

Estimative Index Fertilization Method

Contributed by Tom Messenger

The Estimative Index, or EI for short, is a reasonably new method of dosing fertilisers in a planted aquarium. The basic idea involves dosing more nutrients than the plants actually need, but in such a balance that algae cannot take advantage. This includes the micro as well as macronutrients, and works best for aquaria with high lighting and very dense planting.

Wait a minute. Doesn't excess nutrients in the water column led to increased algae growth? Well no, not really. Remembering that it is an imbalance of nutrients, rather than an excess which causes algae. In order for algae to proliferate it needs other excess components such as lighting and CO₂ to consume the abundance of nutrients supplied by this fertilization method.

EI is based on the effects of high lighting and stable CO₂ injection at around 30ppm. CO₂ saturation levels can either be checked by comparing the pH and KH readings, or by investing in a CO₂ Drop Checker. The latter is far more accurate and shows real time results with color changes based on low, medium and high CO₂ levels.

How does Estimative Index Work?

A standard EI schedule works around a 7-day week, which makes it easy enough to work out. On the Monday (the first day), you would add your Macros, and on the Tuesday you could safely add the Micros without the fear of losing the Iron through a reaction with the Phosphate. The dosing continues like this on alternate days, until Sunday where you would do a 50% water change. This resets the nutrient levels in the aquarium, and makes sure that the excess nutrients are removed. The cycle starts again on the Monday with the Macros. This schedule can obviously be adjusted to suit your needs, but these are the basic principles.

Powdered fertilisers are most commonly used when using the EI method because they are easy to administer.

Primary Fertilizers

The primary macro elements consists of Nitrate (found in KNO₃), Phosphate (found in KH₂PO₄), and Potassium (found in both of these compounds as K). The other primary class of elements is lumped in what is known as micro elements which is a mixture of different minerals i.e. iron, magnesium, boron, etc.

Sometimes, but not necessarily, people will add Magnesium Sulphate (MgSO₄) to help with the buffering capacity of the water (measured as KH). When using R/O water or any water with a low buffering capacity, this will aid against pH crashes overnight due to CO₂ build-ups (which can sometimes form an excess of carbonic acid). Nitrates will also form nitric acid, which will try and push the pH down as well. Even with the relatively high Nitrate levels used in EI, the acidifying effect is not as noticeable as it is with CO₂ injection. You can use a solenoid on a timer to turn off the CO₂ supply at night which can help to keep things stable. It should be turned on again an hour or two before the lights come

on again in the morning to give the CO2 levels a chance to build up again.

Proper Mixture Ratios

Having separate solutions for NO₃, PO₄ and Micros will allow you to alter the concentrations of each parameter, which is helpful when fighting algae or certain nutrient deficiencies.

Generally it is accepted that a ratio of 10:1 NO₃ and PO₄ works well, but again, it differs for each plant species used. You should look at around 20-30ppm of NO₃, and so 2-3ppm of PO₄. The Potassium (K) can be kept the same as NO₃, and the CO₂ should be kept at a constant 30ppm.

You can follow these general dosing recommendations.

- Discuss and comment on this article here on the ASW Forums.