

## Leibig's Law of the Minimum

Many growers have learned that there is more to plant nutrition than NPK. Justus von Leibig formulated "Leibig's Law of the Minimum" in the 1840s. He showed that plant growth is always limited by the lowest level of each essential mineral element. This concept is often illustrated by a barrel with staves of different lengths, each of which represents an essential mineral element. You can only fill the barrel to the level of the lowest stave. By analogy, a plant can only use nitrogen, for example, to the extent of the lowest level of each other essential mineral element. Feeding at 200 ppm N with a fertilizer that contains no calcium, magnesium or sulfur (all macronutrients) means that most of the NPK cannot be used by the plant. This necessitates leaching of the unused salts to avoid a salt build-up, not practical in ebb-flood growing. Because Dyna-Gro Nutrition Solutions are complete, they can be applied at much lower rates while achieving much better growth. This is shown by the results at Oglesby Plant Labs where switching from Peters/Miracle Grow Excel at 200 ppm N to Dyna-Gro at 100 ppm N resulted in getting plants off the bench in 1/3 less time.