SEA-90 Sea Solids Hydroponics Formula (Chart A)
(per 1000 gallons fresh water)

Fertilizer Material	Vegetables - All	Tomatoes Only	Cucumbers Only
	Measure in Pounds		
SEA-90	8	8	8
Ca(NO3)2 (calcium nitrate)	9	10	13
P2O5 (Triple Superphosphate)	2	2	2
KSO4 (potassium sulfate)	4	4	4
FeSO4 (iron sulfate)	3	3	3
Sulfuric Acid	6 gal	6 gal	6 gal
	Measure in Grams		
Boron (borax)	8	8	8
MnSO4 (manganese sulfate)	9	9	9
ZnSO4 (zinc sulfate)	8	8	8
CuSO4 (copper sulfate)	1.5	1.5	1.5
MgSO4 (magnesium sulfate)	300	300	300

Pure Seawater Hydroponics Formula (Chart B)
1000 gallon Nutrient Solution (use pure unadulterated seawater)

Fertilizer Material	Vegetables - All	Tomatoes Only	Cucumbers Only
Seawater	120 gal	120 gal	120 gal
Fresh Water	880 gal	880 gal	880 gal
Ca(NO3)2 (calcium nitrate)	9 lb	10 lb	13 lb
P2O5 (Triple Superphosphate)	2 lb	2 lb	2 lb
KSO4 (potassium sulfate)	4 lb	4 lb	4 lb
FeSO4 (iron sulfate)	3 lb	3 lb	3 lb
Sulfuric Acid	6 gal	6 gal	6 gal

In pure seawater, all minor elements are present in perfect concentrations.

Elemental Quantities for Specific Crops (Chart C)

Element	Vegetables - All	Tomatoes Only	Cucumbers Only
	Measure in PPM		
N (nitrogen)	100	100	260
P (phosphorus)	62	62	62
K (potassium)	150	300	150
Ca (calcium)	165	165	330
Mg (magnesium)	50	50	50
Mn (manganese)	0.60	0.60	0.60
Cu (copper)	0.05	0.05	0.05
Zn (Zinc)	0.09	0.09	0.09
Fe (iron)	5	5	5
S (sulfur)	128	128	128
B (Boron)	0.44	0.44	0.44

Simple Conversion Formula (Chart D)

Per 1000 Gallons Nutrient Solution

Scientific Fact: One pound fertilizer per 1000 gallons water = 125 ppm (parts per million).

	Formula
a = percent of element in fertilizer mix	
b = ppm of element in 1000 gallons water	**(125 ppm)(a) = b**
c = ppm desired in 1000 gallons hydroponics solution	**(b)(d) = c**
d = pounds required in 1000 gallons hydroponics solution	**c/b = d**

	Formula
Example utilizing Chart C:	**(125 ppm)(.19) = 24 ppm Ca**
Required: 165 ppm Calcium for All Vegetables.	**(24 ppm)(d) = 165 ppm desired**
Fertilizer Material: Calcium Nitrate (15.5 - 0 - 0 - .19)	**d = 165 ppm/24 ppm**
	d = 7 lb./1000 gal

Units of Measure Conversion Chart

1 kg = 2.2 lbs
1 kg = 1000 gm
1 lb = 453.6 gm
1 gm = .03 oz
1 gal = 3.785 liters

Directions For Preparing Nutrient Solutions

1. **Fill tank with fresh water to desired level.**
2. **Circulate or stir solution.**
3. **Adjust the pH to 6.5 by adding acid to the solution in small quantities.**
   a. **Tanks of 55 gallons or less use aspirin or distilled white vinegar (two aspirins or one tsp vinegar per gallon water lowers pH from 8.0 to 6.0).**
   b. **Tanks greater than 55 gallons use sulfuric, hydrochloric or phosphoric acid.**
   c. **To raise the pH, add baking soda to 55 gallon tanks or less, and potassium or sodium hydroxide to larger tanks.**
4. **Add all fertilizer, including SEA-90 or sea water, to solution and mix for 30 minutes (15 minutes for smaller tanks). To help fertilizer go into solution faster, add to hot water and stir prior to adding to tank.**
5. **Check the pH again and adjust to 6.0.**

It is recommended that the entire nutrient solution be used completely. Use any remaining solution to water potted plants, on garden soil, or on pasture. DO NOT STORE.

SeaAgri, inc

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