GROWERTALKS

Features

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Watering More Efficiently With Data-Driven Decisions

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Historically, many growers relied on substrate surface color or timers to decide when to water, but what's happening beneath the surface in the root zone can be a very different story. Over the years, new strategies have emerged to help growers water more effectively.

The five levels of substrate moisture: A common language

Let's start with the five-level substrate moisture scale. Level 1 is bone dry—plants wilt, substrate shrinks from the pot edge and crumbles to dust. Level 5 is fully saturated—water drips freely from the substrate. Levels 2 to 4 represent increasing moisture, with clear visual and tactile cues.

Assigning a number value to soil moisture removes the guesswork from watering. Instead of asking "Does this look dry?" ask, "Is this a level 2 or 3?" This simple shift helps growers clearly communicate with their teams. Instead of vague terms like "wet" or "dry," you can provide a clear target that reduces mistakes and promotes uniformity across crops.

Why surface color isn't enough

Judging irrigation needs by surface color alone is risky. Different substrate components can make the surface look dry even when the root zone is wet or vice versa. A great example of this is growers making the transition to wood fiber, which both looks and acts much differently than a traditional peat and perlite mix.

Going solely based on surface visuals can lead to poor irrigation management. The real action is below the surface, where roots need both air and water. Healthy roots grow in air, not water, and allowing the substrate to dry down between irrigations encourages stronger, deeper root systems. Overwatering not only wastes resources, but also limits oxygen, stunts roots and increases disease pressure.

Water by weight: Turning subjective ratings into data

The 1-to-5 scale is helpful, but still subjective. That's where "water by weight" comes in. Weigh trays or pots at level 1 (dry) and level 5 (wet) to set weight value targets for objective, repeatable irrigation. For example, if a tray weighs 500 g dry and 1,300 g wet, you may choose to set a dry target of 800 g and a wet target of 1,100 g. Water when you hit the dry target and stop at the wet target. This method is especially useful for producing young plants with limited substrate volume and for training new irrigators by removing the guesswork.

Tracking wet/dry cycles also reveals plant transpiration trends. If drying slows, transpiration rates may be too low, which can lead to nutrient deficiencies and root rot. Water by weight also helps you know exactly how much water is being delivered to the plant, which is critical for uniformity.

Weather, crop stage & prioritization

Efficient watering isn't just about the substrate—weather and seasonality also play a major role in daily decision-making. A cloudy January day requires less water than a sunny May afternoon. Always ask: "Can these plants make it to tomorrow without water?" If yes, wait— especially late in the day, since wet foliage overnight increases disease risk. Crop sensitivity and growth stage should also be considered since reproductive plants risk flower or fruit abortion if they dry down too hard. Consider developing a watering priority list based on crop type and stage to ensure your team is on the same page.

Geography and greenhouse conditions also play a role. Humidity, airflow and light levels affect drying rates. Understanding these variables helps you anticipate irrigation needs, staying proactive rather than reactive.

Assessing irrigation needs: Good, better, best

Think of irrigation decisions as a hierarchy:

- Bad: Watering by timer
- Good: Checking surface color
- Better: Picking up pots to gauge weight
- Even better: Inspecting roots and using the 1-to-5 scale
- Best: Water by weight—real data drives decisions

No matter whether you irrigate by boom, drip or with your trusty watering wand, it's crucial to know how much water you're delivering per pass and make sure it is uniform. Water by weight can help you calibrate your system and ensure uniformity. Don't forget the "edge effect," where plants at the edge of a crop dry down faster and may need extra attention.

There are a lot of factors that go into irrigation decisions and it's essential to support those decisions with the right data and protocols. By adopting the five-level substrate moisture scale and water-by-weight methods, you can move beyond simple visual cues and make data-driven decisions. **GT**

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