



By Erik Runkle



Improving Crop Quality

Plant quality is an elusive term to describe. If you ask a grower to define what crop quality is, a common response is to hesitate and then say, “I know it when I see it.” That’s probably because a lot of different parameters are simultaneously considered when determining whether a plant is of low, moderate or high quality. Plant quality is also subjective and situational, which makes developing a definition difficult.

Plant quality attributes depend somewhat on the crop, but there are some parameters that have commonality, especially for flowering plants:

- Flowers are prolific, undamaged, large, and at an acceptable stage of development
- Leaves are green, not yellow or chlorotic
- Plants are free of diseases, insects, and weeds
- Plants are of an appropriate size for their container

Below are some of the major factors that contribute to the production of high-quality floriculture crops:

High daily light integral (DLI). Many plant quality attributes improve with high light. Typically

branching, flower number and the intensity of flower color increase as the DLI increases. High light is a major reason why plants displayed during Spring Trials in California are of such high quality. The DLI can be increased by reducing or eliminating anything that casts shade (hanging baskets and infrastructure), maximizing light transmission of a glazing material, and providing high-intensity supplemental lighting.

Low temperatures. There’s often a trade-off between rapid flowering and high plant quality. Plants grown at a high average temperature flower relatively quickly, but because they have a short period of time to harvest light before flowering, flowers are usually fewer and smaller. In contrast, cropping time increases as temperature decreases, but plants capture light for a longer period of time and thus, flower number, size and color often increase. Growers have the challenge of finding the

“sweet spot” — a balance between crop time (production cost) and crop quality (sales price).

Generous plant spacing. Even under a high DLI and at cool temperatures, plant quality is usually reduced when plants are spaced closely together. Close spacing effectively reduces the DLI available to a plant, as neighboring plants are competing to capture light. In response, plants elongate, branching is inhibited, and stems are thinner at tight spacing. Again, growers have to identify a balance between adequate spacing and input costs (costs per pot per week).

Proactive PGR applications. Many floriculture crops are vigorous and require management of plant height. Plant growth regulators (PGRs) are also sometimes applied to stimulate branching and/or flowering, to inhibit lower-leaf yellowing, or to increase flower longevity. These inputs increase production costs, but they can make a large improvement in plant quality. Applying PGRs at appropriate rates and volumes — and especially at the right times — are keys to improving crop quality.

Producing high-quality plants also requires adhering to the growing essentials, including:

- Root zone management: keeping plants properly irrigated with water that contains a desirable alkalinity and fertilizer
- Insect management: constantly monitoring insect populations and being proactive to manage pests
- Disease management: watering practices, humidity management, and sanitation can help keep pathogens from spreading
- Weed management: greenhouse floors with exposed soil often contain weeds and algae, which spread weed seeds into plants and harbor insect pests.

Clearly, it’s not easy (or cheap) to produce high quality plants. Growers who produce the highest quality plants are usually those that pay close attention to details. It takes more time, effort and money, but the results clearly show when plants are marketed. ☒

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Keys to the production of high-quality plants include high light, moderately low temperature, generous plant spacing and proactive PGR applications.

