The mist is so fine that it evaporates almost as soon as it leaves the nozzle. Therefore, water drops are not deposited on the plants during the afternoon, which may create problems. An additional benefit is that considerable cooling is provided by the evaporation of the mist. The control may be set to operate the mist system before the evaporative cooler comes on, thereby reducing your electric bill by cutting the time the cooler is in operation, or the solenoid valve may be wired into the thermostat which controls the evaporative cooler eliminating the need for an additional control.

Relative Humidity

Relative humidity is a ratio between the amount of water vapor present and the amount the air can hold at a given temperature. Because warm air is able to hold more water vapor than cold air before becoming saturated (100% relative humidity), growers should understand that unless the moisture content of the air is changed, the humidity will fall as the temperature increases. Conversely, humidity will rise as the temperature falls. If air coming in contact with a cold surface causes the air temperature to fall to the point where relative humidity becomes 100%, the water vapor in the air condenses (becomes liquid), resulting in morning dew, nighttime condensation in the greenhouse, or the beads of moisture on a glass containing a cold drink. Humidity records do not reflect the influence of a plant's microclimate. Higher relative humidity is generally found near streams, in marshes, or in dense undergrowth.

In orchid habitats, actual daily high and low values may range only about 10% above and below the average during wet months when there is a small diurnal temperature range. On the other hand, they may range as much as 30-40% above and below the average in dry months when there is a large diurnal temperature range.

Increasing Greenhouse Relative Humidity

Maintaining proper relative humidity levels in the greenhouse or growing area can be very difficult during hot, dry, summer days. This is especially true in very dry desert areas where the afternoon ambient humidity may drop as low as 10-12%. Under these conditions, it is difficult to raise humidity levels much above 30-40%, even with an evaporative cooler working its little heart out to hold the growing area temperature down to around 80°F. The problem is to get enough water vapor in the air to produce about 50% humidity without spending the afternoon standing among your plants, garden hose in hand, making everything in the area soggy wet.

The solution is to install an automatic mist system. Most of us aren't too eager to spend the hundred dollars or so (minimum) for one of these, when the money is much better spent buying more orchids. There is a way out of this dilemma, however. Build your own. Nozzles made for fuel oil furnaces make excellent mist nozzles. These neat little gadgets are rated at flow rates as low as 1/2 gallon per hour up to about 3 gallons per hour. The choice is yours. They are easily changed, so several sizes may be tried to find the one right for your conditions. When they become worn and unsuitable for use in a furnace, they are replaced. However, they are still perfectly good to use in a mist system. Many furnace repair companies have used nozzles lying around and will part with them free of charge. If necessary, new ones with filters will only set you back about $8.00 apiece. They have weird sized threads however, so you will need an adapter to let you tie into 1/2 inch water lines or copper tubing. Local fuel suppliers usually have these adapters for about $2.00 each. The remainder of the needed plumbing fittings can be found at any plumbing supply for about $2.00-3.00. Other materials needed include a solenoid valve (about $12.00-15.00), an inexpensive thermostat or humidistat to control the valve (about $20.00), a few feet of PVC pipe or copper tubing, and a few feet of electrical wire. If the greenhouse vents are operated by a thermostat, the mist system can be tied into that thermostat, providing the solenoid valve is rated for the same voltage as the thermostat. (Valves and thermostats are designed for 110 or 24 volts and must be the same.)

Nozzles should be positioned in front of a couple of fans positioned on opposite sides at each end of the growing area. The fans deliver the mist which helps hold humidity at required levels.