Acclimatization of Foliage Plants - What Is It?

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The demand for foliage plants has been very strong for the past several years. Many growers who grew no foliage 5 years ago now have a considerable portion of their production space devoted to foliage. It is fairly easy to produce what appears to be good quality foliage plants. However, producing a plant to later survive indoors takes careful planning.

Webster defines acclimatization as ". . . the climatic adaptation of an organism, especially a plant that has been moved to a new environment." What does this really mean and what can growers do about it?

Growing tropical foliage plants takes a different attitude by the grower than growing other crops. Most floricultural crops such as chrysanthemum, poinsettias, carnations, roses, etc. are produced realizing that they will live only for a short time after they leave the production area. This "life-time" could be only a few days to 6 weeks. The consumer does not really expect these crops to live indefinitely; however, he does expect his foliage plants to live forever. Therefore, the attitude of the grower needs to be similar to that for growing bedding plants.

Bedding plants are not grown as finished products but are grown as starter plants for the consumer to transplant and grow on. To give bedding plants the best chance for survival, they are hardened-off before sale. Foliage plants need to be hardened off before sale also; this is called acclimatization.

The type of hardening-off plants need depends on where the plants will finally be placed. Bedding plants need to be hardened-off to withstand outdoor landscape conditions which are generally favorable for plant growth. Foliage plants are grown in relatively high light, high fertility and high humidity, then sold to be placed indoors where there is usually very low light, low humidity and erratic watering and fertilization. The more drastic the differences between production and indoor conditions, the greater the need for acclimatization.

The general recommendations for acclimatizing tropical foliage plants are as follows:

1. Reduce light levels to 80-90% shade in the greenhouse or holding area. Indoors, plants should be held at 150 fc of light for at least 12 hours/day.

2. Leach the pots thoroughly to remove excess soluble salts.

3. Gradually reduce watering frequency to once or twice a week.

4. Do not fertilize.

For best results, these conditions should be initiated at least 4 weeks before sale. However, even one week of acclimatization is better than none.

What are we really doing to these plants when we acclimatize them and why is it so important? Since light is the most critical factor to consider when moving plants indoors we will devote the remainder of this article to its discussion.

Basically we are trying to change the internal physiology of the plant from that which plant ecologists call sun-grown plants to that of shade-grown plants. Many plants taken directly from a greenhouse and placed indoors do not survive because they have a sun-plant physiology. Leaves which develop in the sun usually have their food producing system at maximum capacity at one-fifth full sunlight. Also, the high light usually stimulates a second or third layer of light trapping organs in the leaf so sun leaves are usually thicker than shade leaves. While sun leaves are very efficient at producing food under high light, they are very inefficient under low light levels.

This situation is reversed in shade leaves. Shade leaves have their food producing system light saturated at less than one-tenth full sunlight. Shade leaves are also generally thinner than sun leaves. This means that shade leaves are more efficient at lower light intensities than sun leaves.

The rate of food production or photosynthesis by a plant is directly dependent on light intensity. The rate of food consumption, or respiration, is more dependent on temperature and available food reserves. Generally, when a plant is moved from a greenhouse to a consumer's home here's what happens: Light intensity drops drastically; this in turn drops the rate of food production to a very low level. Temperature, on the other hand, does not change so drastically and the rate of food consumption remains high. This situation usually results in the plant using up food at a faster rate than it can produce, which if not corrected can eventually starve the plant.

One way to tell if the plant is running a food deficit is to measure its light compensation point. A light compensation point essentially is the light intensity at which food production and food consumption are equal. Raising the light intensity above the light compensation point produces more food than is being consumed, while lowering the light intensity below the light compensation point produces less food than is being consumed.

Light compensation points can and do change depending on the conditions the plant is placed in. Plants grown under high light have high light compensation points (100-700 foot candles) where plants under low light have lower light compensation points. Also, different types of foliage plants can have drastically different compensation points even when grown under the same conditions. All plants will begin to lower their light compensation points when moved indoors. Their chance for survival is partially dependent on how high their light compensation point is initially and how low the light level is indoors. Essentially the plant's survival is a race - a race between light compensation point and food reserves. If the plant can lower its light compensation point before the food reserves run out it will have a greater chance for survival. When the plant is losing the race it begins to take drastic action. It will begin to sacrifice part of itself such as dropping older leaves, so that the rest can survive. Add this to the effects brought on by low humidity, excess soluble salts in the medium and either over- or under-watering and the chances for survival of unconditioned plants decreases.

What can you do to help increase the chances of plant survival? Growers have two options. One is to follow the acclimatization suggestions already mentioned. Although these methods are very effective, they also increase production costs. The other option is to grow the plants in production under conditions more similar to those the plants will be ultimately placed in. This means, in part, to reduce light levels. Research has shown that growing foliage plants under 40-60% shade actually produces larger, more attractive plants which finish earlier than those plants grown in full sun.

Where can you find recommendations on acclimatization and other foliage plant problems? Many publications now carry such recommendations, however, the best source I've found is the Foliage Digest. This monthly publication was spawned from the Florida Foliage Grower and is available for $15.00/year from: Foliage Education and Research Foundation, P.O. Box Y, Apopka, FL 32703.

Each grower must examine his own situation to determine the degree to which he can include these procedures. However, including plant conditioning as a part of your definition of a "quality" foliage plant will result in a more satisfied customer.

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LINDANE - Rebuttable Presumption Against Registration ...

Within the next few months, uses of lindane will be restricted and the registration modified for commercial uses of Lindane. Home owner uses will be canceled altogether. Lindane is registered now primarily for borers, thrips and leafminers. The new label will be restricted use and will specify protective clothing should be worn when mixing and using lindane, the user should shower afterwards, and that women of child bearing years should not be involved in mixing, loading or applying lindane. If you have comments on this action, direct them to Document Control Office (TS-793), Room E-447, Office of Pesticides and Toxic Substances, EPA, 401 M St., SW, Washington, DC 20460.

MORE ON MAVRIK...

Zoecon Corporation (the folks that brought out Enstar a few years ago) has developed a new synthetic pyrethroid called fluvalinate (Mavrik®). Zoecon is developing Mavrik® for leafminer control on chrysanthemums and for other pests. Thus far in our phytotoxicity demonstrations, Mavrik® has not injured the foliage of Starburst, Jade, Jasmine and Jackstraw varieties. We plan to test it on the foliage and flowers of about 30 chrysanthemums varieties. Mavrik® is no weak sister. It has been shown to be effective for corn earworm, and cabbage looper