



COMMENTARY



Different Type of Operating Principles for Greenhouse Technology

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Description

A greenhouse, generally known as a hothouse if it has enough heating, is a building with walls and a roof primarily constructed of transparent material, such as glass, where plants that need to be controlled climatic conditions are produced. These buildings come in a variety of sizes, from modest sheds to enormous factories. A cold frame can be thought of as a tiny greenhouse. When a greenhouse is exposed to sunshine, the interior temperature rises significantly above the ambient temperature, insulating the contents from cold weather. Many commercial glass greenhouses and hothouses are state-of-the-art plantations for growing fruits, flowers, and vegetables. The heating, cooling, lighting, and screening components in the glass greenhouses may all be controlled by a computer to create the ideal environment for plant growth. The best environment is then created for the growth of a particular crop using a variety of ways to control growing parameters such as air temperature, relative humidity, and vapor-pressure deficit.

Because of the translucent walls and roof, incident solar radiation enters a greenhouse and is absorbed by the floor, ground, and contents, which raises the temperature. The structure isn't exposed to the atmosphere, so warmed air can't convect its way out, raising the temperature inside the greenhouse. This is distinct from the hypothesis focused on the planet known as the "greenhouse effect." Quantitative research indicates that in a heated greenhouse, the effect of infrared radiative cooling is not insignificantly tiny and might have economic ramifications. The installation of such screens lowered heat demand by around 8%, according to the analysis of

near-infrared radiation problems in a greenhouse with a high coefficient of reflection screens, and the use of dyes on transparent surfaces was recommended. Savings were also made by using composite less reflective glass or less effective but less expensive anti-reflective coated plain glass.

One of the biggest expenses for running greenhouses around the world, particularly in colder climates, is heating or electricity. The quantity of heat lost through the greenhouse covering is the biggest issue with heating a greenhouse as contrasted to a building that has complete opaque walls. The coverings, on the other hand, cannot effectively insulate since they must permit light to enter the structure. Because standard plastic greenhouse covers only have an R-value of about 2, it costs a lot of money to constantly restore the heat that is lost. The majority of greenhouses employ electric or natural gas furnaces when additional heating is required. Whenever it becomes too warm for the plants within the greenhouse, cooling is often accomplished by opening windows. This can be carried out manually or automatically. Temperature differences or electronic controls can cause window actuators to open windows. To keep track of the temperature and modify the furnace's operation based on the situation, electronic controllers are frequently utilized. This can be as straightforward as a simple thermostat, but in larger greenhouse operations, it may be more challenging. The plants in the greenhouse utilize the light that comes in *via* the windows during the day. Grow lights, which are frequently LED lights, are also installed in some greenhouses. These lights are turned on at night to provide the plants with more light, which raises the output of some crops.