

CALCULATING FERTILIZER NEEDS

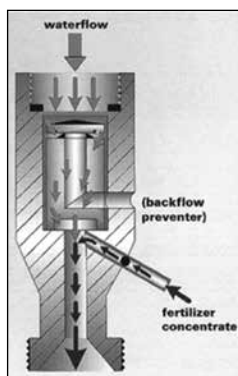
How to Calculate Fertilizer Stock Solutions When Using Injectors or Proportioners.

Greenhouse growers frequently express the concentration of fertilizers, in terms of parts per million (ppm). Fertilizer bags for the commercial grower will list mixing instructions on the label to achieve a desired ppm of Nitrogen. The amount used varies depending on the amount of Nitrogen in the formula. Nitrogen is the first value in the formula. For example: 20-10-15 formula has 20% Nitrogen.

The initial calculation relies on weight. Going to the scale each time you mix a stock tank solution is inconvenient so use a container that you can mark on. Once you weight the fertilizer needed for your stock tank you can draw a mark on the container and in the future simply refill to the mark.

Here are two examples of how to achieve 100 ppm Nitrogen using first, a Siphonex (Hozon) Proportioner and then a 1:100 Gator XL Injector. 100 ppm is a handy rate because to increase to 200 you simply double the amount of fertilizer you use with the same amount of water in your stock tank. For 300 pm, triple the amount, etc.

HOZON - SYPHONEX PROPORTIONER



The Hozon has a proportion ratio of 1:16. For each gallon of concentrate taken up, it produces 16 gallons of liquid fertilizer solution. Example: If a fertilizer recommendation is 2 TBSP per gallon for final concentration, make the solution 16 times greater than the 2 TBSP rate (i.e., $16 \times 2 = 32$) so 32 TBSP per gallon is the concentrated rate. When mixed with water by the Hozon, the solution will come out of the hose end at the recommended rate of 2 TBSP per gallon.

The Hozon draws 1 gallon of concentrate in about 5 minutes, and this will be mixed with approximately 12 to 18 parts of water through the hose, i.e., 5/8 inch instead of 1/2 inch, produces a higher flow rate. Excessive back-pressure will cause the siphon to stop drawing. The Hozon should not be more than 50 feet from the nozzle end to work properly. If more than 50 feet of hose is used, the Hozon can be connected between two sections of hose.

Ounces of different types of water-soluble fertilizer needed to make 1 gallon of concentrate for use with Hozon (1:16 ratio).

Fertilizer Analysis	PPM of Nitrogen Desired				
	100	150	200	250	300
10-30-20	2.0	3.0	4.0	5.0	6.0
15-30-15	1.35	2.03	2.70	3.38	4.05
20-20-20	1.0	1.5	2.0	2.5	3.0

GATOR XL INJECTOR

These injectors operate without electricity, using water pressure as the power source. They are installed directly in the water supply line. Water flow activates the injector, which takes up the required percentage of concentrate directly from a container with stock solution. Inside the injector, concentrate is mixed with water, and water pressure forces the solution downstream. The amount of concentrate dispensed is directly proportional to the volume of water entering the injector, irrespective of variations in water flow or pressure that may occur in the main line. The Gator XL delivers at a fixed proportion of 1:100.



This is the basic formula for determining ppm in 100 gallons of water:
 $A \times 75 = B$

A = the % active ingredient in the fertilizer

B = ppm contained in 1 ounce of the material in 100 gallons of water

Example: 20-10-15 contains 20% Nitrogen (.20).

$$\text{So: } .20 \times 75 = 15$$

Divide the desired ppm by this number to determine the amount of fertilizer needed in 100 gallons of water.

$100/15 = 6.66$ ounces of 20-10-15 in 100 gallons of water will equal 100 ppm Nitrogen.

Since the 1:100 injector mixes at a rate of 1 gallon of stock to 100 gallons of clear water, you would add 6.66 ounce of dry fertilizer to each gallon of water in your stock tank to achieve a 100ppm rate delivered to the plants.