



Fertilizer-Injector Calibration

It's important to check the calibration of your fertilizer injector at least once before each growing season. Injector calibrations take only a few minutes, but a fertilizer injector out of calibration can quickly cause nutrient deficiencies if it isn't supplying an adequate amount of fertilizer. Conversely, if the injector is putting out too much fertilizer, it will waste money, may have adverse environmental impacts, and may lead to nutrient toxicities.

There are two common calibration methods: the flow method and the EC (electrical conductivity) 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 diluted fertilizer is discharged. The EC method checks the concentration of soluble salts in the discharged water containing diluted fertilizer.

Below are the steps to follow for both methods.

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.
- Divide diluted volume by stock volume.
- Injector ratio calculated should be within 1% to 2% of the setting on your injector.

Example: Injector ratio = 18,925 ml (5 gallons)/94 ml (amount of stock used)= 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. So, $1.40 - 0.12 = 1.28$

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

		Injector Setting			E.C. Value
<i>Desired N Feed Rate</i>	1:15	1:100	1:200	(mmhos)	
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 specific to your fertilizer

If the EC of the solution isn’t 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 it to 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 volume of water to obtain the correct ppm concentration shown on the fertilizer bag.

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