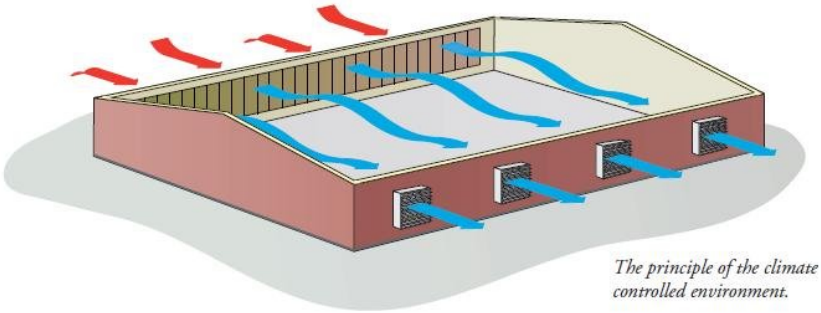
Pad and Fan Cooling

Pad and fan cooling is another method of controlling the relative humidity, air temperature and circulation of fresh air within the greenhouse.

The system consists of cellulose pads along one wall of the greenhouse while the opposite end has exhaust fans. As air is drawn through the pad horizontally, the water flows vertically through the pad creating an evaporative cooling effect. The water is then collected at the bottom of the pad and is re-circulated.

If all vents and doors are closed when the fans operate, air is pulled through the wetted pads and water evaporates. Removing energy from the air lowers the temperature of the air being introduced into the greenhouse.

The air will be at its lowest temperature immediately after passing through the pads. As the air moves across the house to the fans, the air picks up heat from solar radiation, plants and soil – and the temperature of the air gradually increases. The resulting temperature increase, as air moves down the greenhouse, produces a temperature gradient across the length of the greenhouse, with the pad side being coolest and the fan side warmest.



The principle of the climate controlled environment.

"As each litre of water is evaporated, 268 BTUs of heat energy are absorbed from the air by the water during the change from liquid to vapour"

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