lumber should be purchased.

## V. Coverings

- A. Glass-
- Disadvantages Glass is expensive and, because it is fragile, has to be replaced more often than many other materials.
- B. Double layer of polyethylene -
- Advantages relatively inexpensive.
- C. Fiberglass -
- Advantages It is very durable, rigid, and available in various light transmission levels.
- D. Polycarbonate –
- Advantages Material is rigid but also flexible, initial cost of polycarbonate is high, a ten to 15 year life span can be expected and can be purchased in double and triple walled forms which are highly impact resistant.

Acrylic -

Advantages/Disadvantages high light transmittance, high impact resistance, and great strength, costs have proven prohibitive in most cases.

E. Factors to check with covering manufacturer

- |                          |                     |
|--------------------------|---------------------|
| 1. <u>Combustibility</u> | 4. <u>Life span</u> |
| 2. <u>Durability</u>     | 5. <u>Care</u>      |
| 3. <u>Insulation</u>     | 6. <u>Guarantee</u> |

## VI. Shade Compounds

A. What can be added to provide shade for the greenhouse?

Liquid formulas or Shade cloth

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