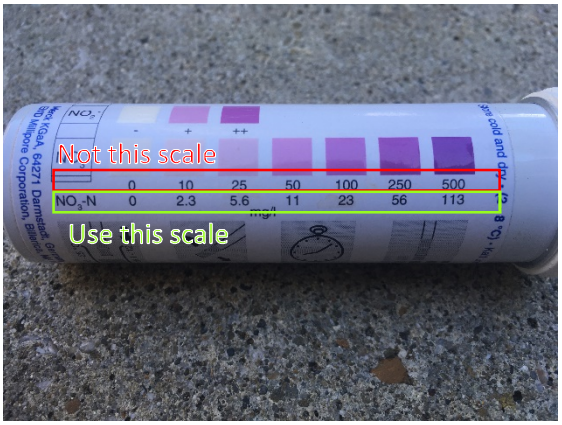
Resource Conservation District of Santa Cruz County

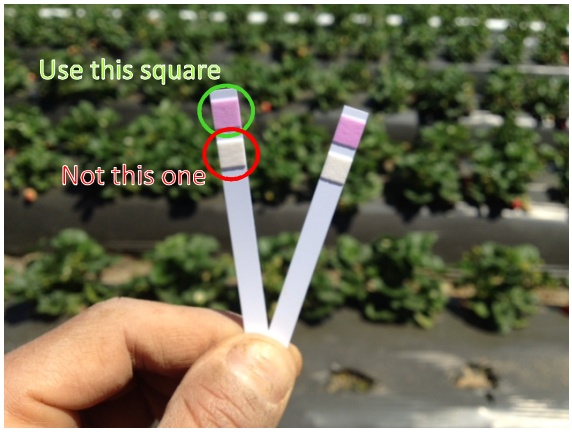
How to estimate the pounds of nitrogen your irrigation water provides to your crop

By Dr. Gerry Spinelli

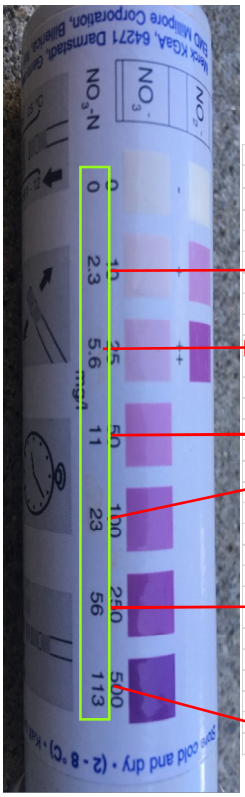
This guide provides directions for measuring the concentration of nitrogen in irrigation water with a nitrate quick test strip and will help you estimate the contribution of irrigation water to your crop nitrogen balance. For a more accurate calculation, we recommend more advanced techniques (Lab nitrogen tests, CropManage, etc.). Nitrate test strips can be provided for free by the RCD of Santa Cruz County: (831) 464-2950, info@rcdsantacruz.org

1. Collect a water sample from the well and dip two strips in the water. Shake off excess water and wait one minute.
2. If the color of both strips is the same, proceed to the next step. If the strips are different colors, throw them away and repeat step 1.
3. Compare the square at the top of the strips with the lower scale (NO_3-N) on the test strip container. If the color is between two numbers, estimate visually the concentration. For example, if the color is between 11 and 23, a good estimate would be 17. This gives you the concentration of nitrogen in the irrigation water, expressed in ppm of NO_3-N.





4. In the table below, find the closest row corresponding to your sample. Pick the column corresponding to the amount of water applied to your crop. For example, if your nitrogen sample is 10 ppm NO_3-N and in the month of July you applied 4 inch of irrigation water, the contribution of the irrigation water was 9 pounds of nitrogen.
   If you do not know how much water you apply, you can use the last four columns of the table to estimate the nitrogen contribution of the irrigation water for one growingcycle of the most common crops in our area. For example, if you grow broccoli and your water sample is 20 ppm NO_3-N, the irrigation water provides 91 pounds of nitrogen during the entire cycle.
   For a direct measurement of irrigation water applied contact the RCD!



Water Sample	Inch of water applied										Estimate per cycle			
ppm of NO_3-N											Strawberry	Lettuce	Caneberry	Broccoli
	1	**2**	**3**	**4**	**5**	**10**	**12**	**15**	**20**	**25**	**26**	**8**	**20**	**20**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	1	2	3	3	5	6	6	2	5	5
2	0	1	1	2	2	5	5	7	9	11	12	4	9	9
3	1	1	2	3	3	7	8	10	14	17	18	5	14	14
4	1	2	3	4	5	9	11	14	18	23	24	7	18	18
5	1	2	3	5	6	11	14	17	23	28	29	9	23	23
6	1	3	4	5	7	14	16	20	27	34	35	11	27	27
7	2	3	5	6	8	16	19	24	32	40	41	13	32	32
8	2	4	5	7	9	18	22	27	36	45	47	15	36	36
9	2	4	6	8	10	20	24	31	41	51	53	16	41	41
10	2	5	7	9	11	23	27	34	45	57	59	18	45	45
15	3	7	10	14	17	34	41	51	68	85	88	27	68	68
20	5	9	14	18	23	45	54	68	91	113	118	36	91	91
25	6	11	17	23	28	57	68	85	113	142	147	45	113	113
30	7	14	20	27	34	68	82	102	136	170	177	54	136	136
35	8	16	24	32	40	79	95	119	159	198	206	63	159	159
40	9	18	27	36	45	91	109	136	181	227	236	73	181	181
45	10	20	31	41	51	102	122	153	204	255	265	82	204	204
50	11	23	34	45	57	113	136	170	227	283	295	91	227	227
60	14	27	41	54	68	136	163	204	272	340	354	109	272	272
70	16	32	48	63	79	159	190	238	317	397	413	127	317	317
80	18	36	54	73	91	181	218	272	363	453	471	145	363	363
90	20	41	61	82	102	204	245	306	408	510	530	163	408	408
100	23	45	68	91	113	227	272	340	453	567	589	181	453	453
110	25	50	75	100	125	249	299	374	499	623	648	199	499	499
120	27	54	82	109	136	272	326	408	544	680	707	218	544	544

Table 1. Total pounds of nitrogen provided by irrigation water based on different NO3-N concentrations and amounts of water applied