



UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Fertilizer Injector Calibration

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It is important to check the calibration of your fertilizer injector at least once before each growing season. A fertilizer injector that is out of calibration can quickly cause nutrient deficiencies if it is not supplying the adequate amount of fertilizer that you are anticipating. Conversely, if the injector is outputting too much fertilizer you will be over applying fertilizer, which will cost more money, may have adverse environmental impacts, and may lead to nutrient toxicities.

Injector calibrations take only a few minutes of time. There are two common methods of calibrating an injector, “The Flow Method” and “The EC Method”. The Flow method is a physical calibration where the amount of stock solution taken up by the injector is compared to the amount of water with the diluted fertilizer is discharged. The EC method checks the concentration of soluble salts in the discharged water with diluted fertilizer in it. Below are the steps to follow for both methods.

Injector Calibrations

Flow method: Injector ratio = diluted volume ÷ stock volume

- Place 500 ml of stock solution in a graduated cylinder
- Remove all air bubbles from injector lead and place lead in graduated cylinder
- Run water through the injector, collecting fertilizer in a large container to known volume (eg. 5 gallons; larger quantities for high ratios)
- Measure how much stock solution was used (in ml)
- Convert diluted volume to ml
- Use above equation
- Injector ratio calculated should be within 1 to 2% of your injector

Example – Injector ratio = 18,925 ml (5 gallons) ÷ 94 ml (amount of stock used)
Injector ratio = 201

EC Method:

- Calibrate EC meter
- Measure EC of clear irrigation water
- Measure EC of irrigation water at the end of the hose after injector
- Subtract EC of irrigation water from EC of fertilizer
- Refer to fertilizer label

Example – You want to apply 200 ppm N of Jack’s Professional 20-3-19 Petunia FeED Plus Mg. The clear irrigation water has an EC of 0.12, and the irrigation water at the end of the hose after the injector has an EC of 1.40.

$$1.40 - 0.12 = 1.28$$

Cross-reference the values from the table on YOUR bag of fertilizer with the value you calculated from your EC values.

<i>Desired N Feed Rate</i>	Injector Setting			E.C. Value (mmhos)
	1:15	1:100	1:200	
50 ppm	0.50	3.38	6.75	0.32
100 ppm	1.00	6.75	13.50	0.64
200 ppm	2.00	13.50	27.00	1.28

From the label of Jack’s Professional 20-3-19 Petunia FeED Plus Mg.
Each fertilizer is different; refer to the table that is specific to your
fertilizer

If the EC of the solution is not correct, then check if you have a problem with the dilution ratio. For example if your dilution ratio is 1:100, take 10ml from the stock solution and add into 1 liter of water. If the EC is what you expect, then adjust your injector up or down until you get the right EC. If the dilution is wrong make sure to add the right amount of fertilizer per the gallons of water to obtain the correct ppm concentration as shown on the fertilizer bag.