

University of California Cooperative Extension

Phosphorus Budget Tables*

Instructions:

1. For a specific field, estimate your average yearly P application (in lbs P_2O_5 /ac added) and yield (in cwt/ac) for the past 5 years.
2. Choose the appropriate table - if you only remove grain and incorporate or burn the straw, use the “Only grain removed” table; if you remove (bale) the straw, use the “Remove grain and ½ of straw”.
3. On the table, locate your average yield on the left hand column and lbs P_2O_5 /ac added on the upper row. Follow the numbers next to your yield and below the amount of P_2O_5 added, and the number where row and column intercept is the value of your P budget. If the P budget is negative, you are extracting more P than you are adding; if it is positive, you are building up P in the soil.

Phosphorus budget and soil test:

- When a soil test indicates that the P level is above 20 ppm and the P budget is positive, no P fertilizer is needed.
- When a soil test indicates that the P level is just above 6 ppm, a maintenance P application is needed. Apply as much P as you are extracting with the grain/straw. Use the P budget table to determine how much P fertilizer is needed for the expected yield in your field so that the P budget is close to zero. For example, if you incorporate straw and the field’s average yield is 80 cwt/ac, you need to apply close to 45 lbs P_2O_5 /a. If your source of P is monoammonium phosphate (MAP), you would apply 80 lbs of MAP/a (MAP is 56% P_2O_5). If the straw is usually removed, you would apply 89 lbs of MAP/a.
- When a soil test indicates that the P level is below 6 ppm and the P budget is negative, P fertilizer is needed. Apply as much P as needed so that your P budget becomes positive. In subsequent years, monitor your yield and P levels to make any further adjustments.

*Developed by Bruce Linquist, Professional Researcher, Agroecosystems Lab, Department of Plant Sciences, UC Davis

Only grain removed

Grain yield (cwt@14%)	P fertilizer added (lb P ₂ O ₅ /ac)														
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
	P balance (lb P ₂ O ₅ /ac)														
50	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39	44
55	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36	41
60	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39
65	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36
70	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28	33
75	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31
80	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28
85	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26
90	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23
95	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20
100	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18
105	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
110	-57	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13

Remove grain and 1/2 of straw

Grain yield (cwt@14%)	P fertilizer added (lb P ₂ O ₅ /ac)														
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
	P balance (lb P ₂ O ₅ /ac)														
50	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24	29	34	39
55	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21	26	31	36
60	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18	23	28	33
65	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30
70	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	7	12	17	22	27
75	-46	-41	-36	-31	-26	-21	-16	-11	-6	-1	4	9	14	19	24
80	-49	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6	11	16	21
85	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3	8	13	18
90	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
95	-58	-53	-48	-43	-38	-33	-28	-23	-18	-13	-8	-3	2	7	12
100	-61	-56	-51	-46	-41	-36	-31	-26	-21	-16	-11	-6	-1	4	9
105	-64	-59	-54	-49	-44	-39	-34	-29	-24	-19	-14	-9	-4	1	6
110	-67	-62	-57	-52	-47	-42	-37	-32	-27	-22	-17	-12	-7	-2	3