

CNMP Reference Tables

Reference Tables in the Nebraska CNMP Workbook

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UNL Soil Fertility Recommendations

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R-33 Applicator Calibration Guide

University of Nebraska Cooperative Extension publications applicable to the Manure Application Workbook:

1. Nutrient Management for Agronomic Crops in Nebraska (EC01-155)
2. Fertilizer Suggestions for Corn (NebGuide G74-174)
3. Fertilizer Suggestions for Soybeans (NebGuide G87-859)
4. Determining Crop Available Nutrients from Manure (NebGuide G97-1335)
5. Manure Applicator Calibration (NebGuide G95-1267)
6. Sampling Manures for Nutrient Analysis (NebGuide G02-1450)
7. Manure Testing: What to Request? (NebFact NF02-507)
8. Using a Chlorophyll Meter to Improve N Management (NebGuide G93-1171)
9. The Corn Stalk Nitrate Test (NebFact NF01-491)
10. Manure Application Calibration Guide (EC03-182)
- 76 11. Calculating the Value of Manure for Crop Production (NebGuide G03-1519)

Table R-1. Plant nutrient uptake and removal in the harvested part of the crop. Values are pounds per unit at a common sales and winter storage moisture (100% DM).

Crop	Test Wt.	DM %	N	P ₂ O ₅	Units
Grain Crops					
Barley (Grain)	48	86	0.87	0.33	lbs./bu.
(Straw)		90	12.7	2.9	lbs./ton
Buckwheat (Grain)	48	85	0.80	0.34	lbs./bu.
Corn (Grain)	56	84.5	0.70	0.31	lbs./bu.
(Stover)		85	17.7	3.5	lbs./ton
Millet, proso (Grain)		90	1.9	0.64	lbs./cwt.
Oats (Grain)	32	86	0.60	0.23	lbs./bu.
(Straw)		90	12.7	2.5	lbs./ton
Rye (Grain)	56	87	1.1	0.40	lbs./bu.
(Straw)		90	8.6	3.7	lbs./ton
Sorghum (Grain)	56	87	0.90	0.40	lbs./bu.
(Stover)		80	13.6	4.0	lbs./ton
Wheat (Grain)	60	86.5	1.2	0.50	lbs./bu.
(Straw)		90	10.1	2.1	lbs./ton
Oil Crops					
Soybeans (Grain)	60	87	3.5	0.79	lbs./bu.
(Stover)		90	15.8	2.5	lbs./ton
Sunflower, oil (Grain)	25	90	29.1	13.0	lbs./1000 lbs.
Silage Crops					
Alfalfa, mid-bloom		40	21.8	4.9	lbs./ton
Corn silage		35	9.0	3.2	lbs./ton
Small grain, dough		35	9.0	4.5	lbs./ton
Sorghum		30	9.0	3.0	lbs./ton
Sorghum-sudan		30	10.4	2.9	lbs./ton

Crop	DM %	N	P ₂ O ₅	Units
Forage Crops (taken as hay) ^{1,2}				
Alfalfa, mid-bloom	85	46.2	9.3	lbs./ton
Birdsfoot trefoil	85	43.2	9.0	lbs./ton
Bluestem, mature	85	7.9	2.7	lbs./ton
Bluestem, early heading	85	21.8	5.8	lbs./ton
Bromegrass, smooth, mid-bloom	85	39.2	10.9	lbs./ton
Clover, red	85	40.8	9.3	lbs./ton
Fescue, Tall, full-bloom	85	35.1	12.5	lbs./ton
Millet, foxtail	85	23.4	7.4	lbs./ton
Orchardgrass, late-bloom	85	22.8	11.7	lbs./ton
Prairie hay, mature	85	14.4	5.5	lbs./ton
Reed canarygrass	85	28.0	9.3	lbs./ton
Small grain, boot	85	34.0	11.7	lbs./ton
Small grain, dough	85	21.8	10.9	lbs./ton
Soybean hay	85	45.7	12.8	lbs./ton
Switchgrass	85	21.8	5.8	lbs./ton
Timothy, mid-bloom	85	26.4	9.0	lbs./ton
Vetch, hairy	85	56.6	13.2	lbs./ton
Wheatgrass, western, early-bloom	85	19.9	5.8	lbs./ton
Sugar Crops				
Sugar beet roots	20	3.5	1.6	lbs./ton
Sugar beet tops	18	5.5	1.3	lbs./ton
				of beets
Food Crops				
Dry Beans	90	4.1	1.1	lbs./cwt.
Popcorn (Grain)	86	1.8	0.6	lbs./cwt.
(Stover)	85	17.7	3.5	lbs./ton
Potatoes ³	22	7.0	2.5	lbs./ton

¹When grazing forages, phosphorus removal is limited to that incorporated into the body of the calf, or the milk of a dairy cow. A 500 lb. weaned calf contains about 4 lb. of phosphorus (9 lb. P₂O₅), and backgrounding will add another 0.8 lb. of P (1.8 lb. P₂O₅) per 100 lb of gain. Supplementation of cow and/or calf will partly replace the P removed. (e.g. 0.30% P x 2 lb./day x 60 days = 0.36 lb. P = 0.8 lb. P₂O₅)

²Calves will retain about 12% of forage nitrogen (about 2.7 lb. N / 100 lb. live wt.). More N is volatilized from the urine and manure (15% of this N). On average figure about 75% of grazed forage N is retained in the field. Also, creep feed at 15% C.P. x 2 lb./day x 60 days = 2.9 lb. N.

³Due to potato disease micro-organisms entering a field in manure, manure applications are discouraged where potatoes are or may be in the rotation.

Table R-2. Calculation of weighted soil nitrate-N credit.

	Example			Your Farm		
	a. Nitrate Nitrogen	b. Sample Depth	a x b	a. Nitrate Nitrogen	b. Sample Depth	a x b
Nitrate Sample 1	11	0 to 8 in.	$11 \times (8 - 0) = 88$			
Nitrate Sample 2	7	8 to 24 in.	$7 \times (24 - 8) = 112$			
Nitrate Sample 3	4	24-36 in.	$4 \times (36 - 24) = 48$			
Weighted Nitrate = (sum of a x b) ÷ total sample depth			$(88 + 112 + 48) \div 36 = 7$			

If the soil test report for nitrate-N is in lbs./ac, then divide that value by 0.3 and by the sampling depth in inches to convert to ppm. Use a default value of 3.0 ppm nitrate-N for samples less than 24 inches deep (unless for shallow-rooted crops), or where no samples were taken. If the effective root zone is less than 24 inches deep, prorate the nitrate-N credit on the basis of a full rooting depth, e.g. if the root depth is 18 inches, then divide ppm by 2 (half of 36 inches).

Table R-3. Typical crop available nutrient content of manure. These values may be used when a manure analysis is not available.

Species	NH ₄ - N	Org. - N	P ₂ O ₅	K ₂ O
Solid Manure (lbs. per ton)*				
Beef (dirt lot)	4	7	7	11
Beef (paved lot)	5	9	9	13
Swine	6	10	9	95
Dairy	2	8	3	6
Broiler litter	12	34	53	36
Turkey litter	8	32	50	30
Layer	12	22	51	36
Slurry Manure (lbs per 1,000 gallons) ¹				
Dairy	6	25	15	19
Beef	8	21	18	26
Swine (earthen pit)	24	8	22	20
Swine (deep pit)	33	17	42	30
Layer	37	20	52	33

Species	NH ₄ - N	Org. - N	P ₂ O ₅	K ₂ O
Sludge from anaerobic lagoon (lbs. per 1,000 gal.)				
Dairy	4	17	20	16
Swine	6	19	52	76
Beef (settling basin)	10	42	40	17
Top water from lagoon or holding pond (lbs / ac-in) ²				
Beef	41	4	10	203
Swine	50	29	17	86
Dairy	27	18	13	113

¹From "Manure Characteristics," MWPS-18-1.

²To obtain pounds per 1,000 gallons, divide by 27.

Table R-4. Legume and green manure nitrogen credits.

Previous Crop	Nitrogen Fertilizer Credits (lbs./acre)	
	Medium/Fine Soils	Sandy Soils
Soybeans	45	45
Soybeans < 30 bu./ac. due to season-long stress	1.0 lb./bu.	1.0 lb./bu.
Sugar beet tops, followed by dry beans	100	100
Alfalfa (70-100% stand, >4 plants/ft ²)	150	100
Alfalfa (30-69% stand, 1.5 to 4 plants/ft ²)	120	70
Alfalfa (0-29% stand, <1.5 plants/ft ²)	90	40
Red or Sweet Clover (70-100% stand, >4 plants/ft ²)	120	80
Red or Sweet Clover (30-69% stand, 1.5 to 4 plants/ft ²)	100	60
Red or Sweet Clover (0-29% stand, <1.5 plants/ft ²)	70	30

Table R-5. Nitrogen recommendations for barley.

Expected Yield (bushels per acre)	Soil Organic Matter (%)		
	1	2	3
	Pounds of Nitrogen to Apply Per Acre		
40	50	30	10
60	80	60	40
80	110	90	70

Table R-6. Nitrogen recommendations for corn based on expected yield with adjustments for soil nitrate-nitrogen and soil organic matter.

Residual Soil Nitrate Level ppm		Relative Level		Corn Expected Yield (Bu/Acre)													
				60	80	100	120	140	160	180	200	220	240				
				Corn Silage Expected Yield (Tons/Acre)								10	13	16	19	22	25
				Pounds of Nitrogen to Apply Per Acre													
3% soil organic matter																	
3	Low	60	75	90	105	120	135	150	165	185	200						
6	Low	35	50	65	80	95	110	125	145	160	175						
9	Medium	0	25	40	55	70	90	105	120	135	150						
12	Medium		0	15	35	50	65	80	95	110	125						
15	High			0	0	25	40	55	70	85	100						
18	High					0	15	30	45	65	80						
21	High						0	0	25	40	55						
24	Very high								0	15	30						
27	Very high									0	0						
2% soil organic matter																	
3	Low	65	85	105	120	140	160	175	195	215	230						
6	Low	40	60	80	95	115	135	155	170	190	210						
9	Medium	20	35	55	75	90	110	130	145	165	185						
12	Medium	0	15	30	50	70	85	105	125	140	160						
15	High		0	0	25	45	60	80	100	115	135						
18	High				0	20	40	55	75	95	110						
21	High					0	15	35	50	70	90						
24	Very high						0	0	25	45	65						
27	Very high								0	20	40						
1% soil organic matter																	
3	Low	75	95	115	140	160	180	200	225	245	265						
6	Low	50	70	95	115	135	155	180	200	220	240						
9	Medium	25	50	70	90	110	135	155	175	195	215						
12	Medium	0	25	45	65	85	110	130	150	170	195						
15	High		0	20	40	65	85	105	125	150	170						
18	High			0	20	40	60	80	105	125	145						
21	High				0	15	35	60	80	100	120						
24	Very high					0	15	35	55	75	95						
27	Very high						0	0	30	50	75						
33	Very high									0	25						
36	Very high										0						

Without a soil test for nitrate-N, assume 3 ppm; without a soil test for organic matter, assume 2%.

Table R-7. Nitrogen recommendations for dry edible beans. If the previous crop was alfalfa or sugar beets and the sugar beet tops were left in the field, no fertilizer nitrogen should be applied. Ample nitrogen will be present from alfalfa or sugar beet residues to supply the dry bean crop needs.

Residual Soil Nitrate-N (30 inch sample) (ppm)	Nitrogen to apply (Pounds per acre)
<5.6	75
5.6 to 8.2	50
8.3 to 11.0	25
> 11.0	0

Table R-8. Nitrogen recommendations for Nebraska pastures and haylands

Zone	Cool Season Grasses		Warm Season Grasses	
	Pasture	Hayland	Pasture	Hayland
Nitrogen to Apply* (pounds per acre)				
I	80-120	100-150	60-90	75-100
II	50-80	60-90	40-75	50-80
III	40-60	50-75	25-50	40-60
IV	20-40	30-60	20-40	30-50

* Use the higher rate when a full profile of subsoil moisture is present.

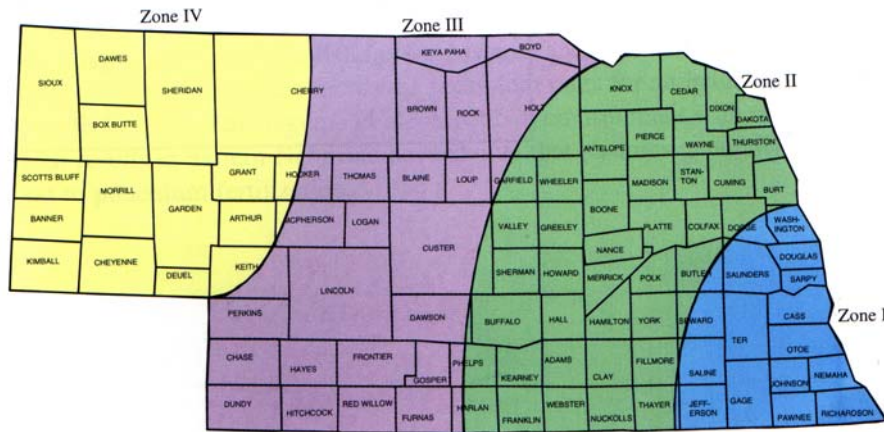


Table R-8. (continued) Recommended nitrogen application rates for Nebraska irrigated pastures based on residual soil nitrate-N.

Stocking Rate (yearlings per acre)	Nitrogen to Apply (pounds per acre)		
	0 – 50	50 – 100	100 – 150
3	8.3	5.6	3.7
4	11.1	8.3	6.5
>4	12.5	11.1	9.3

Table R-9. Nitrate-nitrogen indices and nitrogen recommendations for a three-foot soil sampling depth for millet production.

Residual Soil Nitrate Level		Nitrogen to Apply	
		Following Fallow	Following Wheat
ppm	Relative level	Pounds per acre	
0 to 2.0	Very low	40	80
2.1 to 3.5	Low	20	60
3.6 to 5.0	Medium	10	50
5.1 to 8.0	High	0	30
> 8.0	Very high	0	0
* Average nitrate-N in a three-foot profile			

Table R-10. Nitrogen recommendations for oats.

Expected Yield – Oats	Soil Organic Matter (%)		
	1	2	3
Bushels per acre	Pounds of N to apply per acre		
60	70	50	30
80	90	70	50
100	110	90	70

Table R-11. Nitrogen recommendations for popcorn.

Residual Soil Nitrate Level (ppm)	Expected Yield									
	Hundred weight per acre									
	25	30	35	40	45	50	55	60	70	
Nitrogen to Apply (pounds per acre)										
3% soil organic matter										
2	60	70	75	85	95	100	110	120	135	
4	45	55	60	70	75	85	95	100	120	
6	30	35	45	55	60	70	80	85	105	
8	10	20	30	35	45	55	60	70	85	
10		5	15	20	30	40	45	55	70	
15							5	15	30	
20										
2% soil organic matter										
2	65	75	85	95	105	115	125	135	150	
4	50	60	70	80	90	100	105	115	135	
6	35	45	55	65	75	80	90	100	120	
8	20	30	40	45	55	65	75	85	105	
10	5	10	20	30	40	50	60	70	90	
15						10	20	30	50	
20									10	
1% soil organic matter										
2	75	85	95	105	115	125	135	150	170	
4	55	70	80	90	100	110	120	130	155	
6	40	50	60	75	85	95	105	115	140	
8	25	35	45	55	70	80	90	100	120	
10	10	20	30	40	50	65	75	85	105	
15					10	25	35	45	65	
20								5	25	
Round to nearest 5 pounds										

Table R-12. Potato. Due to potato disease microorganisms entering a field in manure, manure applications are *strongly discouraged* where potatoes are or may be in the rotation.

Table R-13. Nitrogen recommendations for sorghum.

Soil Nitrate Level (ppm)	Expected Yield (bushels per acre)								
	40	60	80	100	120	140	160	180	200
	Nitrogen to Apply (pounds per acre)								
Organic Matter: 3%									
2	25	50	70	90	115	135	160	180	200
4	0	20	40	65	85	110	130	150	175
6	0	0	10	35	55	80	100	120	145
8	0	0	0	5	30	50	70	95	115
10	0	0	0	0	0	20	45	65	90
12	0	0	0	0	0	0	15	35	60
14	0	0	0	0	0	0	0	10	30
16	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
Organic Matter: 2%									
2	45	70	90	110	135	155	180	200	220
4	20	40	60	85	105	130	150	170	195
6	0	10	30	55	75	100	120	140	165
8	0	0	5	25	50	70	90	115	135
10	0	0	0	0	20	40	65	85	110
12	0	0	0	0	0	10	35	55	80
14	0	0	0	0	0	0	5	30	50
16	0	0	0	0	0	0	0	0	20
18	0	0	0	0	0	0	0	0	0
Organic Matter: 1%									
2	65	90	110	130	155	175	200	220	240
4	40	60	80	100	125	145	170	190	215
6	10	30	50	75	95	120	140	160	185
8	0	1	25	45	70	90	110	135	155
10	0	0	0	20	40	60	85	105	130
12	0	0	0	0	10	30	55	75	100
14	0	0	0	0	0	3	25	50	70
16	0	0	0	0	0	0	0	20	40
18	0	0	0	0	0	0	0	0	10

Table R-14. Nitrogen recommendations for sugar beets in Nebraska

Residual Soil Nitrate Level (Lbs. per acre, 6 foot sample)		Soil Organic Matter (%)			
		0 to 1.4	1.5 to 1.7	1.8 to 2.1	> 2.1
ppm		Nitrogen to Apply (pounds per acre)			
0 to 5	0 to 0.25	195	185	175	165
6 to 25	0.25 to 1.2	175	165	155	145
26 to 45	1.2 to 2.1	155	145	135	125
46 to 65	2.1 to 3.0	135	125	115	105
66 to 85	3.0 to 3.9	115	105	95	85
86 to 105	3.9 to 4.8	95	85	75	65
106 to 125	4.8 to 5.7	75	65	55	45
126 to 145	5.7 to 6.6	55	45	35	25
146 to 165	6.6 to 7.5	35	25	0	0
> 165	> 7.5	0	0	0	0

Table R-15. Nitrogen recommendations for sunflower.

Residual Soil Nitrate Level* (ppm)	Dryland Expected Yield					Irrigated Expected Yield				
	(pounds per acre)									
	1000	1200	1400	1600	1800	2000	2200	2400	2600	
	Nitrogen to Apply (pounds per acre)									
0 to 1.0	30	40	50	60	70	80	90	100	110	
1.0 to 2.0	15	25	35	45	55	65	75	85	95	
2.1 to 3.0		10	20	30	40	50	60	70	80	
3.1 to 4.0		0	0	15	25	35	45	55	65	
4.1 to 5.0		0	0	0	0	20	30	40	50	
5.1 to 6.0						0	15	25	35	
> 6.0						0	0	10	20	

* Average ppm NO₃-N in a 0 to 3-foot sample

Table R-16. Nitrogen recommendations for spring wheat.

Expected Yield (bushels per acre)	Soil Organic Matter (%)		
	1	2	3
	Nitrogen to Apply (pounds per acre)		
30	62	42	22
50	110	90	70
70	158	138	118

Table R-17. Recommended nitrogen rates for winter wheat.

Residual Soil Nitrate Level (Average ppm in 3 ft.)	Wheat Price per Bushel						
	\$2.50			\$3.50			
	Fertilizer price per pound of nitrogen						
	\$0.15	\$0.20	\$0.25		\$0.15	\$0.20	\$0.25
	Nitrogen to apply (pounds per acre)						
3	95	81	66		108	97	87
6	64	49	35		76	66	55
9	32	17	3		44	34	24
12	0	0	0		13	2	0
15	0	0	0		0	0	0

Table R-18. Recommended rates of phosphorus on alfalfa.

Phosphorus Soil Test Level			P ₂ O ₅ to Apply		
Bray-1	Olsen-P	Relative Level	Annually Irrigated ¹	Annually ²	Applied Every 2 years ³
				Non-Irrigated	
ppm			Pounds per acre		
0 to 5	0 – 3	Very low (vl)	60	40	80
6 to 15	4 – 10	Low (l)	40	30	60
16 to 25	11 – 17	Medium (m)	30	20	40
> 25	> 17	High (h)			

¹ Established stands where the expected yield is six to eight tons per acre with good water management perform best with annual early spring application. For new seedings of irrigated alfalfa, the farmer should plow down or disk in phosphate fertilizer ahead of seeding at twice the recommended annual rate if soils are low or very low in soil-test phosphorus. This should provide adequate phosphate for the first production year.

² Except in calcareous (high lime) soils, the producer should plow down or disk in applications ahead of seeding at three times the recommended annual rate for non-irrigated alfalfa. This should meet phosphorus needs for three to four years.

³ On calcareous soils in northeast Nebraska (Crofton and Nora soil series), application ahead of seeding following by top dressing every two years is the most profitable method.

Table R-19. Phosphorus recommendations for barley.

Phosphorus Soil Test			P ₂ O ₅ Application Method	
Relative Level	Bray-1	Olsen-P	Broadcast	Band
	ppm		Pounds per acre	
Very low	0 – 5	0 – 3	80	40
Low	6 – 15	4 – 10	60	30
Medium	16 – 25	11 – 17	40	20
High	> 25	> 17	0	0

Table R-20. Phosphorus recommendations for corn.

Phosphorus Soil Test			P ₂ O ₅ to Apply	
Bray-1*	Olsen P*	Relative Level	Broadcast	Band**
			Pounds per acre	
0 to 5	0 to 3	Very low (vl)	80	40
6 to 15	4 to 10	Low (l)	40	20
16 to 24	11 to 16	Medium (m)	0	†
25 to 30	17 to 20	High (h)	0	†
> 30	> 20	Very high (vh)	0	0

*Phosphorus tests: Bray-1 for acid and neutral soils; Olsen P for calcareous soils (pH 7.3 or greater).

** Applied in a band preplant or beside the row at planting.

† Applying 10 to 20 pounds per acre P₂O₅ with 5 to 10 pounds per acre nitrogen in a band at planting may increase early growth on these soils. See NebGuide G77-361, "Using Starter Fertilizers for Corn, Grain Sorghum and Soybeans."

Table R-21. Phosphorus recommendations for dry edible beans.

Phosphorus Soil Test			P ₂ O ₅ Application Rate	
Relative Level	Bray-1	Olsen-P	Broadcast	Band
	ppm		Pounds per acre	
Low	0 – 5	0 – 3	20	40
Medium	6-15	4 – 7	10	20
High	>15	>7	0	0

Table R-22. Phosphorus recommendations for dryland and irrigated grasslands.

Phosphorus Soil Test			Dryland P ₂ O ₅ to Apply	Irrigated P ₂ O ₅ to Apply	
Relative Level	Bray-1	Olsen-P		Grass	Grass-legume
	ppm		Pounds per acre		
Very Low	0 – 5	0 – 3	40	60	90
Low	6 – 15	4 – 10	20	40	60
Medium	16 – 25	10 – 17	10	20	30
High	>25	>17	0	0	0

Table R-23. Phosphorus recommendations for millet.

Phosphorus Soil Test			P ₂ O ₅ to Apply	
Bray-1 P	Olsen-P	Relative Level	Broadcast	Band
ppm			Pounds per acre	
<10	< 5	Very low	80	40
10 to 15	5 to 8	Low	40	20
16 to 20	8 to 12	Medium	20	10
> 20	> 12	High	0	0

Table R-24. Phosphorus recommendations for oats and other spring small grains.

Phosphorus Soil Test			P ₂ O ₅ Application Method	
Relative Level	Bray-1 P	Olsen-P	Broadcast	Band
	ppm		Pounds per acre	
Very low	0 – 5	0 – 3	80	40
Low	6 – 15	4 – 10	60	30
Medium	16 – 25	11 – 17	40	20
High	>25	>17	0	0

Table R-25. Phosphorus recommendations for popcorn.

Phosphorus Soil Test			P ₂ O ₅ to Apply	
Bray-1 P*	Olsen-P*	Relative Level	Broadcast	Band **
ppm			Pounds per acre	
0 to 5	0 to 3	Very low (vl)	80	40
6 to 15	4 to 10	Low (l)	40	20
16 to 24	11 to 16	Medium (m)	0	†
25 to 30	17 to 20	High (h)	0	†
>30	>20	Very high (vh)	0	0

* Phosphorus tests: Bray-1 for acid and neutral soils; Olsen-P for calcareous soil (pH 7.2 or greater).
** Applied in a band preplant or beside the row at planting.
† Applying 10 to 20 pounds per acre P₂O₅ with 5 to 10 pounds per acre nitrogen in a band at planting may increase early growth on these soils. See NebGuide G77-631, "Using Starter Fertilizers for Corn, Grain Sorghum and Soybeans."

Table R-26 Potato. Due to potato disease microorganisms entering a field in manure, manure applications are *strongly discouraged* where potatoes are or may be in the rotation.

Table R-27. Phosphorus recommendations for sorghum.

Phosphorus Soil Test	P ₂ O ₅ to Apply	
Bray-1 P	Broadcast	Band
ppm	Pounds per acre	
0 to 5	80	40
6 to 15	40	20
16 to 25	0	0
> 25	0	0

Table R-28. Phosphorus recommendations for soybean.

Phosphorus Soil Test		P ₂ O ₅ to Apply
Bray-1 P	Olsen-P	
ppm		Pounds per acre
0 to 4	0 to 3	65
6 to 8	4 to 5	40
9 to 12	6 to 8	20
> 12	> 8	0

Table R-29. Phosphorus recommendations for sugar beets.

Phosphorus Soil Test			P ₂ O ₅ to Apply
Bray-1 P	Olsen-P*	Relative Level	
ppm			Pounds per acre
0 to 5	0 to 3	Very low	100
6 to 10	4 to 7	Low	75
11 to 15	7 to 10	Marginal	50
>15	>10	Adequate	0

* For Mitchell soils with an Olsen P level between 11 and 16 ppm, apply 25 pounds P₂O₅ per acre.

Table R-30. Phosphorus recommendations for sunflower.

Phosphorus Soil Test		P ₂ O ₅ to Apply	
Bray-1 P*	Olsen-P*	Broadcast	Band
ppm		Pounds per acre	
0 to 5	0 to 4	60	30
6 to 15	5 to 10	40	20
16 to 25	11 to 15	20	10
>25	>15	0	0

* Phosphorus tests: Bray-1 for acid and neutral soils; Olsen-P for calcareous soils.

Table R-31. Phosphorus recommendations for spring wheat.

Phosphorus Soil Test			P ₂ O ₅ Application Method	
Relative Level	Bray-1 P	Olsen-P	Broadcast	Band
	ppm		Pounds per acre	
Very low	0 – 5	0 – 3	80	40
Low	6 – 15	4 – 10	60	30
Medium	16 – 25	11 – 17	40	20
High	>25	>17	0	0

Table R-32. Most profitable phosphorus application rates for winter wheat in Nebraska for different application methods and expected yield.

Phosphorus Soil Test		Yield Level (bushels/acre)		
Bray-1 P	Olsen-P	40	50	70
ppm		P ₂ O ₅ to apply pounds/ac*		
		Broadcast		
5	3	50	60	70
10	7	20	25	40
15	10	0	10	25
20	13	0	0	10
25	17	0	0	0
30	20	0	0	0
		Row or dual application		
5	3	35	50	70
10	7	10	25	45
15	10	0	10	30
20	13	0	0	20
25	17	0	0	15
30	20	0	0	10

* Based on \$4 per bushel wheat and 30 cents per pound of P₂O₅ and a soil pH of 7.0 (broadcast only).