

### **Inner Climatic (Micro Climate) Control**

The availability of suitable temperature and relative humidity is must. These conditions are created in polyhouse during off-season, so that the required vegetables and fruits etc. May be grown in them in sufficient quantity. The importance of polyhouse is further enhanced due to the possibility of production of creeper vegetables. During daytime, the solar energy enters the house after reflecting from the transparent surface of the polyhouse. This energy helps in increasing the temperature of polyhouse. During this process some energy enters the earth, which comes back in the house in the night and increase its temperature.

### **Heating of Polyhouse**

Heating is required in winter season. Generally the solar energy is sufficient to maintain inner temperature of polyhouse but some times more temperature is required to be supplied to some crops. For this few methods are as follows:

1. Constructing a tunnel below the earth of polyhouse.
2. Covering the northern wall of the house by jute clothing.
3. Covering whole of the polyhouse with jute cloth during night.
4. Fitting solar energy driven device in polyhouse.

### **Cooling of Polyhouse**

In summer season when ambient temperature rises above 400 during daytime, the cooling of polyhouse is required by the following measures, not only the temperature but also relative humidity of polyhouse can also be kept within limit.

1. Removing the internal air of polyhouse out of it in a natural manner.
2. Changing the internal air into external air by putting the fan on.
3. Installation of cooler on eastern or Western Wall not only keeps temperature low but maintains proper humidity also.
4. Running water-misting machine can control the temperature of the polyhouse.

### **Shading**

Certain plants are damaged due to very high light intensity during summer. Shading reduces light intensity and cools the microclimate inside the greenhouse. Shade paints (lime or Redusol or Vari clear), agro-shade nets or retractable thermal screens are generally used and operated manually or through automatic devices.

### **Watering**

Water quality is very important and often overlooked. Total salt-content levels, alkalinity levels, the balance of individual ions such as boron and fluoride can all have serious bearing on crop success. The water sources should be tested before a greenhouse is established. Electrical conductivity level should be 0.75 – 1.5 dS/m and a pH of 6-7. Automatic watering system through drips or over head foggers are generally used depending upon the crop.

### **Fertigation**

It varies from single broad casting of fertilizers to use of soluble grade fertilizers over different operating systems. One of the most modern technologies is currently offered by Priva – Phillips Nutriflux or Van Vliet Midi Aqua Flexilene System. Both the system have nutrient plant demand of nutrients in relation to EC/pH of the media, temperature, RH, light intensity, crop growth, mineral deficiency, etc.

### **Photoperiod control**

Several plant species flower only when they are exposed to specific light duration. Yield and quality of flower crops could be increased with artificial lighting during night hours. Cyclic lighting is most effective. Short day conditions in greenhouses can be created with fully automatic, semi-automatic or manual 'black out' system using good quality black polythene sheets, especially for chrysanthemum.

### **Control system**

A manual or semi-automatic control system is less capital intensive but requires a lot of attention and care. Recently, computerized control systems are available which can integrate temperature, light intensity, relative humidity, CO<sub>2</sub>, plant moisture, nutrient requirement, and plant-protection measures.