

ALKCALC

Input Variables

Company Name: **chn** Your Name: **OCT**
 Sample pH: **7** Sample alkalinity: **174 ppm HCO₃**
 Target alkalinity or pH: **6.4 (pH)** Acid: **All acid types (0)**

Calculated Information

Alkalinity before acid addition:	Alkalinity after acid addition:
meq/L: 2.85	meq/L: 1.83
or ppm of HCO ₃ : 174.0	ppm of HCO ₃ : 111.8
or ppm of CaCO ₃ : 142.7	ppm of CaCO ₃ : 91.7
	Final pH: 6.40

Alternative Acids to Add to Irrigation Water

Acid Types	Phosphoric		Sulfuric				Nitric	
	75.0%	85.0%	35.0%	50.0%	66.0%	96.0%	61.4%	67.0%
Amounts <i>For Small Volumes</i>								
ml per liter	0.078	0.064	0.114	0.072	0.049	0.028	0.076	0.068
fl. oz. per gallon	0.010	0.008	0.015	0.009	0.006	0.004	0.010	0.009
ml per gallon	0.295	0.242	0.430	0.273	0.184	0.108	0.289	0.259
<i>For a 1:100 Injector</i>								
fl. oz. per gallon (conc.)	1.00	0.82	1.45	0.92	0.62	0.36	0.98	0.88
ml per gallon (conc)	29.54	24.24	43.02	27.31	18.44	10.78	28.90	25.92
<i>For a 1:128 Injector</i>								
fl. oz. per gallon (conc.)	1.28	1.05	1.86	1.18	0.80	0.47	1.25	1.12
ml per gallon (conc)	37.82	31.03	55.06	34.95	23.61	13.80	36.99	33.17

Acid Types	Phosphoric		Sulfuric				Nitric	
Amounts <i>For a 1:200 Injector</i>	75.0%	85.0%	35.0%	50.0%	66.0%	96.0%	61.4%	67.0%
fl. oz. per gallon (conc.)	2.00	1.64	2.91	1.85	1.25	0.73	1.95	1.75
ml per gallon (conc.)	59.09	48.49	86.04	54.61	36.89	21.57	57.80	51.83

Nutrients Added by Each Type of Acid

Nutrients Added:	Phosphorus	Phosphorus	Sulfur	Sulfur	Sulfur	Sulfur	Nitrogen	Nitrogen
Amount Added (ppm):	29.23	29.23	16.45	16.45	16.45	16.45	14.28	14.28

Use the information above for modifying your fertility program.

Note: Optimal phosphorus levels are less than 25 ppm for the most crops, based on a constant liquid fertilization.

Notes on the use of acid to modify irrigation water pH and alkalinity

- ALWAYS ADD ACID TO WATER, NOT WATER TO ACID!
- Selection of which acid type to use should be based on the nutrient program being used, type of equipment available and degree of safety desired. All acids pose a health threat if they come in contact with skin. Relatively speaking, phosphoric is the safest, followed by sulfuric and finally nitric acid.
- Use caution when working with acids. Always wear proper face, hand and body protection.
- The acid must be injected with a separate injector or a twin headed injector. It should not be added to the fertilizer concentrate. The acids in the concentrated form can corrode metal pipes.
- Retest your irrigation water (at hose end) after starting acid injection and 3-4 weeks later to confirm the adjusted pH and alkalinity values. Sometimes higher pH's will result in the first week of acid additions because the acids tend to dissolve the built-up hard water deposits in pipes.

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