

# The 1 to 5 Plug Tray Moisture Scale

**Goal:** Describe the five levels in the plug tray moisture scale, which is a tool for more consistent irrigation practices and better communication of substrate moisture level for plug and liner growers.

**1 to 5 Moisture Scale: why is it important?**

Using a standardized approach to evaluate substrate moisture levels can greatly improve the performance and consistency of a young plant operation. Develop a common language of “wet” and “dry” to improve communication between employees in different greenhouse sections. The Moisture Scale is used by many plug and liner growers as a key part of their irrigation management.

Moisture Level	Description	
5	The substrate is completely saturated and appears shiny and black in color. Free moisture can be seen at the substrate surface and dripping from underneath cells. Trays may bend under the heavy weight of the water. In your hand, moisture drips from substrate without squeezing.	
4	The substrate is at maximum water holding capacity and appears dark. It is not shiny, and no free moisture is visible at surfaces. The tray may still bend under the water weight. Lightly pressing down on the substrate will force water from underneath the cells. Squeezing the substrate will quickly release moisture from your hand. After squeezing, the substrate will retain its shape.	
3	The substrate is drying due to plant uptake and evaporation. The substrate appears brown in color and is lighter in weight. Strongly squeezing or pressing the substrate only releases a few water droplets. After squeezing in your hand, the substrate begins to crack apart into chunks.	
2	The substrate appears light brown to tan and has become light in weight. Most rooted crops irrigated at this stage. Plants may begin to wilt. Squeezing the substrate as hard as possible releases no water droplets. If you squeeze the substrate next to your ear you can hear sounds of moisture moving through pore spaces. After squeezing, the substrate is loose and falls apart in your hand.	
1	Completely dried and tan to grey. No water is available and the substrate is very light weight. Many plants may not recover if wilted to this stage. Substrate may separate away from tray cell walls. Squeezing the substrate as hard as possible will not release any water droplets, and when squeezing next to your ear you cannot hear moisture moving through pore spaces. After squeezing, the substrate crumbles in your hand and resembles dust.	

**How to use it:** Moisture levels can be used with specific greenhouse procedures or stages of plant development as a means of quality control or for improved crop uniformity. They can help communicate moisture management ideas (example: let plants dry to Level 2 before irrigating them to Level 4), help fine-tune crop protocols, and aid in other substrate decisions. Use caution when evaluating substrate moisture: sometimes the top of a cell may be drier than the bottom. Base your management decisions on the moisture in the root zone.

**For more information:** Contact authors Jinsheng Huang and Paul Fisher, [pfisher@ufl.edu](mailto:pfisher@ufl.edu). Thanks to our Floriculture Research Alliance at University of Florida sponsors ([floriculturealliance.org](http://floriculturealliance.org)) including A.M.A. Plastics, Blackmore Co., Fafard et Frères Ltd (Canada), Greencare Fertilizers, Pindstrup, Premier Tech Horticulture, Quality Analytical Laboratories, Sun Gro Horticulture, and leading young plant growers. University of Florida IFAS Bulletin FRA S10. April 11, 2013.