

UNIT II: THE GROWING STRUCTURE

Lesson 3: Energy Conservation and Environmental Protection

This lesson describes several greenhouse modifications and procedures that the greenhouse owner can implement to conserve energy and protect the environment.

Greenhouse Modifications and Procedures Used to Conserve Energy

Optimizing natural light intensity minimizes the need for supplemental electric lighting. This can be accomplished by preventing large trees, buildings, etc., from shadowing growing structures. Painting interior surfaces (benches, frames, etc.) with white latex paint also brightens the greenhouse and intensifies the available light in the room. Do not use an oil-based paint. To maximize heating and cooling efficiency, it is wise to invest in high-quality heating, cooling, and ventilation systems. An energy-efficient system that uses economic, available fuel saves money and power.

Routine maintenance ensures optimal efficiency. It is important to get rid of debris in all parts of the system, calibrate the thermostat properly, and create energy-saving structures. The greenhouse owner should also check the growing structure for air leaks and ensure that vents and fan louvers seal tightly. Other preventative measures include sealing holes or cracks in the greenhouse covering and installing weather stripping around doors, windows, etc. Protecting the greenhouse from harsh weather is extremely important. During winter, the north-facing side needs insulation. Creating windbreaks helps protect plants from harsh weather. Whenever needed, high-intensity light bursts should be screened out. Also, installing thermal blankets inside the walls and roof helps conserve heat.

Greenhouse Modifications and Procedures Used to Protect the Environment

When constructing and operating a greenhouse, the owner should follow all government regulations. The structure's design or modifications should minimize the use of hazardous pesticides and other chemicals. Use the least toxic method of controlling pests. To ensure an optimal environment for plants, lower the humidity to reduce the risk of disease. Installing a humidity control system helps regulate the amount of moisture in the greenhouse. Providing adequate spacing for plants facilitates growth.

To prevent pests from entering the greenhouse, place screens over vents, construct screened entryways, and isolate and inspect all new material upon arrival.

The owner can prevent the development of runoff pollution from water-fertilizer solutions by carefully designing or modifying the greenhouse site and its structures. A suitable location helps protect the integrity of the environment if it offers good drainage and an irrigation system that can be recycled.

Summary

The greenhouse owner should implement techniques that conserve energy and protect the environment. Various modifications, such as optimizing interior lighting and painting the interior with white latex, minimize the need for supplemental electricity. Installing a humidity system regulates the growing environment and enhances plant development.

Greenhouse Operation and Management

Credits

Boodley, James W. *The Commercial Greenhouse*, 2nd ed. Albany, NY: Delmar Publishers, 1996.

Greenhouse Operation and Management (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1990.

Herren, Ray V. and Roy L. Donahue. *The Agriculture Dictionary*. Albany, NY: Delmar Publishers Inc., 1991.

Kessler, J.R. Jr. "Hobby Greenhouse Operations and Practices." Auburn University. <<http://www.aces.edu/departments/extcomm/publications/anr/anr-1153/anr-1153.html>> accessed 12/19/01.