Fertigation with organic fertilizer

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Injector types

1. Gasoline powered pump

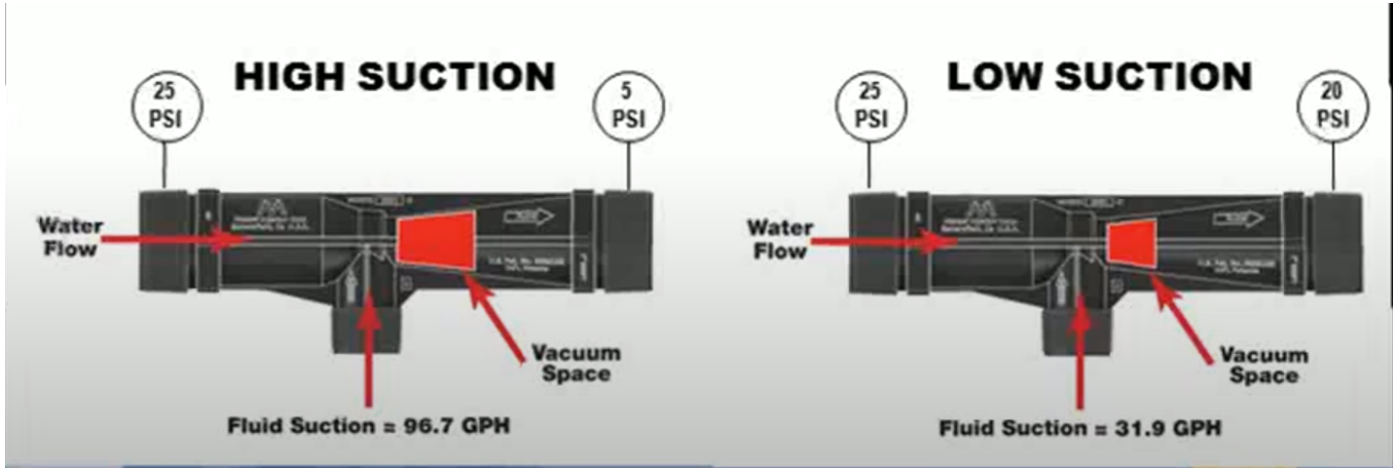
2. Venturi type “Mazzei”

3. Positive displacement pump or proportioner

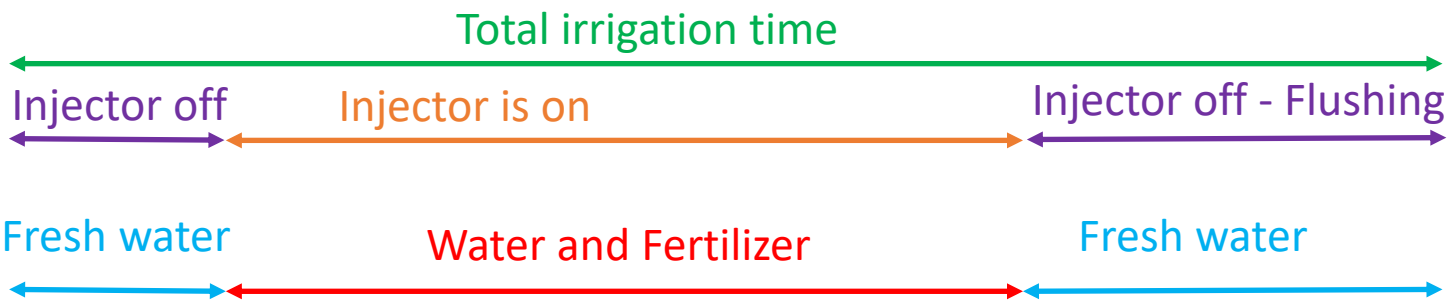
Injector Performance Table
Water Suction Capacity

Operating Pressure PSIG		WATER SUCTION	
Injector INLET	Injector OUTLET	Motive Flow GPM	*Water Suction* GPH
5	0	3.6 *(4.0)	78.0
	1		62.5
	2		42.7
	3		15.5
	4		
10	0	5.0 *(7.5)	115
	2		90.7
	5		44.7
	7		19.4
	8		
15	0	6.2 *(11.0)	135
	5		83.1
	7		58.0
	10		19.1
	12		
20	0	7.1 *(14.0)	141
	5		117
	10		57.6
	12		36.1
	15		

Operating Pressure PSIG		WATER SUCTION	
Injector INLET	Injector OUTLET	Motive Flow GPM	*Water Suction* GPH
60	0	12.3 *(43.0)	140
	5		140
	10		140
	15		140
	20		138
	30		110
	35		73.3
	40		33.2
	45		
70	0	13.3 *(51.0)	141
	5		141
	10		140
	15		140
	20		140
	30		135
	40		87.6
	45		44.5
	50		
	55		
	0		139



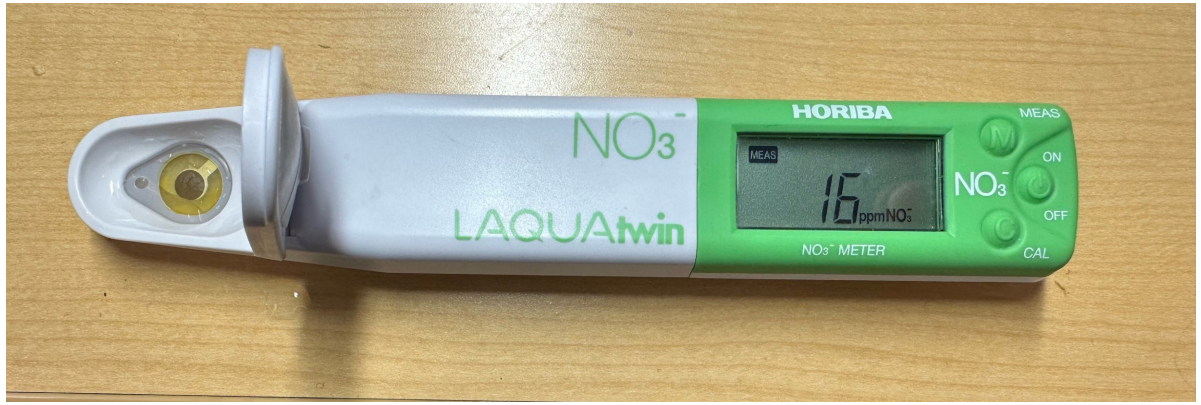
Irrigate with fresh water after injecting fertilizer



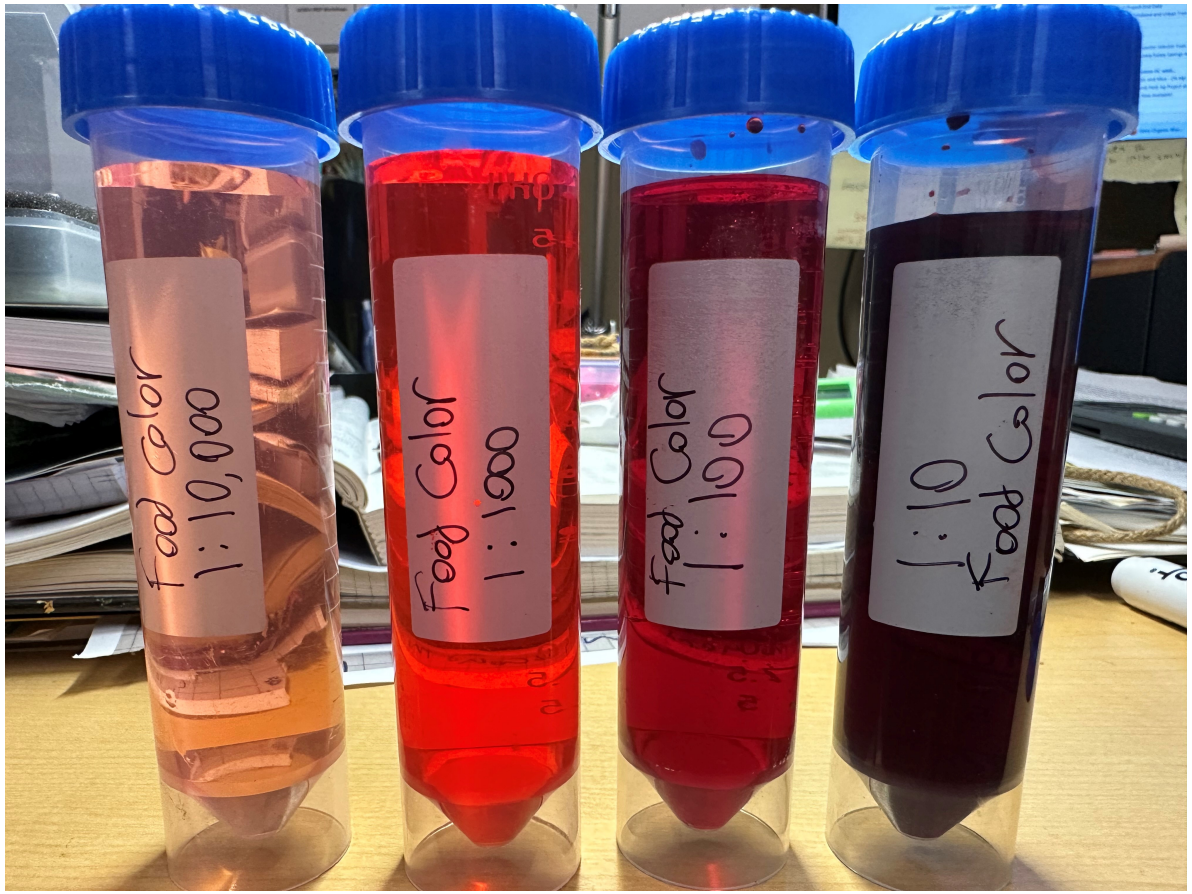
This must be long enough to flush the system

You need to measure how long it takes for water to go from your fertilizer injection point to the end of the furthest dripline

You can measure the Electrical Conductivity of water at the end of the dripline. I will increase substantially when fertilizer gets there. You can also measure nitrate.

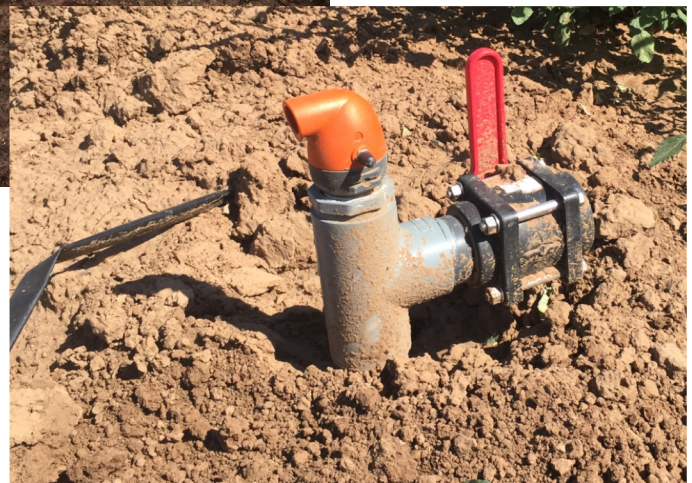


Or you can use food color



Flush laterals, tapes and hoses regularly

Vs



Drip hose flushing

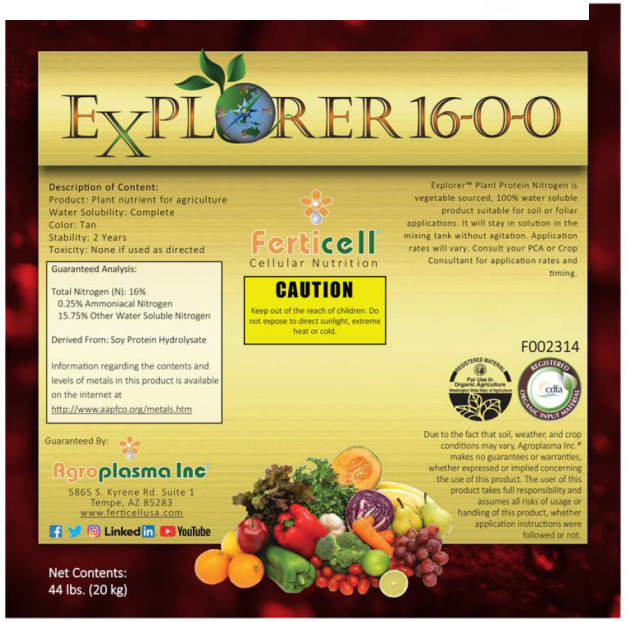
Vs

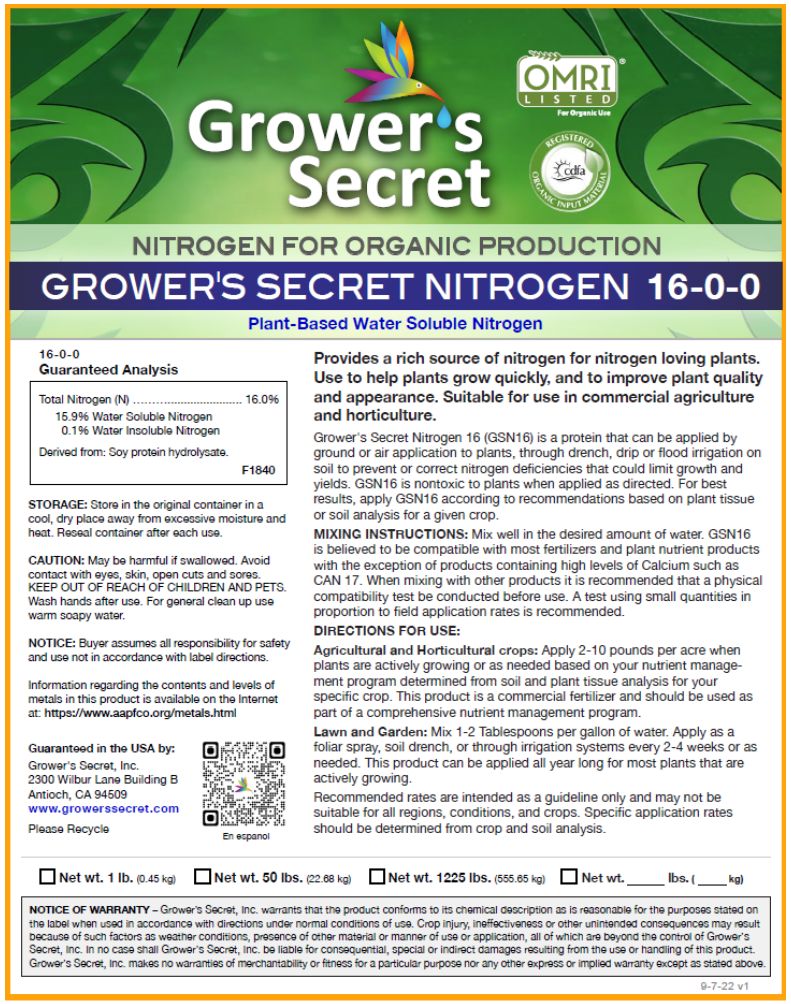
nalgene
MADE IN USA
DRIPLINE

Investigate causes of plugging

Dead Palm

Soy hydrolysate products are more soluble…





…but more expensive per lb of N

Nitrogen management in organic systems

Percentage of available nitrogen

Fish Emulsion: Agrothrive 2.5%-1.5%-2.5%,

30% available → 0.8%

Pelletized chicken manure: 4%-4%-2%,

40% available → 1.6%

Guano 12.5%, 70% available → 8.4%

Feathermeal: 13-0-0, 70% available → 9.1%

GUARANTEED ANALYSIS

Total Nitrogen (N).....3%
2.6% Water Soluble Nitrogen
0.4% Water Insoluble Nitrogen
Available Phosphate (P_2O_5).....2%
Soluble Potash (K_2O).....3%

Derived from: Fish Solubles Stabilized with Phosphoric Acid, Reduced Sugar Molasses, Corn Steep Liquor, Soy Protein Hydrolysate, Sugar Beet Extract, Sulfate of Potash, and Kelp Extract.

Density.....9.5 lbs/gallon at 68°F **F2192**

- Say you want to apply 10 lbs of N per acre when irrigating a half acre block
- We need to inject 10x0.5= 5 lbs of N
- So we need to inject 5 / 0.03 = 166 lbs of fertilizer
- That correspond to 166 / 9.5 = 17 gallons of fertilizer

- To apply 100 lbs of N/acre of 4-4-2
- You apply 100/0.04 = 2500 lbs = 1.25 tons of fertilizer

- To apply 100 lbs of N/acre of 13-0-0
- You apply 100/0.13 = 770 lbs = 0.38 tons of fertilizer

Measure distribution uniformity with a catch can experiment

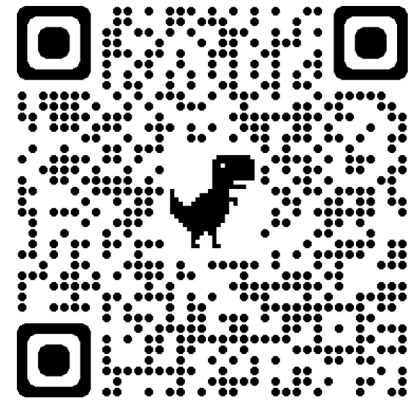
When fertigating, bad distribution uniformity of water means bad distribution of nitrogen!

Also with low DU, some areas are overirrigated and nitrate is leached away

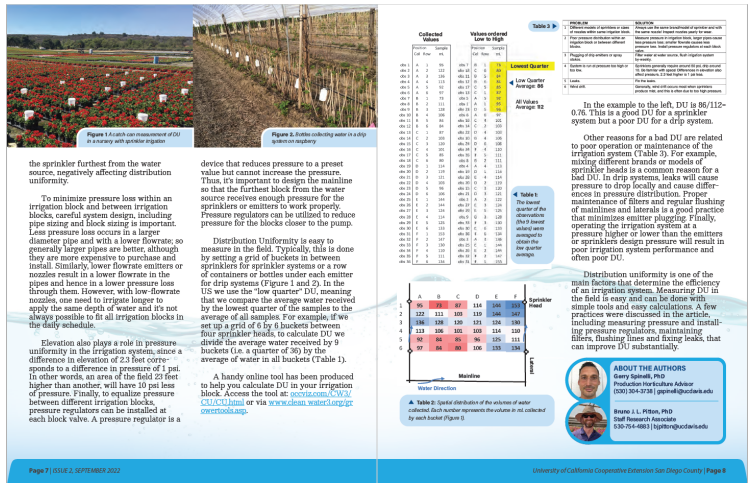
Pressure distribution, plugging, leaks, mismatched nozzle/dripper sizes are the main causes of low distribution uniformity

Fix Leaks

Make flushing easier

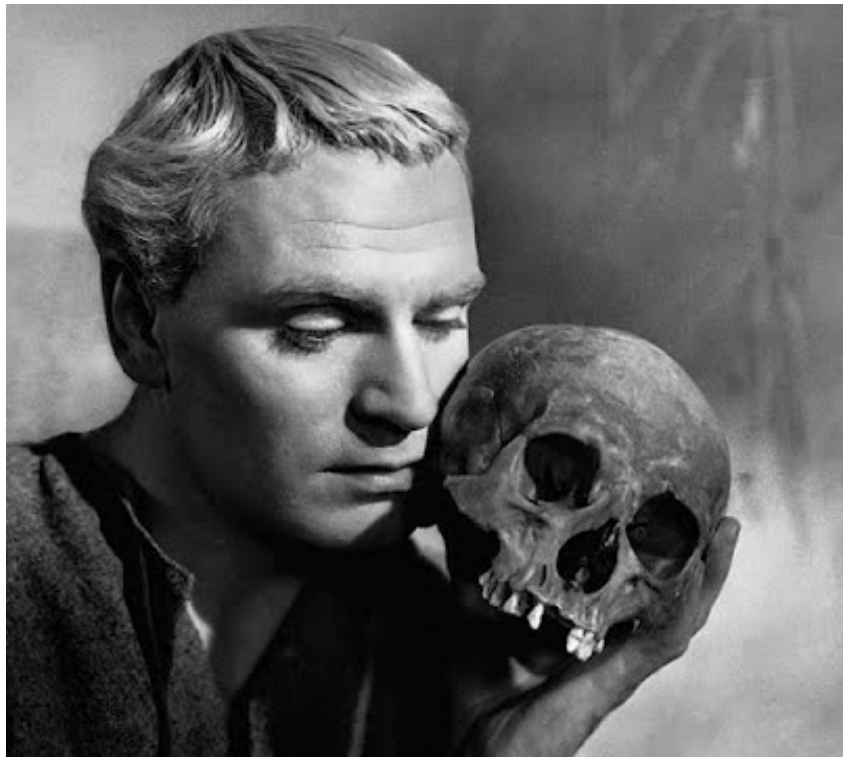


Pressure regulators and pressure compensating emitters



Filters

- Inject before filter or after filter?



Thank you!

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Please complete the evaluation!

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