

Shedding some light on shade cloth

Does your garden space need a little shade to be most productive?

Managers of traditional glasshouse greenhouses apply whitewash to the exterior to reduce the amount of light entering the structure.

They understand this will reduce the total number of lumens entering the structure and reduce heat buildup. Traditional glasshouse greenhouses are expensive to build and maintain. Hoop houses, high tunnels, and geodesic domes (all are considered enclosed spaces) are inexpensive alternatives to traditional greenhouses but do have similar light and heat issues.

Wyoming receives many more days of full sunshine during the growing season (as compared to other U.S.

locations) that even an outside garden may benefit from shading.

Issues tend to show themselves quickly because of the light intensity in Wyoming.

Tomatoes and peppers will be the first to show signs of excessive light exposure and heat stress. Symptoms include the production of smaller-than-average leaves and rolled or curled leaves (often mistakenly blamed on phenoxy herbicide exposure).

Then, later during the production season, there may be poor fruit-set (often mistakenly blamed on lack of pollinators in enclosed space production), sunburn, white or hard

core, and yellow shoulder (see photos page 9).

Some shade and lowering the temperature can fix these things.

Throwing some shade

Historically, shading compounds were relatively cheap and easy to apply. Whitewashing a hoop house, high tunnel, or geodesic dome may not be the first solution that comes to mind, but it can be done, as the products can be used on any covering material and structure (See “Don’t add lime to water” page 9).

Shading compounds reflect light outside the greenhouse before it enters, normalizing the number of lumens received, which, in turn, reduces temperatures. Lime-based whitewash products can be easily washed off with water and in some wetter environments (other than Wyoming) is usually washed off naturally by the end of the summer.

Newer types of shading compounds are a bit longer lived and usually require physical removal (more than just washing off) in the fall if you plan on late season or winter production.

What are the alternatives to painting on shade? If you can’t wait for your trees to grow, shade cloths are a good alternative, and there are a variety from which to choose. Shade cloth is usually a woven or knitted



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polyethylene material that limits the amount of light passing through. For example, a 30 percent shade cloth allows 70 percent light through. A 30 percent shade cloth is the most common recommendation for growing vegetables.

The percentages do not directly translate to heat reduction (for example, 30 percent shade cloth does not equal a 30 percent reduction in temperature). In a comparison of high tunnels with and without a 30 percent black shade cloth, researchers at Purdue University found the 30 percent shade cloth reduced the temperature from 119°F to 109°F, about 7.5%. (See bit.ly/add-shade-to-hightunnels.)

Many options available

Shade cloth is available in a variety of configurations and can be custom ordered to fit your garden or enclosed space. Black, aluminum-coated (aluminet), white, and other colors can be found. Black shade cloth seems to be the most common (it is usually a little less expensive). The aluminum coated product and white options are reflective, do not absorb heat, and may reduce the temperature further than the black product. Colored shade clothes (green, red, tan) are used to filter different wavelengths of light required by some crops.

Shade cloth should be hemmed to keep it from fraying. Grommets can also be added to the hem to assist anchoring. By using stranded wire around the perimeter of the area to be covered, one can connect the grommets to the wire with carabiner clips for easier installment and removal.

Shade cloth can be installed on the outside or inside of a structure.

Timing of application is the last thing to discuss. In areas of Wyoming considered USDA zone 5a, installation is about May 15 and removal about September 15. The decision to install the shade cloth is driven by environmental conditions and personal needs. The odds of a frost or freeze in Zone 5a are significantly decreased by May 15. Increased daily lumens, and many days over 100 degrees in the structure, drive the installation timing.

Removal in the fall is determined by the possibility of snowfall, as the shade cloth will prevent the structure from shedding snow. Higher elevations and shorter growing seasons in some of Wyoming's more challenging growing locations may not benefit from shade cloth.

If your garden or enclosed space is in the full Wyoming light and you think your garden is not reaching its full potential, a little shade might do some good. If you are looking for shade cloth sources, enter "shade cloth greenhouse" into your web browser, and several options for you to shop will be provided.

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Tomato with yellow shoulder disorder

Don't add lime to water

Whitewash is made from a process called "slaking quicklime." The process is the addition of lime to water to create a putty or mortar (this process can be dangerous as it is an exothermic reaction that can give off large amounts of heat).

The putty or mortar is further diluted with water to make a product that has the consistency of paint. Whitewash products can be purchased commercially, or you can make your own version by diluting latex paint with water.

University researchers have published papers on the productivity of enclosed spaces and the need to provide shade. Many plants grown in enclosed spaces are "light saturated" at levels about one-half the intensity of direct sunshine. The result is the additional light cannot be used by the plant and begins to decrease its productivity because of the temperature increase that accompanies this additional light. More information is available at bit.ly/greenhouse-shading.



Tomatoes with sun scald

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