Dispelling Myths in Plant Propagation Information©

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INTRODUCTION

A myth can be defined as "a fiction or half-truth, especially one that forms part of an ideology." The word "myth" often brings to mind stories of characters or creatures of folklore that are generally accepted as fictional, but may also refer to modern-day beliefs or stories ("urban legends" or "urban myths") whose origins may or may not be based on actual fact. The concept of a myth can be extended to our belief system on how things should be done. We can use this idea to help examine the validity of information that we utilize and perpetuate in plant propagation practices. We should especially be on the lookout for myths in plant propagation information when we hear comments such as "That's the way we've always done it," "That's how I was taught to do it," or "That's what the books say."

SOURCES OF PROPAGATION INFORMATION

Information about plant propagation in a nursery setting can come from a number of sources, both internal and external. Internal sources include both associates and production records that provide information about what has worked or not worked in the past. External sources of information on plant propagation can include other industry professionals, scientific journals, reference books, and extension publications. Commercial firms that market seeds, cuttings, and starter plants often provide propagation and cultural information to assist their customers. Other external sources of information include meetings and proceedings of scientific and professional societies (including the I.P.P.S.). Additional sources of information available to the general public include gardening and plant society meetings and publications, as well as the vast array of Internet resources.

The reliability and applicability of information from both internal and external sources can vary tremendously. Internal information can be very useful when well documented with notes and production records, while information based on memory can be subject to error and, even worse, may eventually be lost if not recorded for future reference. Information from academic sources, commercial firms, and reference books are often thorough in their treatment on the propagation of specific plants; however, such information should still be approached as guidelines or starting points since no two sets of conditions (climate and weather, propagation facilities, species and cultivars to be produced, condition of propagation material, etc.) are exactly alike. Information from popular gardening sources may or may not be reliable; anecdotal information based on experience with a few seeds or cuttings may be far from optimal for application in a commercial nursery setting.

MYTHS IN CUTTING PROPAGATION

What are some of the myths that we may encounter in plant propagation? Let's examine some propagation myths from three areas of cutting propagation: technique, facilities, and management.

Myth #1: Leafy cuttings must be prepared by removing (cutting or stripping off) the lower leaves. Some sources recommend removing up to two-thirds of the leaves on a stem cutting. This practice may also involve reducing the size of the remaining leaves. Reasons for the practice of lower leaf removal generally include: (1) Reduced transpiration of the cuttings, (2) Easier insertion of cuttings into the rooting medium, (3) Disease prevention (since leaves in contact with rooting medium can rot), and (4) Greater uptake of auxin. On the other hand, there are some potential problems with this practice, as it: (1) Removes photosynthetic tissue, thus reducing the supply of photosynthates (energy source) to the developing root system, (2) Requires extra time and labor, (3) Provides additional wounds for entry of disease organisms, (4) Can facilitate overly deep insertion into the rooting medium, and (5) Can reduce basal branching of the newly rooted cuttings.

The practice of removing leaves and reducing the leaf size traces some of its origins to the time before intermittent mist systems were available and loss of water by transpiration was more difficult to manage. This practice also has some origins in past times when most cuttings were rooted close together in community trays for later potting into individual liner pots, rather than being rooted directly into liner pots.

Alternatives to this practice include the following: (1) Prepare cuttings without leaf removal. Insert cuttings only deep enough to hold the cutting upright. It is important to consider whether cuttings root from the nodes, internodal tissue, or the basal cut surface so that cuttings are prepared properly and leaves will not be buried in the rooting medium. (2) If lower leaves interfere with insertion of the cuttings into the rooting medium, remove only a minimum number of leaves (often only one leaf). This may be required for plants with large, thick, or stiff leaves.

Myth #2: An intermittent mist system is needed for the commercial propagation of leafy cuttings. The benefits of intermittent mist systems for cutting propagation have made their use common in cutting propagation since such systems: (1) Reduce transpiration, (2) Replace water lost by transpiration, (3) Maintain a moist rooting medium, and (4) Provide automatic systems that are programmable and flexible. However, there are potential problems that may be encountered in cases where an intermittent mist system does the following: (1) Keeps the rooting medium overly wet, (2) Encourages growth of moss, algae, and liverworts, (3) Leaches nutrients from leaves or the rooting medium, (4) Spreads disease due to splashing water, or (5) Cools the rooting medium.

Alternative systems that have gained popularity in some regions and with many crops include fog systems and high-humidity enclosures. Fog systems maintain humidity without direct application of water to the cuttings and propagation medium. Fog systems include high-pressure systems (in which a single, centralized pumping unit can handle a large propagation area) and fan/nozzle systems (often preferred for smaller propagation areas). Propagators that switch from intermittent mist systems to fog systems often encounter a learning curve and the need to modify some of their cutting management practices.

High-humidity enclosures may range in size from a plastic-covered bed in a greenhouse to a full-sized greenhouse (such as a hoop house covered with white polyethylene alone, or clear polyethylene under shade). A limited amount of water is applied inside the enclosure during the day (using conventional spray nozzles, irrigation nozzles, or a fog system) to maintain the humidity in the enclosure. The additional heat build-up often encountered with these systems makes them quite suitable for cuttings of many crops that can normally grow well in warm, humid conditions.

Myth #3: Successful cutting propagation begins with appropriate methods of cutting collection, and continues through cutting preparation, treatment, and rooting. While this sounds quite reasonable, in actuality successful cutting propagation begins with production activities carried out on the source (or stock) plants weeks, days, and hours before cuttings are collected. Activities that influence the eventual performance of cuttings include correct plant identification, fertilization (nutrition), pruning (to maximize vegetative growth), sanitation and crop protection, crop rotation (age/vigor), and irrigation (water status).

Production personnel throughout the nursery have an influence on the outcome of propagation practices when production plants are the source of cutting material. Communication between propagation and production personnel is key to establishing the interdependence of the two groups. Part of this communication involves training production personnel in the 'hows' and 'whys' of cutting propagation so they may understand how their actions and decisions will influence future cutting crops, even though they may never work in the propagation department. Planning, scheduling, and documentation of all critical activities in the production process provide the essential guidelines to be followed in completing the propagation/production cycle.

CONCLUSION

A vast amount of propagation information is available to the modern propagator, but the quality of the information ranges from sound and reliable to outdated and unsubstantiated. Recommendations based on even the best of advice from qualified sources may not always be directly applicable to another nursery situation and will require some modification.

Propagators should not assume that the old ways of doing things remain the best ways of doing things. Experimentation should remain a key activity in any propagation department. At the same time, older methods should not be forgotten as they sometimes find application with new crops or growing situations.

Don't believe everything you hear or read. If it sounds reasonable, try it out. Test it. Prove it. Assume you can improve on it.