Irrigation water N lookup table

Instructions on use of this lookup table

For more information, or to use an online calculator to obtain a similar estimate for a single or blended water source, please go to https://agmpep.com/calc-irrn/ . That calculator also contains a convertor from water volume or pump run time to water depth (inches). A simple version of this calculator is on the "Acre-feet_or_run_time_to_inches" tab in this workbook, but unlike the lookup table, it must be used on a computer.

To use this lookup table, identify the form of nitrogen on your lab report or other data reasource, and look up the result vertically downward (in mg/L = ppm) in the column matching the analysis in your report (choosing from among the four "***N concentration (mg/L or ppm)***" columns, containing values for Nitrate-N, Nitrate, Ammonium-N, and Ammonium). Most irrigation water results will show only nitrate, which will be one of the first two columns. Select the horizontal row where the value most closely matches the result on your report.

Next, select the column showing amount of irrigation water from this soure captured by your crop during the year from the row of numbers immediately beneath the green bar labeled "***Depth of Water during Season (inches).***"

At the yellow cell where the selected row and column intersect you will find a calculated estimate of N available to the crop from the irrigation source, in pounds of N per acre-year.

If irrigating with more than one irrigation water quality (for example, surface & groundwater sources being used in the same field during the same year), repeat the process for each source of water, and add the results together.

To take the result into account when fertilizing, subtract the result proportionally from applications made during periods when the source of irrigation water is being used. For example, if a groundwater supply that has higher nitrate is used early in the season, most of the applied N reduction would be made during that period.

Most surface irrigation water supplies will have very low N concentrations. Groundwater may be higher, and some groundwater can be very high. Ammonium will not be relevant for most irrigation water, but can be important if any confined animal or other wastewater is being used.

Numbers in yellow field are in pounds of N per acre-year

N concentration (mg/L or ppm)				*Depth of Water during Season (inches)*																									
as NO3-N (Nitrate-N)	as NO3 (Nitrate)	as NH4-N (Ammonium-N)	as NH4 (Ammonium)	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.5	2.2	0.5	0.6	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	6	6	6	6	7	7
1.0	4.4	1.0	1.3	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	10	11	11	12	12	13	13	14
2	8.9	2	2.6	5	5	6	7	8	9	10	11	12	13	14	15	15	16	17	18	19	20	21	22	23	24	24	25	26	27
3	13	3	3.9	7	8	10	11	12	14	15	16	18	19	20	22	23	24	26	27	29	30	31	33	34	35	37	38	39	41
4	18	4	5.2	9	11	13	15	16	18	20	22	24	25	27	29	31	33	34	36	38	40	42	44	45	47	49	51	53	54
5	22	5	6.4	11	14	16	18	20	23	25	27	29	32	34	36	39	41	43	45	48	50	52	54	57	59	61	63	66	68
6	27	6	7.7	14	16	19	22	24	27	30	33	35	38	41	44	46	49	52	54	57	60	63	65	68	71	73	76	79	82
7	31	7	9.0	16	19	22	25	29	32	35	38	41	44	48	51	54	57	60	63	67	70	73	76	79	83	86	89	92	95
8	35	8	10	18	22	25	29	33	36	40	44	47	51	54	58	62	65	69	73	76	80	83	87	91	94	98	102	105	109
9	40	9	12	20	24	29	33	37	41	45	49	53	57	61	65	69	73	78	82	86	90	94	98	102	106	110	114	118	122
10	44	10	13	23	27	32	36	41	45	50	54	59	63	68	73	77	82	86	91	95	100	104	109	113	118	122	127	131	136
11	49	11	14	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
12	53	12	15	27	33	38	44	49	54	60	65	71	76	82	87	92	98	103	109	114	120	125	131	136	141	147	152	158	163
13	58	13	17	29	35	41	47	53	59	65	71	77	83	88	94	100	106	112	118	124	130	136	141	147	153	159	165	171	177
14	62	14	18	32	38	44	51	57	63	70	76	83	89	95	102	108	114	121	127	133	140	146	152	159	165	171	178	184	190
15	66	15	19	34	41	48	54	61	68	75	82	88	95	102	109	116	122	129	136	143	150	156	163	170	177	184	190	197	204
16	71	16	21	36	44	51	58	65	73	80	87	94	102	109	116	123	131	138	145	152	160	167	174	181	189	196	203	210	218
17	75	17	22	39	46	54	62	69	77	85	92	100	108	116	123	131	139	146	154	162	170	177	185	193	200	208	216	223	231
18	80	18	23	41	49	57	65	73	82	90	98	106	114	122	131	139	147	155	163	171	180	188	196	204	212	220	228	237	245
19	84	19	24	43	52	60	69	78	86	95	103	112	121	129	138	146	155	164	172	181	189	198	207	215	224	233	241	250	258
20	89	20	26	45	54	63	73	82	91	100	109	118	127	136	145	154	163	172	181	190	199	209	218	227	236	245	254	263	272
21	93	21	27	48	57	67	76	86	95	105	114	124	133	143	152	162	171	181	190	200	209	219	228	238	248	257	267	276	286
22	97	22	28	50	60	70	80	90	100	110	120	130	140	150	160	170	180	189	199	209	219	229	239	249	259	269	279	289	299
23	102	23	30	52	63	73	83	94	104	115	125	136	146	156	167	177	188	198	209	219	229	240	250	261	271	282	292	302	313
24	106	24	31	54	65	76	87	98	109	120	131	141	152	163	174	185	196	207	218	228	239	250	261	272	283	294	305	316	326
25	111	25	32	57	68	79	91	102	113	125	136	147	159	170	181	193	204	215	227	238	249	261	272	283	295	306	317	329	340
26	115	26	33	59	71	83	94	106	118	130	141	153	165	177	189	200	212	224	236	248	259	271	283	295	306	318	330	342	354
27	120	27	35	61	73	86	98	110	122	135	147	159	171	184	196	208	220	233	245	257	269	282	294	306	318	330	343	355	367
28	124	28	36	63	76	89	102	114	127	140	152	165	178	190	203	216	228	241	254	267	279	292	305	317	330	343	355	368	381
29	128	29	37	66	79	92	105	118	131	145	158	171	184	197	210	223	237	250	263	276	289	302	316	329	342	355	368	381	394
30	133	30	39	68	82	95	109	122	136	150	163	177	190	204	218	231	245	258	272	286	299	313	326	340	354	367	381	394	408
31	137	31	40	70	84	98	112	126	141	155	169	183	197	211	225	239	253	267	281	295	309	323	337	351	365	379	393	408	422
32	142	32	41	73	87	102	116	131	145	160	174	189	203	218	232	247	261	276	290	305	319	334	348	363	377	392	406	421	435
33	146	33	42	75	90	105	120	135	150	165	180	194	209	224	239	254	269	284	299	314	329	344	359	374	389	404	419	434	449
34	150	34	44	77	92	108	123	139	154	170	185	200	216	231	247	262	277	293	308	324	339	355	370	385	401	416	432	447	462
35	155	35	45	79	95	111	127	143	159	175	190	206	222	238	254	270	286	301	317	333	349	365	381	397	413	428	444	460	476
36	159	36	46	82	98	114	131	147	163	180	196	212	228	245	261	277	294	310	326	343	359	375	392	408	424	441	457	473	490

Numbers in yellow field are in pounds of N per acre-year

N concentration (mg/L or ppm)				*Depth of Water during Season (inches)*																									
as NO3-N (Nitrate-N)	as NO3 (Nitrate)	as NH4-N (Ammonium-N)	as NH4 (Ammonium)	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
37	164	37	48	84	101	117	134	151	168	185	201	218	235	252	268	285	302	319	335	352	369	386	403	419	436	453	470	486	503
38	168	38	49	86	103	121	138	155	172	189	207	224	241	258	276	293	310	327	345	362	379	396	413	431	448	465	482	500	517
39	173	39	50	88	106	124	141	159	177	194	212	230	248	265	283	301	318	336	354	371	389	407	424	442	460	477	495	513	530
40	177	40	52	91	109	127	145	163	181	199	218	236	254	272	290	308	326	345	363	381	399	417	435	453	471	490	508	526	544
41	181	41	53	93	112	130	149	167	186	204	223	242	260	279	297	316	335	353	372	390	409	427	446	465	483	502	520	539	558
42	186	42	54	95	114	133	152	171	190	209	228	248	267	286	305	324	343	362	381	400	419	438	457	476	495	514	533	552	571
43	190	43	55	97	117	136	156	175	195	214	234	253	273	292	312	331	351	370	390	409	429	448	468	487	507	526	546	565	585
44	195	44	57	100	120	140	160	180	199	219	239	259	279	299	319	339	359	379	399	419	439	459	479	499	519	539	559	578	598
45	199	45	58	102	122	143	163	184	204	224	245	265	286	306	326	347	367	388	408	428	449	469	490	510	530	551	571	592	612
46	204	46	59	104	125	146	167	188	209	229	250	271	292	313	334	355	375	396	417	438	459	480	500	521	542	563	584	605	626
47	208	47	61	107	128	149	170	192	213	234	256	277	298	320	341	362	384	405	426	447	469	490	511	533	554	575	597	618	639
48	212	48	62	109	131	152	174	196	218	239	261	283	305	326	348	370	392	413	435	457	479	500	522	544	566	588	609	631	653
49	217	49	63	111	133	155	178	200	222	244	267	289	311	333	355	378	400	422	444	466	489	511	533	555	578	600	622	644	666
50	221	50	64	113	136	159	181	204	227	249	272	295	317	340	363	385	408	431	453	476	499	521	544	567	589	612	635	657	680
51	226	51	66	116	139	162	185	208	231	254	277	301	324	347	370	393	416	439	462	486	509	532	555	578	601	624	647	670	694
52	230	52	67	118	141	165	189	212	236	259	283	306	330	354	377	401	424	448	471	495	519	542	566	589	613	636	660	684	707
53	235	53	68	120	144	168	192	216	240	264	288	312	336	360	384	408	432	457	481	505	529	553	577	601	625	649	673	697	721
54	239	54	70	122	147	171	196	220	245	269	294	318	343	367	392	416	441	465	490	514	539	563	588	612	636	661	685	710	734
55	243	55	71	125	150	175	199	224	249	274	299	324	349	374	399	424	449	474	499	524	549	573	598	623	648	673	698	723	748
56	248	56	72	127	152	178	203	228	254	279	305	330	355	381	406	432	457	482	508	533	559	584	609	635	660	685	711	736	762
57	252	57	73	129	155	181	207	233	258	284	310	336	362	388	413	439	465	491	517	543	568	594	620	646	672	698	724	749	775
58	257	58	75	131	158	184	210	237	263	289	316	342	368	394	421	447	473	500	526	552	578	605	631	657	684	710	736	763	789
59	261	59	76	134	160	187	214	241	267	294	321	348	374	401	428	455	481	508	535	562	588	615	642	669	695	722	749	776	802
60	266	60	77	136	163	190	218	245	272	299	326	354	381	408	435	462	490	517	544	571	598	626	653	680	707	734	762	789	816
61	270	61	79	138	166	194	221	249	277	304	332	359	387	415	442	470	498	525	553	581	608	636	664	691	719	747	774	802	830
62	274	62	80	141	169	197	225	253	281	309	337	365	393	422	450	478	506	534	562	590	618	646	675	703	731	759	787	815	843
63	279	63	81	143	171	200	228	257	286	314	343	371	400	428	457	486	514	543	571	600	628	657	685	714	743	771	800	828	857
64	283	64	82	145	174	203	232	261	290	319	348	377	406	435	464	493	522	551	580	609	638	667	696	725	754	783	812	841	870
65	288	65	84	147	177	206	236	265	295	324	354	383	413	442	471	501	530	560	589	619	648	678	707	737	766	796	825	855	884
66	292	66	85	150	180	209	239	269	299	329	359	389	419	449	479	509	539	568	598	628	658	688	718	748	778	808	838	868	898
67	297	67	86	152	182	213	243	273	304	334	364	395	425	456	486	516	547	577	607	638	668	699	729	759	790	820	850	881	911
68	301	68	88	154	185	216	247	277	308	339	370	401	432	462	493	524	555	586	617	647	678	709	740	771	801	832	863	894	925
69	305	69	89	156	188	219	250	282	313	344	375	407	438	469	500	532	563	594	626	657	688	719	751	782	813	845	876	907	938
70	310	70	90	159	190	222	254	286	317	349	381	413	444	476	508	539	571	603	635	666	698	730	762	793	825	857	889	920	952
71	314	71	91	161	193	225	257	290	322	354	386	418	451	483	515	547	579	612	644	676	708	740	772	805	837	869	901	933	966
72	319	72	93	163	196	228	261	294	326	359	392	424	457	490	522	555	588	620	653	685	718	751	783	816	849	881	914	947	979
73	323	73	94	165	199	232	265	298	331	364	397	430	463	496	529	563	596	629	662	695	728	761	794	827	860	894	927	960	993

Numbers in yellow field are in pounds of N per acre-year

N concentration (mg/L or ppm)				*Depth of Water during Season (inches)*																										
as NO3-N (Nitrate-N)	as NO3 (Nitrate)	as NH4-N (Ammonium-N)	as NH4 (Ammonium)	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
74	328	74	95	168	201	235	268	302	335	369	403	436	470	503	537	570	604	637	671	704	738	772	805	839	872	906	939	973	1,006
75	332	75	97	170	204	238	272	306	340	374	408	442	476	510	544	578	612	646	680	714	748	782	816	850	884	918	952	986	1,020
76	336	76	98	172	207	241	276	310	345	379	413	448	482	517	551	586	620	655	689	724	758	792	827	861	896	930	965	999	1,034
77	341	77	99	175	209	244	279	314	349	384	419	454	489	524	559	593	628	663	698	733	768	803	838	873	908	942	977	1,012	1,047
78	345	78	100	177	212	248	283	318	354	389	424	460	495	530	566	601	636	672	707	743	778	813	849	884	919	955	990	1,025	1,061
79	350	79	102	179	215	251	287	322	358	394	430	466	501	537	573	609	645	680	716	752	788	824	860	895	931	967	1,003	1,039	1,074
80	354	80	103	181	218	254	290	326	363	399	435	471	508	544	580	617	653	689	725	762	798	834	870	907	943	979	1,015	1,052	1,088
81	359	81	104	184	220	257	294	330	367	404	441	477	514	551	588	624	661	698	734	771	808	845	881	918	955	991	1,028	1,065	1,102
82	363	82	106	186	223	260	297	335	372	409	446	483	520	558	595	632	669	706	743	781	818	855	892	929	967	1,004	1,041	1,078	1,115
83	367	83	107	188	226	263	301	339	376	414	452	489	527	564	602	640	677	715	753	790	828	865	903	941	978	1,016	1,054	1,091	1,129
84	372	84	108	190	228	267	305	343	381	419	457	495	533	571	609	647	685	724	762	800	838	876	914	952	990	1,028	1,066	1,104	1,142
85	376	85	109	193	231	270	308	347	385	424	462	501	539	578	617	655	694	732	771	809	848	886	925	963	1,002	1,040	1,079	1,117	1,156
86	381	86	111	195	234	273	312	351	390	429	468	507	546	585	624	663	702	741	780	819	858	897	936	975	1,014	1,053	1,092	1,131	1,170
87	385	87	112	197	237	276	316	355	394	434	473	513	552	592	631	670	710	749	789	828	868	907	947	986	1,025	1,065	1,104	1,144	1,183
88	389	88	113	199	239	279	319	359	399	439	479	519	559	598	638	678	718	758	798	838	878	918	957	997	1,037	1,077	1,117	1,157	1,197
89	394	89	115	202	242	282	323	363	403	444	484	525	565	605	646	686	726	767	807	847	888	928	968	1,009	1,049	1,089	1,130	1,170	1,210
90	398	90	116	204	245	286	326	367	408	449	490	530	571	612	653	694	734	775	816	857	898	938	979	1,020	1,061	1,102	1,142	1,183	1,224
91	403	91	117	206	248	289	330	371	413	454	495	536	578	619	660	701	743	784	825	866	908	949	990	1,031	1,073	1,114	1,155	1,196	1,238
92	407	92	118	209	250	292	334	375	417	459	500	542	584	626	667	709	751	792	834	876	918	959	1,001	1,043	1,084	1,126	1,168	1,209	1,251
93	412	93	120	211	253	295	337	379	422	464	506	548	590	632	675	717	759	801	843	885	928	970	1,012	1,054	1,096	1,138	1,180	1,223	1,265
94	416	94	121	213	256	298	341	384	426	469	511	554	597	639	682	724	767	810	852	895	937	980	1,023	1,065	1,108	1,151	1,193	1,236	1,278
95	420	95	122	215	258	301	345	388	431	474	517	560	603	646	689	732	775	818	861	904	947	991	1,034	1,077	1,120	1,163	1,206	1,249	1,292
96	425	96	124	218	261	305	348	392	435	479	522	566	609	653	696	740	783	827	870	914	957	1,001	1,044	1,088	1,132	1,175	1,219	1,262	1,306
97	429	97	125	220	264	308	352	396	440	484	528	572	616	660	704	748	792	835	879	923	967	1,011	1,055	1,099	1,143	1,187	1,231	1,275	1,319
98	434	98	126	222	267	311	355	400	444	489	533	578	622	666	711	755	800	844	889	933	977	1,022	1,066	1,111	1,155	1,200	1,244	1,288	1,333
99	438	99	127	224	269	314	359	404	449	494	539	583	628	673	718	763	808	853	898	942	987	1,032	1,077	1,122	1,167	1,212	1,257	1,302	1,346
100	443	100	129	227	272	317	363	408	453	499	544	589	635	680	725	771	816	861	907	952	997	1,043	1,088	1,133	1,179	1,224	1,269	1,315	1,360