Nitrogen Application with Microirrigation

Applying nitrogen fertilizers through drip irrigation systems is efficient, effective, economical and convenient. It requires only a fertilizer injector tank with proper accessories, the age of the tree and knowledge of the kind of nitrogen materials available.

The total amount of actual nitrogen applied for the year will depend on the size of the tree. During the first year after planting, about 1/10th of a pound of actual nitrogen per tree is required. The amount increases progressively each year until maturity when 1 to 1 ½ pounds of actual nitrogen per tree per year is required.

From the chart below you can readily determine how much material to add to the injector tank monthly in order to apply the proper amount for the year.

Tree Age Years	Actual Nitrogen/ Tree/ Year	Amount Per Tree Per Month				
		Pounds of Material			Fluid Ounces of Material	
		Urea (46%) Amm Nit (33%) Ca Nit (15.5%)			Amm Nit Sol (20%) N-Sol (32%)	
1	1/10 lb	.03	.04	.08	0.76	0.45
2	1/5 lb	.05	.08	.16	1.51	0.90
3	1/3 lb	.09	.13	.27	2.50	1.49
4	1/2 lb	.14	.19	.40	3.75	2.26
5	1 lb	.27	.38	.81	7.57	4.51
-	1 1/2 lb	.41	.57	1.21	11.32	6.77

This chart is based on the assumption that nitrogen is applied monthly over an 8-month irrigation period -- March through November.

How to use: Determine age of tree and find factor for material being used. Multiply factor by number of trees and add that many pounds or fluid ounces (depending on material) to injection tank.

Example No. 1: You have a block of 265 trees, 3 years of age, and want to use urea as a nitrogen source. The urea factor for a 3-year-old tree is .09. Multiplying 265 by .09, you get 23.85 pounds -- so add that many pounds of urea to the tank once a month for 8 months (March through November).

Example No. 2: You are using N-Sol 32 instead of urea. The N-Sol 32 factor for a 3-year-old tree is 1.49. Multiplying 265 by 1.49, you get 394.85 fluid ounces -- so add 3.1 gallons of N-Sol 32 solution. There are 128 fluid ounces in a gallon.

Fertilizers are available in many different concentrations and ratios. After a particular ratio of fertilizer has been decided upon, the selection of the fertilizer to use will usually be based on availability and cost. Fertilizers can be compared on the basis of the cost per pound of nutrient element.

Fertilizers with the same ratios can be compared with a simple calculation. For example, the combined cost per pound of nutrient of a 5-10-5 fertilizer can be compared with a 10-20-10 or a 12-24-12 fertilizer.

The relative costs of fertilizers of different ratios can be found by finding the equivalent market values of the fertilizers based on the cost per pound of plant nutrient of ammonium nitrate, treble superphosphate and muriate or potash or other available fertilizers.

Sometimes factors such as availability and ease of handling will determine the fertilizer which will be used.

The approximately percentage of nutrient elements in a few of the common fertilizers are:

	N	P	K
Ammonium nitrate	33.5%	-	-
Ammonium sulfate	21%	-	-
Urea-Ammonium Nitrate (UN-32)	32%	-	-
Urea	46%	-	-
Calcium nitrate	15.5%	-	-
Anhydrous ammonia	82%	-	-
Aqua ammonia	20%	-	-
Single superphosphate	-	19%	-
Trebel superphosphate	-	45%	-
Sulphate of Potash	-	-	50%
Muriate of Potash	-	-	60%