

CHAPTER THREE

Direct Drivers of California's Nitrogen Cycle

Appendix 3.1 Average N Fertilizer Application Rates By Crop, 1973 and 2005

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Appendix 3.1 Average N fertilizer application rates by crop, 1973 and 2005

Area is based on a five-year average centered on 1973 and 2005. The average N application rate has only increased 25% over 33 years. However, the magnitude and direction of change is crop specific. Four of the thirty-three commodities use more than 50% of total N use accounted for in this analysis: almond, cotton, rice, and wheat. Source: Rosenstock et al., 2013.

Crop	Area (ha)		N rate (kg / ha)		Δ N rate (%)	N (% total)	
	1973	2005	1973	2005		1973	2005
Almond	86462	236800	142	201	41	6	15
Avocado	8144	24728	140	125	-11	1	1
Beans, dry	67760	25600	57	102	79	2	1
Broccoli	17432	47000	204	213	4	2	3
Carrots	12592	28248	134	242	80	1	2
Cauliflower	9264	13624	205	267	30	1	1
Celery	7220	10296	321	290	-10	1	1
Corn, sweet	5680	10224	162	239	47	0	1
Cotton	372840	250400	122	195	60	24	16
Grapes, raisin	96080	96000	64	49	-23	3	2
Grapes, table	26432	33280	64	49	-24	1	1
Grapes, wine	65992	191120	59	30	-49	2	2
Lemons	16608	19360	186	138	-26	2	1
Lettuce	58048	92960	178	216	21	5	6
Melons, cantaloupe	19016	17840	106	182	71	1	1
Melons, watermelon	4480	4768	178	169	-5	0	0
Nectarines	4184	13480	147	116	-21	0	1
Onions	11400	18744	164	237	45	1	1
Oranges	74416	76960	73	106	46	3	3
Peaches, clingstone	20200	11752	149	114	-23	2	0
Peaches, freestone	8440	13360	149	127	-15	1	1
Peppers, bell	3520	8280	181	388	114	0	1
Peppers, chile	1887	2184	181	336	85	0	0
Pistachio		41040	166	178	7		2
Plums, dried	33120	27040	106	146	37	2	1
Plums, fresh	9416	12880	123	116	-6	1	0
Potato	28024	16328	212	278	31	3	1
Rice	165200	214320	96	146	52	8	10
Strawberry	3448	13472	178	216	21	0	1
Tomatoes, fresh market	11272	15520	159	198	24	1	1
Tomatoes, processing	88776	111760	159	204	28	7	7

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Walnut	63616	86080	134	154	15	4	4
Wheat	270240	157920	99	198	101	14	10
Average			145	181	25		

Reference

Rosenstock, T.S., Liptzin, D., Six, J., Tomich, T.P., 2013. Nitrogen fertilizer use in California: Assessing the data, trends and a way forward. *California Agriculture* 67, 68–79.
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