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AGVISE LABORATORIES

Agricultural Handbook & Fertilizer Guidelines

2024

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Guides

AGVISE Fertilizer Guidelines (NPK)

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Alfalfa, hay

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
AGVISE Broadcast																		
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
2	0		45	35	30	20	0	0	0	0	100	85	70	55	40	20	0	0
3	0		65	55	45	35	20	0	0	0	155	130	105	80	55	35	0	0
4	0		90	75	60	45	30	0	0	0	205	170	140	110	75	45	0	0
5	0		110	95	75	55	35	0	0	0	255	215	175	135	95	55	0	0
6	0		135	110	90	65	45	0	0	0	305	260	210	160	115	65	0	0
7	0		155	130	105	75	50	0	0	0	355	300	245	190	135	75	0	0
AGVISE Broadcast/Maintenance																		
2	0		45	35	30	20	20	20	0	0	100	100	100	100	100	100	0	0
3	0		65	55	45	35	30	30	0	0	155	150	150	150	150	150	0	0
4	0		90	75	60	45	40	40	0	0	205	200	200	200	200	200	0	0
5	0		110	95	75	55	50	50	0	0	255	250	250	250	250	250	0	0
6	0		135	110	90	65	60	60	0	0	305	300	300	300	300	300	0	0
7	0		155	130	105	75	70	70	0	0	355	350	350	350	350	350	0	0
AGVISE Band																		
2	0		30	25	20	15*	15*	15*	15*	0	85	70	60	45	30	15	15*	0
3	0		45	35	25	20	15*	15*	15*	0	125	105	85	65	45	25	15*	0
4	0		60	50	35	25	15*	15*	15*	0	170	145	115	90	60	35	15*	0
5	0		75	60	45	30	15	15*	15*	0	215	180	145	110	75	45	15*	0
6	0		90	70	55	35	20	15*	15*	0	255	215	175	135	90	50	15*	0
7	0		105	85	65	45	25	15*	15*	0	300	250	205	155	105	60	15*	0
AGVISE Band/Maintenance																		
2	0		30	25	20	20	20	20	15*	0	100	100	100	100	100	100	15*	0
3	0		45	35	30	30	30	30	15*	0	150	150	150	150	150	150	15*	0
4	0		60	50	40	40	40	40	15*	0	200	200	200	200	200	200	15*	0
5	0		75	60	50	50	50	50	15*	0	250	250	250	250	250	250	15*	0
6	0		90	70	60	60	60	60	15*	0	300	300	300	300	300	300	15*	0
7	0		105	85	70	70	70	70	15*	0	350	350	350	350	350	350	15*	0
University Broadcast																		
2	0		35	25	15	0	0	0	0	0	95	65	35	10	0	0	0	0
3	0		50	35	20	10	0	0	0	0	145	100	55	10	0	0	0	0
4	0		65	45	30	10	0	0	0	0	190	130	70	10	0	0	0	0
5	0		80	60	35	10	0	0	0	0	240	165	90	15	0	0	0	0
6	0		100	70	40	15	0	0	0	0	290	195	105	15	0	0	0	0
7	0		115	80	50	15	0	0	0	0	335	230	125	20	0	0	0	0

*Starter rate only

Alfalfa, seed

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
season/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	0		40	35	25	20	15	0	0	0	100	75	50	25	0	0	0	0
								AGVISE Band										
1	0		65	55	45	35	25	0	0	0	135	100	70	40	0	0	0	0

Barley, feed

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
40	70		45	35	30	20	15*	15*	15*	0	75	60	45	30	10	10*	10*	0
60	105		65	55	45	35	20	15*	15*	0	115	90	65	40	20	10*	10*	0
80	140		90	75	60	40	25	15*	15*	0	150	120	90	55	25	10*	10*	0
100	175		110	90	70	50	30	15*	15*	0	190	150	110	70	30	10*	10*	0
120	210		135	110	85	65	40	15*	15*	0	230	180	130	85	35	10*	10*	0
140	245		155	130	100	75	45	15*	15*	0	265	210	155	100	40	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
40	70		45	35	30	20	20	20	15*	0	75	60	45	30	20	20	10*	0
60	105		65	55	45	30	30	30	15*	0	115	90	65	40	30	30	10*	0
80	140		90	75	60	40	35	35	15*	0	150	120	90	55	40	40	10*	0
100	175		110	90	70	50	45	45	15*	0	190	150	110	70	50	50	10*	0
120	210		135	110	85	65	55	55	15*	0	230	180	130	85	60	60	10*	0
140	245		155	130	100	75	65	65	15*	0	265	210	155	100	70	70	10*	0
Minimum N = 10								AGVISE Band										
40	70		20	20	15*	15*	15*	15*	15*	0	40	30	20	15	10*	10*	10*	0
60	105		35	30	20	15	15*	15*	15*	0	55	45	35	20	10*	10*	10*	0
80	140		45	35	30	20	15*	15*	15*	0	75	60	45	30	10	10*	10*	0
100	175		55	45	35	25	20	15*	15*	0	95	75	55	35	15	10*	10*	0
120	210		65	55	45	35	20	15*	15*	0	115	90	65	40	20	10*	10*	0
140	245		80	65	50	40	25	15*	15*	0	135	105	75	50	20	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
40	70		20	20	20	20	20	20	15*	0	40	30	20	20	20	20	10*	0
60	105		35	30	30	30	30	30	15*	0	55	45	35	30	30	30	10*	0
80	140		45	35	35	35	35	35	15*	0	75	60	45	40	40	40	10*	0
100	175		55	45	45	45	45	45	15*	0	95	75	55	50	50	50	10*	0
120	210		65	55	55	55	55	55	15*	0	115	90	65	60	60	60	10*	0
140	245		80	65	65	65	65	65	15*	0	135	105	75	70	70	70	10*	0
Minimum N = 10								University Broadcast										
40	70		25	20	15*	15*	15*	15*	15*	0	45	30	15	10*	10*	10*	10*	0
60	100		40	30	15*	15*	15*	15*	15*	0	65	45	25	10*	10*	10*	10*	0
80	135		55	40	25	15*	15*	15*	15*	0	90	60	35	10*	10*	10*	10*	0
100	170		70	50	30	15*	15*	15*	15*	0	110	80	45	10*	10*	10*	10*	0
120	205		80	60	35	15*	15*	15*	15*	0	135	95	50	10*	10*	10*	10*	0
140	240		95	70	40	15*	15*	15*	15*	0	155	110	60	15	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Barley, hay

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	25		15	10	0	0	0	0	0	0	20	15	10	0	0	0	0	0
2	50		30	20	15	0	0	0	0	0	40	30	20	15	0	0	0	0
3	70		45	35	25	15	0	0	0	0	60	45	35	20	0	0	0	0
4	95		60	45	30	20	0	0	0	0	80	60	45	25	0	0	0	0
5	120		75	55	40	25	0	0	0	0	100	75	55	35	10	0	0	0
6	145		90	70	50	25	0	0	0	0	120	90	65	40	15	0	0	0
								AGVISE Broadcast/Maintenance										
1	25		15	10	10	10	10	10	0	0	45	45	45	45	45	45	0	0
2	50		30	25	25	25	25	25	0	0	90	90	90	90	90	90	0	0
3	70		45	35	35	35	35	35	0	0	135	135	135	135	135	135	0	0
4	95		60	50	50	50	50	50	0	0	180	180	180	180	180	180	0	0
5	120		75	60	60	60	60	60	0	0	225	225	225	225	225	225	0	0
6	145		90	70	70	70	70	70	0	0	270	270	270	270	270	270	0	0
								AGVISE Band										
1	25		10	10	5	5	0	0	0	0	15	10	10	5	5	0	0	0
2	50		20	15	10	5	0	0	0	0	30	25	20	15	10	5	0	0
3	70		35	25	20	10	5	0	0	0	45	35	30	20	15	5	0	0
4	95		45	35	25	15	5	0	0	0	60	50	40	30	20	10	0	0
5	120		55	40	30	20	5	0	0	0	75	65	50	35	25	10	0	0
6	145		65	50	35	20	5	0	0	0	90	75	60	45	30	15	0	0
								AGVISE Band/Maintenance										
1	25		10	10	10	10	10	10	0	0	45	45	45	45	45	45	0	0
2	50		25	25	25	25	25	25	0	0	90	90	90	90	90	90	0	0
3	70		35	35	35	35	35	35	0	0	135	135	135	135	135	135	0	0
4	95		60	50	50	50	50	50	0	0	180	180	180	180	180	180	0	0
5	120		75	60	60	60	60	60	0	0	225	225	225	225	225	225	0	0
6	145		90	70	70	70	70	70	0	0	270	270	270	270	270	270	0	0

Barley, malt

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
40	60		45	35	30	20	15*	15*	15*	0	75	60	45	30	10	10*	10*	0
60	95		65	55	45	30	20	15*	15*	0	115	90	65	40	20	10*	10*	0
80	125		90	75	60	40	25	15*	15*	0	150	120	90	55	25	10*	10*	0
100	155		110	90	70	50	30	15*	15*	0	190	150	110	70	30	10*	10*	0
120	185		135	110	85	65	40	15*	15*	0	230	180	130	85	35	10*	10*	0
140	215		155	130	100	75	45	15*	15*	0	265	210	155	100	40	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
40	60		45	35	30	20	20	20	15*	0	75	60	45	30	20	20	10*	0
60	95		65	55	45	30	30	30	15*	0	115	90	65	40	30	30	10*	0
80	125		90	75	60	40	35	35	15*	0	150	120	90	55	40	40	10*	0
100	155		110	90	70	50	45	45	15*	0	190	150	110	70	50	50	10*	0
120	185		135	110	85	65	55	55	15*	0	230	180	130	85	60	60	10*	0
140	215		155	130	100	75	65	65	15*	0	265	210	155	100	70	70	10*	0
Minimum N = 10								AGVISE Band										
40	60		20	20	15*	15*	15*	15*	15*	0	40	30	20	15	10*	10*	10*	0
60	95		35	30	20	15	15*	15*	15*	0	55	45	35	20	10*	10*	10*	0
80	125		45	35	30	20	15*	15*	15*	0	75	60	45	30	10	10*	10*	0
100	155		55	45	35	25	20	15*	15*	0	95	75	55	35	15	10*	10*	0
120	185		65	55	45	35	20	15*	15*	0	115	90	65	40	20	10*	10*	0
140	215		80	65	50	40	25	15*	15*	0	135	105	75	50	20	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
40	60		20	20	20	20	20	20	15*	0	40	30	20	20	20	20	10*	0
60	95		35	30	30	30	30	30	15*	0	55	45	35	30	30	30	10*	0
80	125		45	35	35	35	35	35	15*	0	75	60	45	40	40	40	10*	0
100	155		55	45	45	45	45	45	15*	0	95	75	55	50	50	50	10*	0
120	185		65	55	55	55	55	55	15*	0	115	90	65	60	60	60	10*	0
140	215		80	65	65	65	65	65	15*	0	135	105	75	70	70	70	10*	0
Minimum N = 10								University Broadcast										
40	60		25	20	15*	15*	15*	15*	15*	0	45	30	15	10*	10*	10*	10*	0
60	90		40	30	15*	15*	15*	15*	15*	0	65	45	25	10*	10*	10*	10*	0
80	120		55	40	25	15*	15*	15*	15*	0	90	60	35	10*	10*	10*	10*	0
100	150		70	50	30	15*	15*	15*	15*	0	110	80	45	10*	10*	10*	10*	0
120	180		80	60	35	15*	15*	15*	15*	0	135	95	50	10*	10*	10*	10*	0
140	210		95	70	40	15*	15*	15*	15*	0	155	110	60	15	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Bean, dry

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1000	50		40	35	25	20	0	0	0	0	45	35	25	0	0	0	0	0
1400	70		55	45	40	30	20	0	0	0	65	50	35	20	0	0	0	0
1800	90		75	60	50	40	25	0	0	0	80	65	45	30	0	0	0	0
2200	110		90	75	60	45	35	0	0	0	100	80	55	35	0	0	0	0
2600	130		105	90	70	55	40	0	0	0	115	90	65	40	0	0	0	0
3000	150		120	100	85	65	45	0	0	0	135	105	80	50	20	0	0	0
								AGVISE Broadcast/Maintenance										
1000	50		40	35	25	20	15	15	0	0	45	35	25	15	15	15	0	0
1400	70		55	45	40	30	20	20	0	0	65	50	35	20	20	20	0	0
1800	90		75	60	50	40	25	25	0	0	80	65	45	30	25	25	0	0
2200	110		90	75	60	45	35	30	0	0	100	80	55	35	30	30	0	0
2600	130		105	90	70	55	40	35	0	0	115	90	65	40	35	35	0	0
3000	150		120	100	85	65	45	40	0	0	135	105	80	50	40	40	0	0
								AGVISE Band										
1000	50		20	20	15	10	0	0	0	0	25	20	15	0	0	0	0	0
1400	70		30	25	20	15	15	0	0	0	40	30	20	10	0	0	0	0
1800	90		35	30	25	20	15	0	0	0	50	40	25	15	0	0	0	0
2200	110		45	40	35	25	20	0	0	0	60	45	35	20	0	0	0	0
2600	130		55	45	40	30	25	0	0	0	70	55	40	20	0	0	0	0
3000	150		60	55	45	35	30	0	0	0	85	65	45	25	0	0	0	0
								AGVISE Band/Maintenance										
1000	50		20	20	15	15	15	15	0	0	25	20	15	15	15	15	0	0
1400	70		30	25	20	20	20	20	0	0	40	30	20	20	20	20	0	0
1800	90		35	30	25	25	25	25	0	0	50	40	25	25	25	25	0	0
2200	110		45	40	35	30	30	30	0	0	60	45	35	30	30	30	0	0
2600	130		55	45	40	35	35	35	0	0	70	55	40	35	35	35	0	0
3000	150		60	55	45	40	40	40	0	0	85	65	45	40	40	40	0	0
								University Broadcast										
1000	50		20	15	10	0	0	0	0	0	30	20	15	10	0	0	0	0
1400	70		30	20	15	0	0	0	0	0	45	30	20	10	0	0	0	0
1800	90		35	25	15	10	0	0	0	0	55	40	25	10	0	0	0	0
2200	110		45	30	20	10	0	0	0	0	65	50	30	10	0	0	0	0
2600	130		55	40	25	10	0	0	0	0	80	55	35	15	0	0	0	0
3000	150		60	45	25	10	0	0	0	0	90	65	40	15	0	0	0	0

Bean, faba

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1000	0		30	25	20	0	0	0	0	0	60	45	25	0	0	0	0	0
1400	0		45	40	30	20	0	0	0	0	80	60	35	0	0	0	0	0
1800	0		60	50	40	30	0	0	0	0	105	75	50	0	0	0	0	0
2200	0		70	60	45	35	25	0	0	0	130	95	60	25	0	0	0	0
2600	0		85	70	55	40	25	0	0	0	155	110	70	30	0	0	0	0
3000	0		100	80	65	50	30	0	0	0	175	130	80	35	0	0	0	0
								AGVISE Broadcast/Maintenance										
1000	0		30	25	20	15	15	15	0	0	60	45	25	15	15	15	0	0
1400	0		45	40	30	20	20	20	0	0	80	60	35	20	20	20	0	0
1800	0		60	50	40	30	25	25	0	0	105	75	50	25	25	25	0	0
2200	0		70	60	45	35	30	30	0	0	130	95	60	30	30	30	0	0
2600	0		85	70	55	40	35	35	0	0	155	110	70	35	35	35	0	0
3000	0		100	80	65	50	40	40	0	0	175	130	80	40	40	40	0	0
								AGVISE Band										
1000	0		15	15	10	10*	10*	10*	10*	0	30	20	15	5	0	0	0	0
1400	0		20	20	15	10	10*	10*	10*	0	40	30	20	5	0	0	0	0
1800	0		30	25	20	15	10	10*	10*	0	50	35	25	10	0	0	0	0
2200	0		35	30	25	20	15	10*	10*	0	65	45	30	10	0	0	0	0
2600	0		40	35	30	25	15	10*	10*	0	75	55	35	15	0	0	0	0
3000	0		50	40	35	25	20	10*	10*	0	85	65	40	15	0	0	0	0
								AGVISE Band/Maintenance										
1000	0		30	25	20	15	15	15	0	0	60	45	25	15	15	15	0	0
1400	0		45	40	30	20	20	20	0	0	80	60	35	20	20	20	0	0
1800	0		60	50	40	30	25	25	0	0	105	75	50	25	25	25	0	0
2200	0		70	60	45	35	30	30	0	0	130	95	60	30	30	30	0	0
2600	0		85	70	55	40	35	35	0	0	155	110	70	35	35	35	0	0
3000	0		100	80	65	50	40	40	0	0	175	130	80	40	40	40	0	0
								University Broadcast										
1000	0		15	10	10	0	0	0	0	0	25	20	10	0	0	0	0	0
1400	0		20	15	10	0	0	0	0	0	35	25	15	0	0	0	0	0
1800	0		25	20	10	0	0	0	0	0	45	30	20	0	0	0	0	0
2200	0		35	25	15	0	0	0	0	0	55	40	20	0	0	0	0	0
2600	0		40	25	15	0	0	0	0	0	70	45	25	10	0	0	0	0
3000	0		45	30	20	10	0	0	0	0	80	55	30	10	0	0	0	0

*Starter rate only

Bean, navy

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
AGVISE Broadcast																		
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
1000	50		40	35	25	20	0	0	0	0	45	35	25	0	0	0	0	0
1400	70		55	45	40	30	20	0	0	0	65	50	35	20	0	0	0	0
1800	90		75	60	50	40	25	0	0	0	80	65	45	30	0	0	0	0
2200	110		90	75	60	45	35	0	0	0	100	80	55	35	0	0	0	0
2600	130		105	90	70	55	40	0	0	0	115	90	65	40	0	0	0	0
3000	150		120	100	85	65	45	0	0	0	135	105	80	50	20	0	0	0
AGVISE Broadcast/Maintenance																		
1000	50		40	35	25	20	15	15	0	0	45	35	25	15	15	15	0	0
1400	70		55	45	40	30	20	20	0	0	65	50	35	20	20	20	0	0
1800	90		75	60	50	40	25	25	0	0	80	65	45	30	25	25	0	0
2200	110		90	75	60	45	35	30	0	0	100	80	55	35	30	30	0	0
2600	130		105	90	70	55	40	35	0	0	115	90	65	40	35	35	0	0
3000	150		120	100	85	65	45	40	0	0	135	105	80	50	40	40	0	0
AGVISE Band																		
1000	50		20	20	15	10	0	0	0	0	25	20	15	0	0	0	0	0
1400	70		30	25	20	15	15	0	0	0	40	30	20	10	0	0	0	0
1800	90		35	30	25	20	15	0	0	0	50	40	25	15	0	0	0	0
2200	110		45	40	35	25	20	0	0	0	60	45	35	20	0	0	0	0
2600	130		55	45	40	30	25	0	0	0	70	55	40	20	0	0	0	0
3000	150		60	55	45	35	30	0	0	0	85	65	45	25	0	0	0	0
AGVISE Band/Maintenance																		
1000	50		20	20	15	15	15	15	0	0	25	20	15	15	15	15	0	0
1400	70		30	25	20	20	20	20	0	0	40	30	20	20	20	20	0	0
1800	90		35	30	25	25	25	25	0	0	50	40	25	25	25	25	0	0
2200	110		45	40	35	30	30	30	0	0	60	45	35	30	30	30	0	0
2600	130		55	45	40	35	35	35	0	0	70	55	40	35	35	35	0	0
3000	150		60	55	45	40	40	40	0	0	85	65	45	40	40	40	0	0
University Broadcast																		
1000	50		20	15	10	0	0	0	0	0	30	20	15	10	0	0	0	0
1400	70		30	20	15	0	0	0	0	0	45	30	20	10	0	0	0	0
1800	90		35	25	15	10	0	0	0	0	55	40	25	10	0	0	0	0
2200	110		45	30	20	10	0	0	0	0	65	50	30	10	0	0	0	0
2600	130		55	40	25	10	0	0	0	0	80	55	35	15	0	0	0	0
3000	150		60	45	25	10	0	0	0	0	90	65	40	15	0	0	0	0

Bean, pinto

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1000	40		40	35	25	20	0	0	0	0	45	35	25	0	0	0	0	0
1400	55		55	45	40	30	20	0	0	0	65	50	35	20	0	0	0	0
1800	70		75	60	50	40	25	0	0	0	80	65	45	30	0	0	0	0
2200	90		90	75	60	45	35	0	0	0	100	80	55	35	0	0	0	0
2600	105		105	90	70	55	40	0	0	0	115	90	65	40	0	0	0	0
3000	120		120	100	85	65	45	0	0	0	135	105	80	50	20	0	0	0
								AGVISE Broadcast/Maintenance										
1000	40		40	35	25	20	15	15	0	0	45	35	25	15	15	15	0	0
1400	55		55	45	40	30	20	20	0	0	65	50	35	20	20	20	0	0
1800	70		75	60	50	40	25	25	0	0	80	65	45	30	25	25	0	0
2200	90		90	75	60	45	35	30	0	0	100	80	55	35	30	30	0	0
2600	105		105	90	70	55	40	35	0	0	115	90	65	40	35	35	0	0
3000	120		120	100	85	65	45	40	0	0	135	105	80	50	40	40	0	0
								AGVISE Band										
1000	40		20	20	15	10	0	0	0	0	25	20	15	0	0	0	0	0
1400	55		30	25	20	15	15	0	0	0	40	30	20	10	0	0	0	0
1800	70		35	30	25	20	15	0	0	0	50	40	25	15	0	0	0	0
2200	90		45	40	35	25	20	0	0	0	60	45	35	20	0	0	0	0
2600	105		55	45	40	30	25	0	0	0	70	55	40	20	0	0	0	0
3000	120		60	55	45	35	30	0	0	0	85	65	45	25	0	0	0	0
								AGVISE Band/Maintenance										
1000	40		20	20	15	15	15	15	0	0	25	20	15	15	15	15	0	0
1400	55		30	25	20	20	20	20	0	0	40	30	20	20	20	20	0	0
1800	70		35	30	25	25	25	25	0	0	50	40	25	25	25	25	0	0
2200	90		45	40	35	30	30	30	0	0	60	45	35	30	30	30	0	0
2600	105		55	45	40	35	35	35	0	0	70	55	40	35	35	35	0	0
3000	120		60	55	45	40	40	40	0	0	85	65	45	40	40	40	0	0
								University Broadcast										
1000	50		20	15	10	0	0	0	0	0	30	20	15	10	0	0	0	0
1400	70		30	20	15	0	0	0	0	0	45	30	20	10	0	0	0	0
1800	90		35	25	15	10	0	0	0	0	55	40	25	10	0	0	0	0
2200	110		45	30	20	10	0	0	0	0	65	50	30	10	0	0	0	0
2600	130		55	40	25	10	0	0	0	0	80	55	35	15	0	0	0	0
3000	150		60	45	25	10	0	0	0	0	90	65	40	15	0	0	0	0

Birdsfoot trefoil/clover

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
							AGVISE Broadcast											
	lb/acre N						lb/acre P_2O_5											
2	0		35	30	20	15	0	0	0	0	85	60	35	0	0	0	0	0
3	0		55	45	35	25	0	0	0	0	130	90	55	15	0	0	0	0
4	0		75	60	45	30	15	0	0	0	175	125	70	20	0	0	0	0
5	0		95	75	55	40	20	0	0	0	220	155	90	25	0	0	0	0
6	0		110	90	70	45	25	0	0	0	260	185	110	30	0	0	0	0
							AGVISE Broadcast/Maintenance											
2	0		35	30	30	30	30	30	0	0	85	70	70	70	70	70	0	0
3	0		55	45	45	45	45	45	0	0	130	105	105	105	105	105	0	0
4	0		75	60	60	60	60	60	0	0	175	140	140	140	140	140	0	0
5	0		95	75	75	75	75	75	0	0	220	175	175	175	175	175	0	0
6	0		110	90	90	90	90	90	0	0	260	210	210	210	210	210	0	0
							AGVISE Band											
2	0		25	20	15	10	5	0	0	0	70	50	30	10	0	0	0	0
3	0		40	30	25	15	5	0	0	0	105	75	50	20	0	0	0	0
4	0		50	40	30	20	10	0	0	0	140	100	65	25	0	0	0	0
5	0		65	50	40	25	10	0	0	0	175	130	80	30	0	0	0	0
6	0		80	60	45	30	15	0	0	0	210	155	95	40	0	0	0	0
							AGVISE Band/Maintenance											
2	0		30	30	30	30	30	30	0	0	70	70	70	70	70	70	0	0
3	0		45	45	45	45	45	45	0	0	105	105	105	105	105	105	0	0
4	0		60	60	60	60	60	60	0	0	140	140	140	140	140	140	0	0
5	0		75	75	75	75	75	75	0	0	175	175	175	175	175	175	0	0
6	0		90	90	90	90	90	90	0	0	210	210	210	210	210	210	0	0
							University Broadcast											
2	0		35	25	10	0	0	0	0	0	85	60	35	10	0	0	0	0
3	0		50	35	20	0	0	0	0	0	130	90	50	10	0	0	0	0
4	0		70	45	25	0	0	0	0	0	175	120	65	15	0	0	0	0
5	0		85	60	30	0	0	0	0	0	215	150	85	20	0	0	0	0
6	0		105	70	35	0	0	0	0	0	260	180	100	20	0	0	0	0

Broccoli/cauliflower

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5									lb/acre K_2O							
1	200		210	190	170	150	130	75	0	0	250	195	140	85	30	0	0	0

Buckwheat

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
10	25		15	10	10*	10*	10*	10*	10*	0	20	15	10*	10*	10*	10*	10*	0
20	50		30	25	20	15	10*	10*	10*	0	35	30	20	10	10*	10*	10*	0
30	75		45	35	30	20	15	10*	10*	0	55	40	30	20	10*	10*	10*	0
40	100		60	50	40	30	20	10*	10*	0	70	55	40	25	10*	10*	10*	0
50	125		75	60	50	35	25	10*	10*	0	90	70	50	30	10*	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
10	25		15	10	10*	10*	10*	10*	10*	0	20	15	10*	10*	10*	10*	10*	0
20	50		30	25	20	15	10*	10*	10*	0	35	30	20	10	10*	10*	10*	0
30	75		45	35	30	20	15	10*	10*	0	55	40	30	20	10*	10*	10*	0
40	100		60	50	40	30	20	15	10*	0	70	55	40	25	10*	10*	10*	0
50	125		75	60	50	35	25	15	10*	0	90	70	50	30	15	15	10*	0
Minimum N = 10								AGVISE Band										
10	25		10*	10*	10*	10*	10*	10*	10*	0	10*	10*	10*	10*	10*	10*	10*	0
20	50		15	10	10*	10*	10*	10*	10*	0	20	15	10*	10*	10*	10*	10*	0
30	75		20	20	15	10	10*	10*	10*	0	25	20	15	10*	10*	10*	10*	0
40	100		30	25	20	15	10*	10*	10*	0	35	30	20	10	10*	10*	10*	0
50	125		35	30	25	20	10	10*	10*	0	45	35	25	15	10*	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
10	25		10*	10*	10*	10*	10*	10*	10*	0	10*	10*	10*	10*	10*	10*	10*	0
20	50		15	10	10*	10*	10*	10*	10*	0	20	15	10*	10*	10*	10*	10*	0
30	75		20	20	15	10	10*	10*	10*	0	25	20	15	10*	10*	10*	10*	0
40	100		30	25	20	15	15	15	10*	0	35	30	20	10	10*	10*	10*	0
50	125		35	30	25	20	15	15	10*	0	45	35	25	15	15	15	10*	0
Minimum N = 10								University Broadcast										
10	20		10*	10*	10*	10*	10*	10*	10*	0	15	10*	10*	10*	10*	10*	10*	0
20	45		25	15	10*	10*	10*	10*	10*	0	35	25	15	10*	10*	10*	10*	0
30	65		35	25	15	10*	10*	10*	10*	0	50	35	20	10*	10*	10*	10*	0
40	90		45	35	20	10*	10*	10*	10*	0	65	45	30	10*	10*	10*	10*	0
50	110		60	40	25	10*	10*	10*	10*	0	80	60	35	10*	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Cabbage

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5									lb/acre K_2O							
1	10		10*	10*	10*	10*	10*	10*	10*	0	15	10*	10*	10*	10*	10*	10*	0
Minimum N = 10								AGVISE Broadcast										
1	10		10*	10*	10*	10*	10*	10*	10*	0	10*	10*	10*	10*	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Canary grass, seed

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
1600	55	35	30	25	0	0	0	0	0	65	50	35	20	0	0	0	0
2000	70	45	40	30	25	0	0	0	0	80	60	45	25	0	0	0	0
2400	85	55	45	35	25	0	0	0	0	95	75	50	30	0	0	0	0
2800	100	65	55	45	30	20	0	0	0	110	85	60	35	0	0	0	0
3200	110	75	60	50	35	25	0	0	0	125	100	70	40	0	0	0	0
3600	125	85	70	55	40	25	0	0	0	140	110	80	45	0	0	0	0
4000	140	95	80	60	45	30	0	0	0	160	125	90	50	0	0	0	0
							AGVISE Broadcast/Maintenance										
1600	55	35	30	25	20	15	15	0	0	65	50	35	20	20	20	0	0
2000	70	45	40	30	25	20	20	0	0	80	60	45	30	30	30	0	0
2400	85	55	45	35	25	25	25	0	0	95	75	50	35	35	35	0	0
2800	100	65	55	45	30	30	30	0	0	110	85	60	40	40	40	0	0
3200	110	75	60	50	35	30	30	0	0	125	100	70	45	45	45	0	0
3600	125	85	70	55	40	35	35	0	0	140	110	80	50	50	50	0	0
4000	140	95	80	60	45	40	40	0	0	160	125	90	55	55	55	0	0
							AGVISE Band										
1600	55	20	15	15	10	10	0	0	0	30	25	15	10	0	0	0	0
2000	70	20	20	15	15	10	0	0	0	40	30	20	10	0	0	0	0
2400	85	25	25	20	15	10	0	0	0	45	35	25	10	0	0	0	0
2800	100	30	25	20	20	15	0	0	0	55	40	30	15	0	0	0	0
3200	110	35	30	25	20	15	0	0	0	60	45	30	15	0	0	0	0
3600	125	40	35	30	25	20	0	0	0	70	55	35	20	0	0	0	0
4000	140	45	40	30	25	20	0	0	0	80	60	40	20	0	0	0	0
							AGVISE Band/Maintenance										
1600	55	20	15	15	15	15	15	0	0	30	25	20	20	20	20	0	0
2000	70	20	20	20	20	20	20	0	0	40	30	30	30	30	30	0	0
2400	85	25	25	25	25	25	25	0	0	45	35	35	35	35	35	0	0
2800	100	30	30	30	30	30	30	0	0	55	40	40	40	40	40	0	0
3200	110	35	30	30	30	30	30	0	0	60	45	45	45	45	45	0	0
3600	125	40	35	35	35	35	35	0	0	70	55	50	50	50	50	0	0
4000	140	45	40	40	40	40	40	0	0	80	60	55	55	55	55	0	0
							University Broadcast										
1600	55	25	15	10	0	0	0	0	0	40	30	20	10	0	0	0	0
2000	70	30	20	10	0	0	0	0	0	55	40	25	10	0	0	0	0
2400	85	35	25	15	0	0	0	0	0	65	45	30	10	0	0	0	0
2800	100	40	30	15	0	0	0	0	0	75	55	35	15	0	0	0	0
3200	110	45	35	20	0	0	0	0	0	85	60	40	15	0	0	0	0
3600	125	55	35	20	0	0	0	0	0	95	70	45	15	0	0	0	0
4000	140	60	40	25	0	0	0	0	0	105	75	50	20	0	0	0	0

Canola, bu/acre

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
10	35		25	0	0	0	0	0	0	0	30	25	0	0	0	0	0	0
20	70		45	40	30	25	0	0	0	0	60	45	30	0	0	0	0	0
30	105		70	60	45	35	25	0	0	0	95	70	45	20	0	0	0	0
40	140		90	80	65	50	35	0	0	0	125	90	60	30	0	0	0	0
50	175		115	95	80	60	45	0	0	0	155	115	75	35	0	0	0	0
60	210		140	115	95	75	50	0	0	0	185	140	90	40	0	0	0	0
70	245		160	135	110	85	60	0	0	0	215	160	105	50	0	0	0	0
80	280		185	155	125	100	70	0	0	0	250	185	120	55	0	0	0	0
								AGVISE Broadcast/Maintenance										
10	35		25	20	15	10	10	10	0	0	30	25	15	5	5	5	0	0
20	70		45	40	30	25	20	20	0	0	60	45	30	15	10	10	0	0
30	105		70	60	45	35	25	25	0	0	95	70	45	20	15	15	0	0
40	140		90	80	65	50	35	35	0	0	125	90	60	30	20	20	0	0
50	175		115	95	80	60	45	45	0	0	155	115	75	35	20	20	0	0
60	210		140	115	95	75	55	55	0	0	185	140	90	40	25	25	0	0
70	245		160	135	110	85	65	65	0	0	215	160	105	50	30	30	0	0
80	280		185	155	125	100	70	70	0	0	250	185	120	55	35	35	0	0
								AGVISE Band										
10	35		10	10*	10*	10*	10*	10*	10*	0	15	10	5	5	0	0	0	0
20	70		25	20	15	10	10*	10*	10*	0	30	25	15	5	0	0	0	0
30	105		35	30	25	15	10	10*	10*	0	45	35	20	10	0	0	0	0
40	140		45	40	30	25	15	10*	10*	0	60	45	30	15	0	0	0	0
50	175		60	50	40	30	20	10*	10*	0	75	55	35	15	0	0	0	0
60	210		70	60	45	35	20	10*	10*	0	95	70	45	20	0	0	0	0
70	245		80	70	55	40	25	10*	10*	0	110	80	50	25	0	0	0	0
80	280		95	80	60	45	30	10*	10*	0	125	90	60	30	0	0	0	0
								AGVISE Band/Maintenance										
10	35		10	10*	10*	10*	10*	10*	10*	0	15	10	5	5	5	5	0	0
20	70		25	20	20	20	20	20	10*	0	30	25	15	10	10	10	0	0
30	105		35	30	25	25	25	25	10*	0	45	35	20	15	15	15	0	0
40	140		45	40	35	35	35	35	10*	0	60	45	30	20	20	20	0	0
50	175		60	50	45	45	45	45	10*	0	75	55	35	20	20	20	0	0
60	210		70	60	55	55	55	55	10*	0	95	70	45	25	25	25	0	0
70	245		80	70	65	65	65	65	10*	0	110	80	50	30	30	30	0	0
80	280		95	80	70	70	70	70	10*	0	125	90	60	35	35	35	0	0

*Starter rate only

Canola, lb/acre

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
							AGVISE Broadcast											
	lb/acre N						lb/acre P_2O_5										lb/acre K_2O	
800	55		35	30	25	0	0	0	0	0	50	35	25	0	0	0	0	0
1200	85		55	45	40	30	20	0	0	0	75	55	35	0	0	0	0	0
1600	110		75	60	50	40	30	0	0	0	100	75	50	20	0	0	0	0
2000	140		90	80	65	50	35	0	0	0	125	90	60	30	0	0	0	0
2400	170		110	95	75	60	40	0	0	0	150	110	70	35	0	0	0	0
							AGVISE Broadcast/Maintenance											
800	55		35	30	25	20	15	15	0	0	50	35	25	10	5	5	0	0
1200	85		55	45	40	30	20	20	0	0	75	55	35	15	10	10	0	0
1600	110		75	60	50	40	30	30	0	0	100	75	50	20	15	15	0	0
2000	140		90	80	65	50	35	35	0	0	125	90	60	30	20	20	0	0
2400	170		110	95	75	60	45	45	0	0	150	110	70	35	20	20	0	0
							AGVISE Band											
800	55		20	15	10	10*	10*	10*	10*	0	25	20	10	5	0	0	0	0
1200	85		30	25	20	15	10*	10*	10*	0	35	25	20	10	0	0	0	0
1600	110		35	30	25	20	10	10*	10*	0	50	35	25	10	0	0	0	0
2000	140		45	40	30	25	15	10*	10*	0	60	45	30	15	0	0	0	0
2400	170		55	45	35	25	20	10*	10*	0	75	55	35	15	0	0	0	0
							AGVISE Band/Maintenance											
800	55		20	15	15	15	15	15	10*	0	25	20	10	5	5	5	0	0
1200	85		30	25	20	20	20	20	10*	0	35	25	20	10	10	10	0	0
1600	110		35	30	30	30	30	30	10*	0	50	35	25	15	15	15	0	0
2000	140		45	40	35	35	35	35	10*	0	60	45	30	20	20	20	0	0
2400	170		55	45	45	45	45	45	10*	0	75	55	35	20	20	20	0	0
							University Broadcast											
800	50		25	20	10	0	0	0	0	0	40	25	15	10	0	0	0	0
1200	80		40	25	15	10	0	0	0	0	55	40	25	10	0	0	0	0
1600	105		50	35	20	10	0	0	0	0	75	55	30	10	0	0	0	0
2000	130		65	45	30	10	0	0	0	0	95	65	40	15	0	0	0	0
2400	155		75	55	35	10	0	0	0	0	115	80	50	15	0	0	0	0

*Starter rate only

Carrot

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
300	105		120	105	95	85	75	40	0	0	145	120	90	60	30	0	0	0
400	140		160	145	130	115	100	55	0	0	195	160	120	80	45	0	0	0
500	175		195	180	160	140	120	65	0	0	245	200	150	100	55	0	0	0
600	210		235	215	190	170	145	80	0	0	295	235	180	120	65	0	0	0
700	245		275	250	225	200	170	90	0	0	345	275	210	140	75	0	0	0
800	280		315	285	255	225	195	105	0	0	395	315	240	165	85	0	0	0
								AGVISE Broadcast/Maintenance										
300	105		120	105	95	85	75	40	0	0	145	145	145	145	145	145	0	0
400	140		160	145	130	115	100	55	0	0	195	190	190	190	190	190	0	0
500	175		195	180	160	140	120	65	0	0	245	240	240	240	240	240	0	0
600	210		235	215	190	170	145	80	0	0	295	290	290	290	290	290	0	0
700	245		275	250	225	200	170	90	0	0	345	335	335	335	335	335	0	0
800	280		315	285	255	225	195	105	0	0	395	385	385	385	385	385	0	0
								AGVISE Band										
300	105		70	65	60	55	45	30	0	0	80	70	55	40	25	10	0	0
400	140		95	85	80	70	65	40	0	0	110	90	70	50	35	15	0	0
500	175		115	105	100	90	80	50	0	0	140	115	90	65	40	20	0	0
600	210		140	130	115	105	95	60	0	0	165	135	110	80	50	20	0	0
700	245		165	150	135	125	110	75	0	0	195	160	125	90	60	25	0	0
800	280		185	170	155	140	125	85	0	0	220	180	145	105	65	30	0	0
								AGVISE Band/Maintenance										
300	105		70	65	60	55	45	30	0	0	145	145	145	145	145	145	0	0
400	140		95	85	80	70	65	40	0	0	190	190	190	190	190	190	0	0
500	175		115	105	100	90	80	50	0	0	240	240	240	240	240	240	0	0
600	210		140	130	115	105	95	60	0	0	290	290	290	290	290	290	0	0
700	245		165	150	135	125	110	75	0	0	335	335	335	335	335	335	0	0
800	280		185	170	155	140	125	85	0	0	385	385	385	385	385	385	0	0

Chickpea

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
1200	0	40	30	25	0	0	0	0	0	70	50	30	0	0	0	0	0
1400	0	45	40	30	20	0	0	0	0	80	60	35	0	0	0	0	0
1600	0	50	45	35	25	0	0	0	0	95	70	45	0	0	0	0	0
1800	0	60	50	40	30	0	0	0	0	105	75	50	0	0	0	0	0
2000	0	65	55	45	30	20	0	0	0	120	85	55	20	0	0	0	0
2200	0	70	60	45	35	25	0	0	0	130	95	60	25	0	0	0	0
2400	0	80	65	50	40	25	0	0	0	140	105	65	25	0	0	0	0
							AGVISE Broadcast/Maintenance										
1200	0	40	30	25	20	15	15	0	0	70	50	30	15	15	15	0	0
1400	0	45	40	30	20	20	20	0	0	80	60	35	20	20	20	0	0
1600	0	50	45	35	25	20	20	0	0	95	70	45	20	20	20	0	0
1800	0	60	50	40	30	25	25	0	0	105	75	50	25	25	25	0	0
2000	0	65	55	45	30	30	30	0	0	120	85	55	25	25	25	0	0
2200	0	70	60	45	35	30	30	0	0	130	95	60	30	30	30	0	0
2400	0	80	65	50	40	35	35	0	0	140	105	65	30	30	30	0	0
							AGVISE Band										
1200	0	20	15	15	10*	10*	10*	10*	0	35	25	15	5	0	0	0	0
1400	0	20	20	15	10	10*	10*	10*	0	40	30	20	5	0	0	0	0
1600	0	25	20	20	15	10*	10*	10*	0	45	35	20	10	0	0	0	0
1800	0	30	25	20	15	10	10*	10*	0	50	35	25	10	0	0	0	0
2000	0	30	25	20	15	15	10*	10*	0	60	40	25	10	0	0	0	0
2200	0	35	30	25	20	15	10*	10*	0	65	45	30	10	0	0	0	0
2400	0	40	30	25	20	15	10*	10*	0	70	50	30	10	0	0	0	0
							AGVISE Band/Maintenance										
1200	0	20	15	15	15	15	15	10*	0	35	25	15	15	15	15	0	0
1400	0	20	20	20	20	20	20	10*	0	40	30	20	20	20	20	0	0
1600	0	25	20	20	20	20	20	10*	0	45	35	20	20	20	20	0	0
1800	0	30	25	25	25	25	25	10*	0	50	35	25	25	25	25	0	0
2000	0	30	30	30	30	30	30	10*	0	60	40	25	25	25	25	0	0
2200	0	35	30	30	30	30	30	10*	0	65	45	30	30	30	30	0	0
2400	0	40	35	35	35	35	35	10*	0	70	50	30	30	30	30	0	0
							University Broadcast										
1200	0	20	15	10	0	0	0	0	0	30	20	10	0	0	0	0	0
1400	0	20	15	10	0	0	0	0	0	35	25	15	0	0	0	0	0
1600	0	25	15	10	0	0	0	0	0	40	30	15	0	0	0	0	0
1800	0	25	20	10	0	0	0	0	0	45	30	20	0	0	0	0	0
2000	0	30	20	10	0	0	0	0	0	50	35	20	0	0	0	0	0
2200	0	35	25	15	0	0	0	0	0	55	40	20	0	0	0	0	0
2400	0	35	25	15	0	0	0	0	0	60	45	25	0	0	0	0	0

*Starter rate only

Corn, grain

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
						AGVISE Broadcast											
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
100	120	90	75	60	45	30	15*	15*	0	115	95	70	50	30	10*	10*	0
125	150	110	95	75	60	40	15*	15*	0	145	115	90	65	35	10*	10*	0
150	180	135	110	90	70	50	15*	15*	0	170	140	110	75	45	10*	10*	0
175	210	155	130	105	80	55	15*	15*	0	200	165	125	90	50	10	10*	0
200	240	180	150	120	90	65	15*	15*	0	230	185	145	100	55	15	10*	0
225	270	200	170	135	105	70	15*	15*	0	260	210	160	115	65	15	10*	0
250	300	225	190	150	115	80	15*	15*	0	290	235	180	125	70	15	10*	0
Minimum N = 10						AGVISE Broadcast/Maintenance											
100	120	90	75	60	45	35	35	15*	0	115	95	70	50	30	25	10*	0
125	150	110	95	75	60	45	45	15*	0	145	115	90	65	35	30	10*	0
150	180	135	110	90	70	55	55	15*	0	170	140	110	75	45	35	10*	0
175	210	155	130	105	80	65	65	15*	0	200	165	125	90	50	40	10*	0
200	240	180	150	120	90	75	75	15*	0	230	185	145	100	55	45	10*	0
225	270	200	170	135	105	85	85	15*	0	260	210	160	115	65	50	10*	0
250	300	225	190	150	115	90	90	15*	0	290	235	180	125	70	55	10*	0
Minimum N = 10						AGVISE Band											
100	120	50	40	30	20	15*	15*	15*	0	60	50	40	25	15	10*	10*	0
125	150	65	50	40	25	15*	15*	15*	0	75	60	45	35	20	10*	10*	0
150	180	80	60	45	30	15*	15*	15*	0	90	75	55	40	25	10*	10*	0
175	210	90	70	55	35	20	15*	15*	0	105	85	65	45	30	10*	10*	0
200	240	105	85	60	40	20	15*	15*	0	120	95	75	55	30	10	10*	0
225	270	115	95	70	45	25	15*	15*	0	135	110	85	60	35	10	10*	0
250	300	130	105	80	50	25	15*	15*	0	150	120	95	70	40	15	10*	0
Minimum N = 10						AGVISE Band/Maintenance											
100	120	50	40	35	35	35	35	15*	0	60	50	40	25	25	25	10*	0
125	150	65	50	45	45	45	45	15*	0	75	60	45	35	30	30	10*	0
150	180	80	60	55	55	55	55	15*	0	90	75	55	40	35	35	10*	0
175	210	90	70	65	65	65	65	15*	0	105	85	65	45	40	40	10*	0
200	240	105	85	75	75	75	75	15*	0	120	95	75	55	45	45	10*	0
225	270	115	95	85	85	85	85	15*	0	135	110	85	60	50	50	10*	0
250	300	130	105	90	90	90	90	15*	0	150	120	95	70	55	55	10*	0
Minimum N = 10						University Broadcast											
100	120	60	45	25	15*	15*	15*	15*	0	100	80	55	35	10*	0	0	0
125	150	75	55	35	15*	15*	15*	15*	0	125	100	70	40	15	0	0	0
150	180	90	65	40	15*	15*	15*	15*	0	150	120	85	50	15	0	0	0
175	210	105	75	45	15*	15*	15*	15*	0	175	135	100	60	20	0	0	0
200	240	120	85	50	15*	15*	15*	15*	0	200	155	110	65	20	0	0	0
225	270	140	100	60	20	15*	15*	15*	0	225	175	125	75	25	0	0	0
250	300	155	110	65	20	15*	15*	15*	0	250	195	140	85	30	0	0	0

Minimum N = 10

*Starter rate only

Corn, NP/CP=0.10

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	175		160	135	105	80	55	15*	15*	0	230	185	145	100	60	20	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
1	175		160	135	105	80	65	65	15*	0	230	185	145	100	60	40	10*	0
Minimum N = 10								AGVISE Band										
1	175		95	75	55	35	20	15*	15*	0	120	100	80	55	35	15	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
1	175		95	75	65	65	65	65	15*	0	120	100	80	55	40	40	10*	0
Minimum N = 10								University Broadcast										
1	175		105	75	40	15*	15*	15*	15*	0	200	155	110	65	20	0	0	0
Minimum N = 10																		

*Starter rate only

Corn, NP/CP=0.15

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	155		160	135	105	80	55	15*	15*	0	230	185	145	100	60	20	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
1	155		160	135	105	80	65	65	15*	0	230	185	145	100	60	40	10*	0
Minimum N = 10								AGVISE Band										
1	155		95	75	55	35	20	15*	15*	0	120	100	80	55	35	15	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
1	155		95	75	65	65	65	65	15*	0	120	100	80	55	40	40	10*	0
Minimum N = 10								University Broadcast										
1	155		105	75	40	15*	15*	15*	15*	0	200	155	110	65	20	0	0	0
Minimum N = 10																		

*Starter rate only

Corn, NP/CP=0.20

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	145		160	135	105	80	55	15*	15*	0	230	185	145	100	60	20	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
1	145		160	135	105	80	65	65	15*	0	230	185	145	100	60	40	10*	0
Minimum N = 10								AGVISE Band										
1	145		95	75	55	35	20	15*	15*	0	120	100	80	55	35	15	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
1	145		95	75	65	65	65	65	15*	0	120	100	80	55	40	40	10*	0
Minimum N = 10								University Broadcast										
1	145		105	75	40	15*	15*	15*	15*	0	200	155	110	65	20	0	0	0
Minimum N = 10																		*Starter rate only

Corn, pop

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
										AGVISE Broadcast								
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
50	60		45	35	30	25	15	15*	15*	0	60	45	35	20	10*	10*	10*	0
70	85		60	50	40	30	20	15*	15*	0	85	65	45	30	10	10*	10*	0
90	110		80	65	55	40	30	15*	15*	0	105	85	60	40	15	10*	10*	0
110	130		100	80	65	50	35	15*	15*	0	130	100	75	45	20	10*	10*	0
130	155		115	95	80	60	40	15*	15*	0	155	120	90	55	20	10*	10*	0
150	180		135	110	90	70	50	15*	15*	0	180	140	100	65	25	10*	10*	0
170	205		150	125	105	80	55	15*	15*	0	200	160	115	70	30	10*	10*	0
Minimum N = 10										AGVISE Broadcast/Maintenance								
50	60		45	35	30	25	20	20	15*	0	60	45	35	20	15	15	10*	0
70	85		60	50	40	30	30	30	15*	0	85	65	45	30	20	20	10*	0
90	110		80	65	55	40	35	35	15*	0	105	85	60	40	25	25	10*	0
110	130		100	80	65	50	45	45	15*	0	130	100	75	45	30	30	10*	0
130	155		115	95	80	60	50	50	15*	0	155	120	90	55	35	35	10*	0
150	180		135	110	90	70	60	60	15*	0	180	140	100	65	40	40	10*	0
170	205		150	125	105	80	70	70	15*	0	200	160	115	70	45	45	10*	0
Minimum N = 10										AGVISE Band								
50	60		25	20	15*	15*	15*	15*	15*	0	30	25	20	10	10*	10*	10*	0
70	85		35	30	20	15*	15*	15*	15*	0	45	35	25	15	10*	10*	10*	0
90	110		45	35	30	20	15*	15*	15*	0	55	45	30	20	10*	10*	10*	0
110	130		55	45	35	20	15*	15*	15*	0	70	55	40	25	10*	10*	10*	0
130	155		65	55	40	25	15*	15*	15*	0	80	65	45	30	10	10*	10*	0
150	180		80	60	45	30	15*	15*	15*	0	95	75	55	35	15	10*	10*	0
170	205		90	70	55	35	15	15*	15*	0	105	85	60	40	15	10*	10*	0
Minimum N = 10										AGVISE Band/Maintenance								
50	60		25	20	20	20	20	20	15*	0	30	25	20	15	15	15	10*	0
70	85		35	30	30	30	30	30	15*	0	45	35	25	20	20	20	10*	0
90	110		45	35	35	35	35	35	15*	0	55	45	30	25	25	25	10*	0
110	130		55	45	45	45	45	45	15*	0	70	55	40	30	30	30	10*	0
130	155		65	55	50	50	50	50	15*	0	80	65	45	35	35	35	10*	0
150	180		80	60	60	60	60	60	15*	0	95	75	55	40	40	40	10*	0
170	205		90	70	70	70	70	70	15*	0	105	85	60	45	45	45	10*	0
Minimum N = 10										University Broadcast								
50	60		30	20	15*	15*	15*	15*	15*	0	50	35	20	10*	10*	10*	10*	0
70	85		45	30	20	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
90	110		55	40	25	15*	15*	15*	15*	0	90	65	40	15	10*	10*	10*	0
110	130		65	50	30	15*	15*	15*	15*	0	110	80	50	15	10*	10*	10*	0
130	155		80	55	35	15*	15*	15*	15*	0	135	95	55	20	10*	10*	10*	0
150	180		90	65	40	15*	15*	15*	15*	0	155	110	65	20	10*	10*	10*	0
170	205		105	75	45	15*	15*	15*	15*	0	175	125	75	25	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Corn, silage

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
5	50		40	35	25	20	15	15*	15*	0	50	40	30	25	15	10*	10*	0
10	105		75	65	55	45	35	15*	15*	0	95	80	65	50	35	15	10*	0
15	155		115	100	85	65	50	15*	15*	0	145	120	95	75	50	25	10*	0
20	210		155	135	110	90	65	15*	15*	0	195	160	130	100	65	35	10*	0
25	260		195	165	140	110	80	15*	15*	0	240	200	160	120	80	40	10*	0
30	310		235	200	165	130	100	15*	15*	0	290	245	195	145	100	50	10*	0
35	365		270	235	195	155	115	15*	15*	0	340	285	225	170	115	60	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
5	50		40	35	25	20	20	20	15*	0	50	40	40	40	40	40	10*	0
10	105		75	65	55	45	35	35	15*	0	95	85	85	85	85	85	10*	0
15	155		115	100	85	65	55	55	15*	0	145	125	125	125	125	125	10*	0
20	210		155	135	110	90	70	70	15*	0	195	165	165	165	165	165	10*	0
25	260		195	165	140	110	90	90	15*	0	240	205	205	205	205	205	10*	0
30	310		235	200	165	130	110	110	15*	0	290	250	250	250	250	250	10*	0
35	365		270	235	195	155	125	125	15*	0	340	290	290	290	290	290	10*	0
Minimum N = 10								AGVISE Band										
5	50		20	15	15*	15*	15*	15*	15*	0	25	20	15	10	10*	10*	10*	0
10	105		40	35	30	25	20	15*	15*	0	50	40	35	25	15	10*	10*	0
15	155		60	50	45	35	30	15*	15*	0	75	60	50	35	25	15	10*	0
20	210		80	70	60	50	40	15*	15*	0	100	80	65	50	35	20	10*	0
25	260		100	85	75	60	50	15*	15*	0	120	100	80	60	40	20	10*	0
30	310		115	105	90	75	60	15	15*	0	145	125	100	75	50	25	10*	0
35	365		135	120	105	85	70	20	15*	0	170	145	115	85	60	30	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
5	50		20	20	20	20	20	20	15*	0	40	40	40	40	40	40	10*	0
10	105		40	35	35	35	35	35	15*	0	85	85	85	85	85	85	10*	0
15	155		60	55	55	55	55	55	15*	0	125	125	125	125	125	125	10*	0
20	210		80	70	70	70	70	70	15*	0	165	165	165	165	165	165	10*	0
25	260		100	90	90	90	90	90	15*	0	205	205	205	205	205	205	10*	0
30	310		115	110	110	110	110	110	15*	0	250	250	250	250	250	250	10*	0
35	365		135	125	125	125	125	125	15*	0	290	290	290	290	290	290	10*	0
Minimum N = 10								University Broadcast										
5	50		25	20	15*	15*	15*	15*	15*	0	40	30	20	10*	10*	10*	10*	0
10	105		50	35	20	15*	15*	15*	15*	0	85	60	35	10*	10*	10*	10*	0
15	155		75	55	30	15*	15*	15*	15*	0	125	90	55	15	10*	10*	10*	0
20	210		100	70	40	15*	15*	15*	15*	0	165	120	70	20	10*	10*	10*	0
25	260		125	90	55	20	15*	15*	15*	0	210	150	90	30	10*	10*	10*	0
30	310		150	105	65	20	15*	15*	15*	0	250	175	105	35	10*	10*	10*	0
35	365		170	125	75	25	15*	15*	15*	0	290	205	125	40	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Corn-soybean rotation

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
100	120		120	100	80	60	45	15*	15*	0	145	125	100	75	55	30	10*	0
125	150		145	125	100	80	55	15*	15*	0	185	155	125	95	70	40	10*	0
150	180		175	150	120	95	65	15*	15*	0	220	185	150	115	80	45	10*	0
175	210		205	175	140	110	75	15*	15*	0	255	215	175	135	95	55	10*	0
200	240		235	200	160	125	90	15*	15*	0	295	250	200	155	110	60	10*	0
225	270		265	225	180	140	100	15*	15*	0	330	280	225	175	120	70	10*	0
250	300		295	250	205	155	110	15*	15*	0	370	310	250	195	135	80	10*	0

Minimum N = 10

AGVISE Broadcast/Maintenance

100	120		120	100	80	60	55	55	15*	0	145	125	100	75	55	55	10*	0
125	150		145	125	100	80	70	70	15*	0	185	155	125	95	70	70	10*	0
150	180		175	150	120	95	85	85	15*	0	220	185	150	115	80	80	10*	0
175	210		205	175	140	110	100	100	15*	0	255	215	175	135	95	95	10*	0
200	240		235	200	160	125	115	115	15*	0	295	250	200	155	110	110	10*	0
225	270		265	225	180	140	130	130	15*	0	330	280	225	175	125	125	10*	0
250	300		295	250	205	155	140	140	15*	0	370	310	250	195	135	135	10*	0

Minimum N = 10

First-year broadcast P and K guideline for 2-year corn-soybean rotation, assuming corn:soybean yield ratio of 3.7:1 bu/acre. Approximate summation of AGVISE corn broadcast guideline and soybean crop removal.

Corn, sweet

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
4	80	65	55	40	25	15*	15*	15*	0	105	80	55	30	10*	10*	10*	0
5	100	85	65	50	30	15*	15*	15*	0	135	100	70	40	10*	10*	10*	0
6	120	100	80	60	40	15	15*	15*	0	160	120	85	45	10*	10*	10*	0
7	140	115	90	70	45	20	15*	15*	0	185	140	100	55	10*	10*	10*	0
8	160	135	105	80	50	25	15*	15*	0	215	165	110	60	10*	10*	10*	0
9	180	150	120	90	55	25	15*	15*	0	240	185	125	70	10*	10*	10*	0
10	200	165	130	100	65	30	15*	15*	0	270	205	140	75	10	10*	10*	0
Minimum N = 10							AGVISE Broadcast/Maintenance										
4	80	65	55	40	25	15*	15*	15*	0	105	80	55	30	20	20	10*	0
5	100	85	65	50	30	15*	15*	15*	0	135	100	70	40	30	30	10*	0
6	120	100	80	60	40	15	15	15*	0	160	120	85	45	35	35	10*	0
7	140	115	90	70	45	20	20	15*	0	185	140	100	55	40	40	10*	0
8	160	135	105	80	50	25	20	15*	0	215	165	110	60	45	45	10*	0
9	180	150	120	90	55	25	25	15*	0	240	185	125	70	50	50	10*	0
10	200	165	130	100	65	30	30	15*	0	270	205	140	75	55	55	10*	0
Minimum N = 10							AGVISE Band										
4	80	35	25	20	15*	15*	15*	15*	0	55	40	30	15	10*	10*	10*	0
5	100	40	30	20	15*	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
6	120	50	40	25	15*	15*	15*	15*	0	80	60	45	25	10*	10*	10*	0
7	140	60	45	30	20	15*	15*	15*	0	95	75	50	30	10*	10*	10*	0
8	160	65	50	35	20	15*	15*	15*	0	105	85	60	35	10*	10*	10*	0
9	180	75	60	40	25	15*	15*	15*	0	120	95	65	40	10	10*	10*	0
10	200	85	65	45	25	15*	15*	15*	0	135	105	75	45	15	10*	10*	0
Minimum N = 10							AGVISE Band/Maintenance										
4	80	35	25	20	15*	15*	15*	15*	0	55	40	30	20	20	20	10*	0
5	100	40	30	20	15*	15*	15*	15*	0	65	50	35	30	30	30	10*	0
6	120	50	40	25	15	15	15	15*	0	80	60	45	35	35	35	10*	0
7	140	60	45	30	20	20	20	15*	0	95	75	50	40	40	40	10*	0
8	160	65	50	35	20	20	20	15*	0	105	85	60	45	45	45	10*	0
9	180	75	60	40	25	25	25	15*	0	120	95	65	50	50	50	10*	0
10	200	85	65	45	30	30	30	15*	0	135	105	75	55	55	55	10*	0
Minimum N = 10							University Broadcast										
4	70	40	25	15*	15*	15*	15*	15*	0	80	55	35	15	10*	10*	10*	0
5	90	50	35	20	15*	15*	15*	15*	0	95	70	45	20	10*	10*	10*	0
6	110	60	40	25	15*	15*	15*	15*	0	115	85	55	25	10*	10*	10*	0
7	125	65	50	30	15*	15*	15*	15*	0	135	100	65	25	10*	10*	10*	0
8	145	75	55	30	15*	15*	15*	15*	0	155	115	70	30	10*	10*	10*	0
9	160	85	60	35	15*	15*	15*	15*	0	175	130	80	35	10*	10*	10*	0
10	180	95	70	40	15*	15*	15*	15*	0	195	140	90	40	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Crambe

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
							AGVISE Broadcast											
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1000	55		35	30	20	0	0	0	0	0	50	40	25	0	0	0	0	0
1400	75		50	40	30	20	0	0	0	0	70	55	35	20	0	0	0	0
1800	95		65	55	40	30	0	0	0	0	90	70	50	30	0	0	0	0
2200	115		80	65	50	35	0	0	0	0	110	85	60	35	0	0	0	0
2600	140		95	80	60	40	20	0	0	0	130	100	70	40	0	0	0	0
3000	160		110	90	70	45	25	0	0	0	150	115	80	45	0	0	0	0
							AGVISE Broadcast/Maintenance											
1000	55		35	30	20	20	20	20	0	0	50	40	25	15	10	10	0	0
1400	75		50	40	30	25	25	25	0	0	70	55	35	20	10	10	0	0
1800	95		65	55	40	30	30	30	0	0	90	70	50	30	15	15	0	0
2200	115		80	65	50	40	40	40	0	0	110	85	60	35	20	20	0	0
1600	140		95	80	60	45	45	45	0	0	130	100	70	40	25	25	0	0
3000	160		110	90	70	55	55	55	0	0	150	115	80	45	25	25	0	0
							AGVISE Band											
1000	55		20	15	10	10*	10*	10*	10*	0	30	25	20	10	5	0	0	0
1400	75		25	20	15	10*	10*	10*	10*	0	45	35	25	15	5	0	0	0
1800	95		35	25	20	15	10*	10*	10*	0	60	45	30	20	5	0	0	0
2200	115		40	35	25	15	10*	10*	10*	0	70	55	40	25	5	0	0	0
1600	140		50	40	30	20	10	10*	10*	0	85	65	45	30	10	0	0	0
3000	160		55	45	35	25	10	10*	10*	0	95	75	55	30	10	0	0	0
							AGVISE Band/Maintenance											
1000	55		20	20	20	20	20	20	10*	0	30	25	20	10	10	10	0	0
1400	75		25	25	25	25	25	25	10*	0	45	35	25	15	10	10	0	0
1800	95		35	30	30	30	30	30	10*	0	60	45	30	20	15	15	0	0
2200	115		40	40	40	40	40	40	10*	0	70	55	40	25	20	20	0	0
1600	140		50	45	45	45	45	45	10*	0	85	65	45	30	25	25	0	0
3000	160		55	55	55	55	55	55	10*	0	95	75	55	30	25	25	0	0
							University Broadcast											
1000	50		30	20	15	0	0	0	0	0	45	30	20	0	0	0	0	0
1400	70		45	30	20	10	0	0	0	0	65	45	25	10	0	0	0	0
1800	90		55	40	25	10	0	0	0	0	85	60	30	10	0	0	0	0
2200	110		70	50	30	10	0	0	0	0	105	70	40	10	0	0	0	0
1600	130		80	60	35	10	0	0	0	0	120	85	45	10	0	0	0	0
3000	150		95	65	40	10	0	0	0	0	140	95	55	10	0	0	0	0

*Starter rate only

Flax

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
							AGVISE Broadcast											
	lb/acre N						lb/acre P_2O_5											
10	30		20	0	0	0	0	0	0	0	30	20	0	0	0	0	0	0
20	60		45	35	30	20	0	0	0	0	55	45	30	0	0	0	0	0
30	90		65	55	45	30	0	0	0	0	85	65	50	30	0	0	0	0
40	120		90	75	60	40	25	0	0	0	115	90	65	40	0	0	0	0
50	150		110	90	70	50	30	0	0	0	145	110	80	50	0	0	0	0
60	180		135	110	85	65	40	0	0	0	170	135	95	55	0	0	0	0
							AGVISE Broadcast/Maintenance											
10	30		20	20	15	10	10	10	0	0	30	20	15	10	5	5	0	0
20	60		45	35	30	20	20	20	0	0	55	45	30	20	10	10	0	0
30	90		65	55	45	30	25	25	0	0	85	65	50	30	15	15	0	0
40	120		90	75	60	40	35	35	0	0	115	90	65	40	20	20	0	0
50	150		110	90	70	50	45	45	0	0	145	110	80	50	25	25	0	0
60	180		135	110	85	65	55	55	0	0	170	135	95	55	30	30	0	0
							AGVISE Band											
10	30		10	10*	10*	10*	10*	10*	10*	0	15	10	5	0	0	0	0	0
20	60		20	20	15	10*	10*	10*	10*	0	25	20	10	0	0	0	0	0
30	90		35	25	20	15	10*	10*	10*	0	40	25	15	5	0	0	0	0
40	120		45	35	30	20	15	10*	10*	0	50	35	20	5	0	0	0	0
50	150		55	45	35	25	15	10*	10*	0	65	45	25	5	0	0	0	0
60	180		65	55	45	30	20	10*	10*	0	80	55	30	5	0	0	0	0
							AGVISE Band/Maintenance											
10	30		10	10*	10*	10*	10*	10*	10*	0	15	10	5	5	5	5	0	0
20	60		20	20	20	20	20	20	10*	0	25	20	10	10	10	10	0	0
30	90		35	25	25	25	25	25	10*	0	40	25	15	15	15	15	0	0
40	120		45	35	35	35	35	35	10*	0	50	35	20	20	20	20	0	0
50	150		55	45	45	45	45	45	10*	0	65	45	25	25	25	25	0	0
60	180		65	55	55	55	55	55	10*	0	80	55	30	30	30	30	0	0
							University Broadcast											
10	30		10	10	0	0	0	0	0	0	20	15	10	0	0	0	0	0
20	60		20	15	10	0	0	0	0	0	40	25	15	0	0	0	0	0
30	90		30	20	15	0	0	0	0	0	60	40	25	10	0	0	0	0
40	120		40	30	20	10	0	0	0	0	75	55	30	10	0	0	0	0
50	150		50	35	20	10	0	0	0	0	95	70	40	10	0	0	0	0
60	180		60	45	25	10	0	0	0	0	115	80	50	15	0	0	0	0

*Starter rate only

Forage mix, alfalfa-grass

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
2	30		35	30	20	15	0	0	0	0	85	60	35	0	0	0	0	0
3	45		55	45	35	25	0	0	0	0	130	90	55	15	0	0	0	0
4	60		75	60	45	30	15	0	0	0	175	125	70	20	0	0	0	0
5	75		95	75	55	40	20	0	0	0	220	155	90	25	0	0	0	0
6	90		110	90	70	45	25	0	0	0	260	185	110	30	0	0	0	0
								AGVISE Broadcast/Maintenance										
2	30		35	30	20	20	20	20	0	0	95	95	95	95	95	95	0	0
3	45		55	45	35	30	30	30	0	0	145	145	145	145	145	145	0	0
4	60		75	60	45	40	40	40	0	0	190	190	190	190	190	190	0	0
5	75		95	75	55	50	50	50	0	0	240	240	240	240	240	240	0	0
6	90		110	90	70	60	60	60	0	0	290	290	290	290	290	290	0	0
								AGVISE Band										
2	30		25	20	15	10	5	0	0	0	70	50	30	10	0	0	0	0
3	45		40	30	25	15	5	0	0	0	105	75	50	20	0	0	0	0
4	60		50	40	30	20	10	0	0	0	140	100	65	25	0	0	0	0
5	75		65	50	40	25	10	0	0	0	175	130	80	30	0	0	0	0
6	90		80	60	45	30	15	0	0	0	210	155	95	40	0	0	0	0
								AGVISE Band/Maintenance										
2	30		25	20	20	20	20	20	0	0	95	95	95	95	95	95	0	0
3	45		40	30	30	30	30	30	0	0	145	145	145	145	145	145	0	0
4	60		50	40	40	40	40	40	0	0	190	190	190	190	190	190	0	0
5	75		65	50	50	50	50	50	0	0	240	240	240	240	240	240	0	0
6	90		80	60	60	60	60	60	0	0	290	290	290	290	290	290	0	0

Forage mix, alfalfa-small grain

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
2	45		40	35	25	0	0	0	0	0	85	70	55	40	25	0	0	0
3	70		60	50	40	25	0	0	0	0	125	105	80	60	35	0	0	0
4	90		80	65	50	35	0	0	0	0	170	140	110	75	45	0	0	0
5	115		100	85	65	45	25	0	0	0	210	175	135	95	60	20	0	0
6	140		125	100	75	50	30	0	0	0	255	205	160	115	70	25	0	0
								AGVISE Band										
2	45		25	20	15	10	10*	10*	10*	0	60	50	40	25	15	10*	10*	0
3	70		35	30	25	15	10*	10*	10*	0	90	70	55	40	25	10*	10*	0
4	90		50	40	30	20	15	10*	10*	0	115	95	75	55	35	15	10*	0
5	115		65	50	40	30	15	10*	10*	0	145	120	95	70	45	15	10*	0
6	140		75	60	45	35	20	10*	10*	0	175	145	115	80	50	20	10*	0

*Starter rate only

Forage mix, barley-oat

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
1	60		60	45	35	25	0	0	0	0	135	100	70	40	0	0	0	0
								AGVISE Broadcast/Maintenance										
1	60		60	45	35	35	35	35	0	0	135	105	105	105	105	105	0	0
								AGVISE Band										
1	60		40	30	25	20	15	10*	10*	0	90	65	45	25	10*	10*	10*	0
								AGVISE Band/Maintenance										
1	60		40	35	35	35	35	35	10*	0	105	105	105	105	105	105	10*	0

*Starter rate only

Forage mix, barley-pea

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	60		60	50	40	30	20	0	0	0	130	105	80	55	30	0	0	0
								AGVISE Broadcast/Maintenance										
1	60		60	50	40	40	40	40	0	0	130	110	110	110	110	110	0	0
								AGVISE Band										
1	60		40	35	25	20	15	0	0	0	90	75	60	40	25	0	0	0
								AGVISE Band/Maintenance										
1	60		40	40	40	40	40	40	0	0	110	110	110	110	110	110	0	0

Forage mix, oat-pea

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	55		55	45	35	25	0	0	0	0	90	65	45	20	0	0	0	0
								AGVISE Broadcast/Maintenance										
1	55		55	45	35	35	35	35	0	0	125	125	125	125	125	125	0	0
								AGVISE Band										
1	55		35	30	25	15	10	0	0	0	60	45	30	15	0	0	0	0
								AGVISE Band/Maintenance										
1	55		35	35	35	35	35	35	0	0	125	125	125	125	125	125	0	0

Garden, vegetable

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5									lb/acre K_2O							
1	195		160	145	135	120	105	65	0	0	250	185	115	50	25	0	0	0

To convert lb/acre to lb/1000 sq. ft., divide the lb/acre guideline by 50. (e.g. 100 lb/acre equals 2 lb/1000 sq. ft.)

Grass, lawn

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1	220		100	75	55	30	25*	0	0	0	225	165	110	50	25	0	0	0
								University Broadcast										
1	200		100	75	50	25	0	0	0	0	195	135	75	15	0	0	0	0

To convert lb/acre to lb/1000 sq. ft., divide the lb/acre guideline by 50. (e.g. 100 lb/acre equals 2 lb/1000 sq. ft.)
The total amount of nitrogen suggested for a lawn should be spread over 3 or 4 applications during the season.

Grass, pasture

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
1	30	15	10	0	0	0	0	0	0	20	15	10	0	0	0	0	0
2	60	30	20	15	0	0	0	0	0	40	30	20	15	0	0	0	0
3	90	45	35	25	15	0	0	0	0	60	45	35	20	0	0	0	0
4	120	60	45	30	20	0	0	0	0	80	60	45	25	0	0	0	0
5	150	75	55	40	25	0	0	0	0	100	75	55	35	10	0	0	0
6	180	90	70	50	25	0	0	0	0	120	90	65	40	15	0	0	0
7	210	105	80	55	30	0	0	0	0	140	105	75	45	15	0	0	0
							AGVISE Broadcast/Maintenance										
1	30	15	10	10	10	10	10	0	0	45	45	45	45	45	45	0	0
2	60	30	25	25	25	25	25	0	0	90	90	90	90	90	90	0	0
3	90	45	35	35	35	35	35	0	0	135	135	135	135	135	135	0	0
4	120	60	50	50	50	50	50	0	0	180	180	180	180	180	180	0	0
5	150	75	60	60	60	60	60	0	0	225	225	225	225	225	225	0	0
6	180	90	70	70	70	70	70	0	0	270	270	270	270	270	270	0	0
7	210	105	85	85	85	85	85	0	0	315	315	315	315	315	315	0	0
							AGVISE Band										
1	30	10	10	5	5	0	0	0	0	15	10	10	5	5	0	0	0
2	60	20	15	10	5	0	0	0	0	30	25	20	15	10	5	0	0
3	90	35	25	20	10	5	0	0	0	45	35	30	20	15	5	0	0
4	120	45	35	25	15	5	0	0	0	60	50	40	30	20	10	0	0
5	150	55	40	30	20	5	0	0	0	75	65	50	35	25	10	0	0
6	180	65	50	35	20	5	0	0	0	90	75	60	45	30	15	0	0
7	210	75	60	40	25	10	0	0	0	105	90	70	50	35	15	0	0
							AGVISE Band/Maintenance										
1	30	10	10	10	10	10	10	0	0	45	45	45	45	45	45	0	0
2	60	25	25	25	25	25	25	0	0	90	90	90	90	90	90	0	0
3	90	35	35	35	35	35	35	0	0	135	135	135	135	135	135	0	0
4	120	50	50	50	50	50	50	0	0	180	180	180	180	180	180	0	0
5	150	60	60	60	60	60	60	0	0	225	225	225	225	225	225	0	0
6	180	70	70	70	70	70	70	0	0	270	270	270	270	270	270	0	0
7	210	85	85	85	85	85	85	0	0	315	315	315	315	315	315	0	0
							University Broadcast										
1	25	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
2	50	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
3	75	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
4	100	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
5	125	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
6	150	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0
7	175	40	25	10	0	0	0	0	0	70	50	25	10	0	0	0	0

Grass, seed (brome)

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
200	40		20	15	10	0	0	0	0	0	25	20	15	0	0	0	0	0
300	60		30	20	15	0	0	0	0	0	40	30	20	15	0	0	0	0
400	80		40	30	20	10	0	0	0	0	50	40	30	15	0	0	0	0
500	100		50	40	25	15	0	0	0	0	65	50	35	20	0	0	0	0
600	120		60	45	30	20	0	0	0	0	80	60	45	25	0	0	0	0
700	140		70	55	35	20	0	0	0	0	90	70	50	30	0	0	0	0
800	160		80	60	45	25	0	0	0	0	105	80	60	35	10	0	0	0
900	180		90	70	50	30	0	0	0	0	120	90	65	40	10	0	0	0
								AGVISE Broadcast/Maintenance										
200	40		20	15	10	10	10	10	0	0	25	20	15	10	10	10	0	0
300	60		30	20	15	10	10	10	0	0	40	30	20	20	20	20	0	0
400	80		40	30	20	15	15	15	0	0	50	40	30	25	25	25	0	0
500	100		50	40	25	20	20	20	0	0	65	50	35	30	30	30	0	0
600	120		60	45	30	25	25	25	0	0	80	60	45	40	40	40	0	0
700	140		70	55	35	30	30	30	0	0	90	70	50	45	45	45	0	0
800	160		80	60	45	35	35	35	0	0	105	80	60	50	50	50	0	0
900	180		90	70	50	40	40	40	0	0	120	90	65	55	55	55	0	0
								AGVISE Band										
200	40		15	10	10	5	0	0	0	0	20	15	15	10	5	5	0	0
300	60		20	15	10	5	0	0	0	0	30	25	20	15	10	5	0	0
400	80		30	20	15	10	0	0	0	0	40	35	25	20	15	5	0	0
500	100		35	30	20	10	5	0	0	0	50	40	35	25	15	10	0	0
600	120		45	35	25	15	5	0	0	0	60	50	40	30	20	10	0	0
700	140		50	40	30	15	5	0	0	0	70	60	45	35	25	10	0	0
800	160		60	45	30	20	5	0	0	0	80	65	55	40	25	15	0	0
900	180		65	50	35	20	5	0	0	0	90	75	60	45	30	15	0	0
								AGVISE Band/Maintenance										
200	40		15	10	10	10	10	10	0	0	20	15	15	10	10	10	0	0
300	60		20	15	10	10	10	10	0	0	30	25	20	20	20	20	0	0
400	80		30	20	15	15	15	15	0	0	40	35	25	25	25	25	0	0
500	100		35	30	20	20	20	20	0	0	50	40	35	30	30	30	0	0
600	120		45	35	25	25	25	25	0	0	60	50	40	40	40	40	0	0
700	140		50	40	30	30	30	30	0	0	70	60	45	45	45	45	0	0
800	160		60	45	35	35	35	35	0	0	80	65	55	50	50	50	0	0
900	180		65	50	40	40	40	40	0	0	90	75	60	55	55	55	0	0

Grass, seed

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
1	100		80	60	40	20	0	0	0	0	120	90	60	30	0	0	0	0
								AGVISE Band										
1	100		55	40	25	15	0	0	0	0	90	65	45	20	0	0	0	0

Grass, timothy

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	80		55	45	35	25	15	0	0	0	70	55	40	25	0	0	0	0
								AGVISE Broadcast/Maintenance										
1	80		55	45	40	40	40	40	0	0	140	140	140	140	140	140	0	0
								AGVISE Band										
1	80		40	35	25	20	15	0	0	0	55	40	30	20	5	0	0	0
								AGVISE Band/Maintenance										
1	80		40	40	40	40	40	40	0	0	140	140	140	140	140	140	0	0

Hemp, seed

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
400	80		40	30	25	20	10	0	0	0	80	65	45	30	15	0	0	0
600	120		60	50	40	30	20	0	0	0	120	95	70	45	20	0	0	0
800	160		80	65	50	40	25	0	0	0	160	125	90	60	25	0	0	0
1000	200		100	80	65	50	30	0	0	0	200	155	115	75	30	0	0	0
1200	240		120	100	80	55	35	0	0	0	240	190	140	90	40	0	0	0

Lentil

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
						AGVISE Broadcast											
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
1400	0	30	25	20	15	0	0	0	0	55	40	30	15	0	0	0	0
1800	0	40	30	25	20	0	0	0	0	70	55	35	20	0	0	0	0
2200	0	45	40	30	25	15	0	0	0	90	65	45	25	0	0	0	0
2600	0	55	45	35	30	20	0	0	0	105	80	55	30	0	0	0	0
3000	0	65	55	45	30	20	0	0	0	120	90	65	35	0	0	0	0
3400	0	75	60	50	35	25	0	0	0	135	105	70	40	0	0	0	0
3800	0	80	70	55	40	25	0	0	0	150	115	80	45	0	0	0	0
						AGVISE Broadcast/Maintenance											
1400	0	30	25	20	20	20	20	0	0	55	40	30	25	25	25	0	0
1800	0	40	30	25	25	25	25	0	0	70	55	35	30	30	30	0	0
2200	0	45	40	30	30	30	30	0	0	90	65	45	40	40	40	0	0
1600	0	55	45	35	35	35	35	0	0	105	80	55	45	45	45	0	0
3000	0	65	55	45	40	40	40	0	0	120	90	65	55	55	55	0	0
3400	0	75	60	50	45	45	45	0	0	135	105	70	60	60	60	0	0
3800	0	80	70	55	55	55	55	0	0	150	115	80	70	70	70	0	0
						AGVISE Band											
1400	0	20	15	15	0	0	0	0	0	40	30	20	10	0	0	0	0
1800	0	25	20	15	10	0	0	0	0	50	40	25	15	0	0	0	0
2200	0	30	25	20	15	0	0	0	0	60	45	30	15	0	0	0	0
1600	0	35	30	25	15	10	0	0	0	75	55	35	20	0	0	0	0
3000	0	40	35	25	20	15	0	0	0	85	65	45	20	0	0	0	0
3400	0	45	40	30	25	15	0	0	0	95	70	50	25	0	0	0	0
3800	0	55	45	35	25	15	0	0	0	110	80	55	25	0	0	0	0
						AGVISE Band/Maintenance											
1400	0	20	20	20	20	20	20	0	0	40	30	25	25	25	25	0	0
1800	0	25	25	25	25	25	25	0	0	50	40	30	30	30	30	0	0
2200	0	30	30	30	30	30	30	0	0	60	45	40	40	40	40	0	0
2600	0	35	35	35	35	35	35	0	0	75	55	45	45	45	45	0	0
3000	0	40	40	40	40	40	40	0	0	85	65	55	55	55	55	0	0
3400	0	45	45	45	45	45	45	0	0	95	70	60	60	60	60	0	0
3800	0	55	55	55	55	55	55	0	0	110	80	70	70	70	70	0	0
						University Broadcast											
1400	0	20	15	10	0	0	0	0	0	35	25	15	10	0	0	0	0
1800	0	25	20	10	0	0	0	0	0	50	35	20	10	0	0	0	0
2200	0	35	25	15	0	0	0	0	0	60	40	25	10	0	0	0	0
2600	0	40	25	15	0	0	0	0	0	70	50	30	10	0	0	0	0
3000	0	45	30	20	10	0	0	0	0	80	60	35	15	0	0	0	0
3400	0	50	35	20	10	0	0	0	0	90	65	40	15	0	0	0	0
3800	0	55	40	25	10	0	0	0	0	100	75	45	20	0	0	0	0

A nitrogen application is suggested if the topsoil nitrate-N is less than 30 lb/acre.

Millet, seed

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1200	50		35	30	20	0	0	0	0	0	45	35	25	0	0	0	0	0
1400	55		40	30	25	0	0	0	0	0	50	40	30	0	0	0	0	0
1600	65		45	35	30	20	0	0	0	0	55	45	30	0	0	0	0	0
1800	70		50	40	35	25	0	0	0	0	65	50	35	20	0	0	0	0
2000	80		55	45	35	25	0	0	0	0	70	55	40	25	0	0	0	0
2200	90		60	50	40	30	0	0	0	0	80	60	45	25	0	0	0	0
2400	95		65	55	45	35	20	0	0	0	85	65	50	30	0	0	0	0
Minimum = 10								AGVISE Broadcast/Maintenance										
1200	50		35	30	20	15	10	10	0	0	45	35	25	15	5	5	0	0
1400	55		40	30	25	20	10	10	0	0	50	40	30	15	10	10	0	0
1600	65		45	35	30	20	15	10	0	0	55	45	30	20	10	10	0	0
1800	70		50	40	35	25	15	15	0	0	65	50	35	20	10	10	0	0
2000	80		55	45	35	25	20	15	0	0	70	55	40	25	10	10	0	0
2200	90		60	50	40	30	20	15	0	0	80	60	45	25	15	15	0	0
2400	95		65	55	45	35	20	20	0	0	85	65	50	30	15	15	0	0
Minimum = 10								AGVISE Band										
1200	50		15	15	10	10*	10*	10*	10*	0	20	15	10	5	0	0	0	0
1400	55		20	15	15	10*	10*	10*	10*	0	25	20	15	10	0	0	0	0
1600	65		20	20	15	10	10*	10*	10*	0	30	20	15	10	5	0	0	0
1800	70		25	20	15	10	10*	10*	10*	0	30	25	20	10	5	0	0	0
2000	80		30	25	20	15	10*	10*	10*	0	35	30	20	10	5	0	0	0
2200	90		30	25	20	15	10*	10*	10*	0	40	30	20	15	5	0	0	0
2400	95		35	30	20	15	10*	10*	10*	0	45	35	25	15	5	0	0	0
Minimum = 10								AGVISE Band/Maintenance										
1200	50		15	15	10	10*	10*	10*	10*	0	20	15	10	5	5	5	0	0
1400	55		20	15	15	10	10	10	10*	0	25	20	15	10	10	10	0	0
1600	65		20	20	15	10	10	10	10*	0	30	20	15	10	10	10	0	0
1800	70		25	20	15	15	15	15	10*	0	30	25	20	10	10	10	0	0
2000	80		30	25	20	15	15	15	10*	0	35	30	20	10	10	10	0	0
2200	90		30	25	20	15	15	15	10*	0	40	30	20	15	15	15	0	0
2400	95		35	30	20	20	20	20	10*	0	45	35	25	15	15	15	0	0
Minimum = 10								University Broadcast										
1200	40		20	10	10	0	0	0	0	0	30	25	15	10	0	0	0	0
1400	50		20	15	10	0	0	0	0	0	35	25	15	10	0	0	0	0
1600	55		25	15	10	0	0	0	0	0	40	30	20	10	0	0	0	0
1800	65		25	20	10	0	0	0	0	0	50	35	20	10	0	0	0	0
2000	70		30	20	10	0	0	0	0	0	55	40	25	10	0	0	0	0
2200	75		35	25	15	0	0	0	0	0	60	40	25	10	0	0	0	0
2400	85		35	25	15	0	0	0	0	0	65	45	30	10	0	0	0	0

Minimum = 10

*Starter rate only

Mustard

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
800	55		35	30	25	20	0	0	0	0	50	40	25	0	0	0	0	0
1200	85		55	50	40	30	20	0	0	0	75	60	40	25	0	0	0	0
1600	110		75	65	50	40	30	0	0	0	100	75	55	30	0	0	0	0
2000	140		95	80	65	50	35	0	0	0	125	95	70	40	0	0	0	0
2400	170		115	95	80	60	45	0	0	0	150	115	80	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
800	55		35	30	25	20	15	15	0	0	50	40	25	15	5	5	0	0
1200	85		55	50	40	30	20	20	0	0	75	60	40	25	10	10	0	0
1600	110		75	65	50	40	30	30	0	0	100	75	55	30	15	15	0	0
2000	140		95	80	65	50	35	35	0	0	125	95	70	40	20	20	0	0
2400	170		115	95	80	60	45	45	0	0	150	115	80	45	20	20	0	0
								AGVISE Band										
800	55		20	15	15	10*	10*	10*	10*	0	25	20	15	5	0	0	0	0
1200	85		30	25	20	15	10	10*	10*	0	35	30	20	10	5	0	0	0
1600	110		35	30	25	20	15	10*	10*	0	50	40	25	15	5	0	0	0
2000	140		45	40	30	25	20	10*	10*	0	60	50	35	20	5	0	0	0
2400	170		55	50	40	30	20	10*	10*	0	75	60	40	25	5	0	0	0
								AGVISE Band/Maintenance										
800	55		20	15	15	15	15	15	10*	0	25	20	15	5	5	5	0	0
1200	85		30	25	20	20	20	20	10*	0	35	30	20	10	10	10	0	0
1600	110		35	30	30	30	30	30	10*	0	50	40	25	15	15	15	0	0
2000	140		45	40	35	35	35	35	10*	0	60	50	35	20	20	20	0	0
2400	170		55	50	45	45	45	45	10*	0	75	60	40	25	20	20	0	0
								University Broadcast										
800	50		25	20	10	0	0	0	0	0	40	25	15	10	0	0	0	0
1200	80		40	25	15	10	0	0	0	0	55	40	25	10	0	0	0	0
1600	105		50	35	20	10	0	0	0	0	75	55	30	10	0	0	0	0
2000	130		65	45	30	10	0	0	0	0	95	65	40	15	0	0	0	0
2400	155		75	55	35	10	0	0	0	0	115	80	50	15	0	0	0	0

*Starter rate only

Oat, grain

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
40	40		30	25	20	15*	15*	15*	15*	0	60	45	35	20	10*	10*	10*	0
60	60		40	35	25	20	15*	15*	15*	0	90	70	50	30	10	10*	10*	0
80	80		55	45	35	25	20	15*	15*	0	120	95	70	40	15	10*	10*	0
100	100		70	60	45	35	20	15*	15*	0	150	115	85	55	20	10*	10*	0
120	120		85	70	55	40	25	15*	15*	0	180	140	100	65	25	10*	10*	0
140	140		100	80	65	50	30	15*	15*	0	210	165	120	75	30	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
40	40		30	25	20	15*	15*	15*	15*	0	60	45	35	20	10*	10*	10*	0
60	60		40	35	25	20	15*	15*	15*	0	90	70	50	30	10	10	10*	0
80	80		55	45	35	25	20	20	15*	0	120	95	70	40	15	15	10*	0
100	100		70	60	45	35	25	25	15*	0	150	115	85	55	20	20	10*	0
120	120		85	70	55	40	30	30	15*	0	180	140	100	65	25	20	10*	0
140	140		100	80	65	50	35	35	15*	0	210	165	120	75	30	25	10*	0
Minimum N = 10								AGVISE Band										
40	40		15*	15*	15*	15*	15*	15*	15*	0	30	25	20	10	10*	10*	10*	0
60	60		20	15	15*	15*	15*	15*	15*	0	45	35	25	15	10*	10*	10*	0
80	80		30	25	20	15*	15*	15*	15*	0	60	50	35	25	10*	10*	10*	0
100	100		35	30	25	15	15*	15*	15*	0	75	60	45	30	15	10*	10*	0
120	120		40	35	25	20	15*	15*	15*	0	90	75	55	35	15	10*	10*	0
140	140		50	40	30	25	15*	15*	15*	0	105	85	65	40	20	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
40	40		15*	15*	15*	15*	15*	15*	15*	0	30	25	20	10	10*	10*	10*	0
60	60		20	15	15*	15*	15*	15*	15*	0	45	35	25	15	10	10	10*	0
80	80		30	25	20	20	20	20	15*	0	60	50	35	25	15	15	10*	0
100	100		35	30	25	25	25	25	15*	0	75	60	45	30	20	20	10*	0
120	120		40	35	30	30	30	30	15*	0	90	75	55	35	20	20	10*	0
140	140		50	40	35	35	35	35	15*	0	105	85	65	40	25	25	10*	0
Minimum N = 10								University Broadcast										
40	50		20	15*	15*	15*	15*	15*	15*	0	45	30	15	10*	10*	10*	10*	0
60	80		35	25	15*	15*	15*	15*	15*	0	65	45	25	10*	10*	10*	10*	0
80	105		45	30	20	15*	15*	15*	15*	0	90	60	35	10*	10*	10*	10*	0
100	130		55	40	25	15*	15*	15*	15*	0	110	75	40	10*	10*	10*	10*	0
120	155		65	50	30	15*	15*	15*	15*	0	135	90	50	10*	10*	10*	10*	0
140	180		80	55	35	15*	15*	15*	15*	0	155	105	60	10*	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Oat, silage

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	60		60	50	45	35	25	0	0	0	110	90	65	40	15	0	0	0
								AGVISE Broadcast/Maintenance										
1	60		60	50	45	35	25	25	0	0	110	90	85	85	85	85	0	0
								AGVISE Band										
1	60		30	25	20	15	10*	10*	10*	0	75	60	40	25	10*	10*	10*	0
								AGVISE Band/Maintenance										
1	60		30	25	25	25	25	25	10*	0	85	85	85	85	85	85	10*	0

*Starter rate only

Onion

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
AGVISE Broadcast																		
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
300	90		155	140	130	115	100	55	25*	25*	145	120	90	60	30	0	0	0
400	120		210	190	170	150	130	75	25*	25*	195	160	120	80	45	0	0	0
500	150		260	240	215	190	165	95	25*	25*	245	200	150	100	55	0	0	0
600	180		315	285	255	230	200	110	25*	25*	295	235	180	120	65	0	0	0
700	210		365	335	300	265	230	130	25*	25*	345	275	210	140	75	0	0	0
800	240		420	380	340	305	265	150	25*	25*	395	315	240	165	85	0	0	0
AGVISE Broadcast/Maintenance																		
300	90		155	140	130	115	100	55	25*	25*	145	120	100	100	100	100	0	0
400	120		210	190	170	150	130	75	25*	25*	195	160	130	130	130	130	0	0
500	150		260	240	215	190	165	95	25*	25*	245	200	165	165	165	165	0	0
600	180		315	285	255	230	200	110	25*	25*	295	235	200	200	200	200	0	0
700	210		365	335	300	265	230	130	25*	25*	345	275	230	230	230	230	0	0
800	240		420	380	340	305	265	150	25*	25*	395	315	265	265	265	265	0	0
AGVISE Band																		
300	90		85	80	70	65	60	35	25*	25*	80	70	55	40	25	10*	10*	0
400	120		115	105	95	85	80	50	25*	25*	110	90	70	50	35	15	10*	0
500	150		145	135	120	110	95	60	25*	25*	140	115	90	65	40	20	10*	0
600	180		175	160	145	130	115	75	25*	25*	165	135	110	80	50	20	10*	0
700	210		205	185	170	155	135	85	25*	25*	195	160	125	90	60	25	10*	0
800	240		230	215	195	175	155	100	25*	25*	220	180	145	105	65	30	10*	0
AGVISE Band/Maintenance																		
300	90		155	140	130	115	100	55	25*	25*	145	120	100	100	100	100	0	0
400	120		210	190	170	150	130	75	25*	25*	195	160	130	130	130	130	0	0
500	150		260	240	215	190	165	95	25*	25*	245	200	165	165	165	165	0	0
600	180		315	285	255	230	200	110	25*	25*	295	235	200	200	200	200	0	0
700	210		365	335	300	265	230	130	25*	25*	345	275	230	230	230	230	0	0
800	240		420	380	340	305	265	150	25*	25*	395	315	265	265	265	265	0	0
University Broadcast																		
300	90		85	80	70	65	60	35	25*	25*	100	100	100	100	100	100	10*	0
400	120		115	105	95	85	80	50	25*	25*	130	130	130	130	130	130	10*	0
500	150		145	135	120	110	95	60	25*	25*	165	165	165	165	165	165	10*	0
600	180		175	160	145	130	115	75	25*	25*	200	200	200	200	200	200	10*	0
700	210		205	185	170	155	135	85	25*	25*	230	230	230	230	230	230	10*	0
800	240		230	215	195	175	155	100	25*	25*	265	265	265	265	265	265	10*	0

*Starter rate only

Pea, field

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
20	0		25	20	20	0	0	0	0	0	55	40	30	15	0	0	0	0
30	0		40	35	25	20	15	0	0	0	80	60	40	20	0	0	0	0
40	0		55	45	35	30	20	0	0	0	105	80	55	30	0	0	0	0
50	0		65	55	45	35	25	0	0	0	135	100	70	40	0	0	0	0
60	0		80	65	55	45	30	0	0	0	160	120	85	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
20	0		25	20	20	15	15	15	0	0	55	40	30	15	15	15	0	0
30	0		40	35	25	20	20	20	0	0	80	60	40	20	20	20	0	0
40	0		55	45	35	30	30	30	0	0	105	80	55	30	30	30	0	0
50	0		65	55	45	35	35	35	0	0	135	100	70	40	35	35	0	0
60	0		80	65	55	45	40	40	0	0	160	120	85	45	45	45	0	0
								AGVISE Band										
20	0		15	15	10	10	5	0	0	0	35	25	15	0	0	0	0	0
30	0		25	20	20	15	10	0	0	0	50	40	25	15	0	0	0	0
40	0		35	30	25	20	15	0	0	0	70	50	35	15	0	0	0	0
50	0		45	35	30	25	20	0	0	0	90	65	45	20	0	0	0	0
60	0		50	45	35	30	20	0	0	0	105	80	50	25	0	0	0	0
								AGVISE Band/Maintenance										
20	0		15	15	15	15	15	15	0	0	35	25	15	15	15	15	0	0
30	0		25	20	20	20	20	20	0	0	50	40	25	20	20	20	0	0
40	0		35	30	30	30	30	30	0	0	70	50	35	30	30	30	0	0
50	0		45	35	35	35	35	35	0	0	90	65	45	35	35	35	0	0
60	0		50	45	40	40	40	40	0	0	105	80	50	45	45	45	0	0
								University Broadcast										
20	0		20	15	10	0	0	0	0	0	30	25	15	10	0	0	0	0
30	0		25	20	10	0	0	0	0	0	50	35	20	10	0	0	0	0
40	0		35	25	15	0	0	0	0	0	65	45	30	10	0	0	0	0
50	0		45	30	20	10	0	0	0	0	80	60	35	15	0	0	0	0
60	0		55	40	20	10	0	0	0	0	95	70	45	15	0	0	0	0

A nitrogen application is suggested if the topsoil nitrate-N is less than 30 lb/acre.

Pea, green

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1000	20		25	20	0	0	0	0	0	0	25	0	0	0	0	0	0	0
2000	40		55	40	25	0	0	0	0	0	55	40	25	0	0	0	0	0
3000	60		80	60	40	0	0	0	0	0	80	60	40	0	0	0	0	0
4000	80		110	80	50	25	0	0	0	0	105	80	50	25	0	0	0	0
5000	100		135	100	65	30	0	0	0	0	135	100	65	30	0	0	0	0
								AGVISE Broadcast/Maintenance										
1000	20		25	20	0	0	0	0	0	0	25	0	0	0	0	0	0	0
2000	40		55	40	25	0	0	0	0	0	55	40	25	0	0	0	0	0
3000	60		80	60	40	0	0	0	0	0	80	60	40	0	0	0	0	0
4000	80		110	80	50	25	0	0	0	0	105	80	50	25	0	0	0	0
5000	100		135	100	65	30	0	0	0	0	135	100	65	30	0	0	0	0
								AGVISE Band										
1000	20		15	10	10	5	0	0	0	0	15	10	10	5	0	0	0	0
2000	40		30	25	15	10	5	0	0	0	30	20	15	10	5	0	0	0
3000	60		45	35	25	15	5	0	0	0	45	35	25	15	5	0	0	0
4000	80		60	45	35	20	10	0	0	0	55	45	30	20	5	0	0	0
5000	100		75	60	40	25	10	0	0	0	70	55	40	25	10	0	0	0
								AGVISE Band/Maintenance										
1000	20		15	10	10	5	0	0	0	0	15	10	10	5	0	0	0	0
2000	40		30	25	15	10	5	0	0	0	30	20	15	10	5	0	0	0
3000	60		45	35	25	15	5	0	0	0	45	35	25	15	5	0	0	0
4000	80		60	45	35	20	10	0	0	0	55	45	30	20	5	5	0	0
5000	100		75	60	40	25	10	5	0	0	70	55	40	25	10	5	0	0

Potato, chip

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
150	70		65	55	45	35	30*	30*	30*	0	145	115	80	40	30*	30*	30*	30*
200	90		85	75	60	50	35	30*	30*	0	195	160	115	70	30*	30*	30*	30*
250	115		105	90	75	60	45	30*	30*	0	250	200	150	95	35	30*	30*	30*
300	135		130	110	90	75	55	30*	30*	0	300	250	190	125	60	30*	30*	30*
350	160		150	130	105	85	65	30*	30*	0	360	295	230	160	80	30*	30*	30*
400	180		170	145	120	95	75	30*	30*	0	415	345	270	190	110	30*	30*	30*
450	205		190	165	135	110	80	30*	30*	0	475	395	315	225	135	35	30*	30*
								AGVISE Broadcast/Maintenance										
150	70		65	55	45	35	30*	30*	30*	0	145	115	80	75	75	75	30*	30*
200	90		85	75	60	50	35	35	30*	0	195	160	115	100	100	100	30*	30*
250	115		105	90	75	60	45	45	30*	0	250	200	150	125	125	125	30*	30*
300	135		130	110	90	75	55	55	30*	0	300	250	190	150	150	150	30*	30*
350	160		150	130	105	85	65	65	30*	0	360	295	230	175	175	175	30*	30*
400	180		170	145	120	95	75	70	30*	0	415	345	270	200	200	200	30*	30*
450	205		190	165	135	110	80	80	30*	0	475	395	315	225	225	225	30*	30*
								AGVISE Band										
150	70		45	40	35	30*	30*	30*	30*	0	100	80	55	30*	30*	30*	30*	30*
200	90		60	55	45	35	30*	30*	30*	0	135	110	80	50	30*	30*	30*	30*
250	115		80	65	55	45	30	30*	30*	0	175	140	105	70	30*	30*	30*	30*
300	135		95	80	65	50	40	30*	30*	0	210	175	135	90	40	30*	30*	30*
350	160		110	95	75	60	45	30*	30*	0	250	205	160	110	60	30*	30*	30*
400	180		125	105	90	70	50	30*	30*	0	290	240	190	135	75	30*	30*	30*
450	205		140	120	100	80	60	30*	30*	0	330	275	220	155	95	30*	30*	30*
								AGVISE Band/Maintenance										
150	70		45	40	35	30*	30*	30*	30*	0	100	80	75	75	75	75	30*	30*
200	90		60	55	45	35	35	35	30*	0	135	110	100	100	100	100	30*	30*
250	115		80	65	55	45	45	45	30*	0	175	140	125	125	125	125	30*	30*
300	135		95	80	65	55	55	55	30*	0	210	175	150	150	150	150	30*	30*
350	160		110	95	75	65	65	65	30*	0	250	205	175	175	175	175	30*	30*
400	180		125	105	90	70	70	70	30*	0	290	240	200	200	200	200	30*	30*
450	205		140	120	100	80	80	80	30*	0	330	275	225	225	225	225	30*	30*

*Starter rate only

Potato, dryland

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
150	75		65	55	45	35	30*	30*	30*	0	145	115	80	40	30*	30*	30*	30*
200	100		85	75	60	50	35	30*	30*	0	195	160	115	70	30*	30*	30*	30*
250	125		105	90	75	60	45	30*	30*	0	250	200	150	95	35	30*	30*	30*
300	150		130	110	90	75	55	30*	30*	0	300	250	190	125	60	30*	30*	30*
350	175		150	130	105	85	65	30*	30*	0	360	295	230	160	80	30*	30*	30*
400	200		170	145	120	95	75	30*	30*	0	415	345	270	190	110	30*	30*	30*
450	225		190	165	135	110	80	30*	30*	0	475	395	315	225	135	35	30*	30*
Minimum N = 20								AGVISE Broadcast/Maintenance										
150	75		65	55	45	35	30*	30*	30*	0	145	115	80	75	75	75	30*	30*
200	100		85	75	60	50	35	35	30*	0	195	160	115	100	100	100	30*	30*
250	125		105	90	75	60	45	45	30*	0	250	200	150	125	125	125	30*	30*
300	150		130	110	90	75	55	55	30*	0	300	250	190	150	150	150	30*	30*
350	175		150	130	105	85	65	65	30*	0	360	295	230	175	175	175	30*	30*
400	200		170	145	120	95	75	70	30*	0	415	345	270	200	200	200	30*	30*
450	225		190	165	135	110	80	80	30*	0	475	395	315	225	225	225	30*	30*
Minimum N = 20								AGVISE Band										
150	75		45	40	35	30*	30*	30*	30*	0	100	80	55	30*	30*	30*	30*	30*
200	100		60	55	45	35	30*	30*	30*	0	135	110	80	50	30*	30*	30*	30*
250	125		80	65	55	45	30	30*	30*	0	175	140	105	70	30*	30*	30*	30*
300	150		95	80	65	50	40	30*	30*	0	210	175	135	90	40	30*	30*	30*
350	175		110	95	75	60	45	30*	30*	0	250	205	160	110	60	30*	30*	30*
400	200		125	105	90	70	50	30*	30*	0	290	240	190	135	75	30*	30*	30*
450	225		140	120	100	80	60	30*	30*	0	330	275	220	155	95	30*	30*	30*
Minimum N = 20								AGVISE Band/Maintenance										
150	75		50	40	35	30*	30*	30*	30*	0	100	80	75	75	75	75	30*	30*
200	100		65	55	45	35	35	35	30*	0	135	110	100	100	100	100	30*	30*
250	125		80	70	55	45	45	45	30*	0	175	140	125	125	125	125	30*	30*
300	150		95	80	70	55	55	55	30*	0	210	175	150	150	150	150	30*	30*
350	175		110	95	80	65	65	65	30*	0	250	205	175	175	175	175	30*	30*
400	200		125	110	90	70	70	70	30*	0	290	240	200	200	200	200	30*	30*
450	225		140	120	100	80	80	80	30*	0	330	275	225	225	225	225	30*	30*
Minimum N = 20								University Broadcast										
150	60		65	45	30*	30*	0	0	0	0	110	75	40	30*	0	0	0	0
200	80		85	60	35	30*	0	0	0	0	145	100	55	30*	0	0	0	0
250	100		110	75	45	30*	0	0	0	0	185	125	70	30*	0	0	0	0
300	120		130	90	50	30*	0	0	0	0	220	150	85	30*	0	0	0	0
350	140		150	105	60	30*	0	0	0	0	260	180	100	30*	0	0	0	0
400	160		175	120	70	30*	0	0	0	0	295	205	110	30*	0	0	0	0
450	180		195	135	75	30*	0	0	0	0	330	230	125	30*	0	0	0	0
Minimum N = 20																		

*Starter rate only

Potato, irrigated

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
200	110		85	75	60	50*	50*	50*	50*	50*	245	205	165	125	85	50*	50*	50*
250	140		105	90	75	60	50*	50*	50*	50*	305	255	205	155	105	55	50*	50*
300	165		130	110	90	75	55	50*	50*	50*	365	305	245	185	125	65	50*	50*
350	195		150	130	105	85	65	50*	50*	50*	425	355	285	215	145	75	50*	50*
400	220		170	145	120	95	75	50*	50*	50*	490	410	330	250	170	90	50*	50*
450	250		190	165	135	110	80	50*	50*	50*	550	460	370	280	190	100	50*	50*
500	275		215	185	150	120	90	50*	50*	50*	610	510	410	310	210	110	50*	50*
Minimum N = 20								AGVISE Broadcast/Maintenance										
200	110		85	75	60	50*	50*	50*	50*	50*	245	205	165	125	100	100	50*	50*
250	140		105	90	75	60	50*	50*	50*	50*	305	255	205	155	125	125	50*	50*
300	165		130	110	90	75	55	55	50*	50*	365	305	245	185	150	150	50*	50*
350	195		150	130	105	85	65	65	50*	50*	425	355	285	215	175	175	50*	50*
400	220		170	145	120	95	75	70	50*	50*	490	410	330	250	200	200	50*	50*
450	250		190	165	135	110	80	80	50*	50*	550	460	370	280	225	225	50*	50*
500	275		215	185	150	120	90	90	50*	50*	610	510	410	310	250	250	50*	50*
Minimum N = 20								AGVISE Band										
200	110		60	55	50*	50*	50*	50*	50*	50*	180	150	120	90	60	50*	50*	50*
250	140		80	65	55	50*	50*	50*	50*	50*	230	190	150	115	75	50*	50*	50*
300	165		95	80	65	50	50*	50*	50*	50*	275	230	185	135	90	50*	50*	50*
350	195		110	95	75	60	50*	50*	50*	50*	320	265	215	160	105	55	50*	50*
400	220		125	105	90	70	50	50*	50*	50*	365	305	245	185	120	60	50*	50*
450	250		140	120	100	80	60	50*	50*	50*	410	340	275	205	135	70	50*	50*
500	275		155	135	110	90	65	50*	50*	50*	455	380	305	230	155	75	50*	50*
Minimum N = 20								AGVISE Band/Maintenance										
200	110		60	55	50*	50*	50*	50*	50*	50*	180	150	120	100	100	100	50*	50*
250	140		80	65	55	50*	50*	50*	50*	50*	230	190	150	125	125	125	50*	50*
300	165		95	80	65	55	55	55	50*	50*	275	230	185	150	150	150	50*	50*
350	195		110	95	75	65	65	65	50*	50*	320	265	215	175	175	175	50*	50*
400	220		125	105	90	70	70	70	50*	50*	365	305	245	200	200	200	50*	50*
450	250		140	120	100	80	80	80	50*	50*	410	340	275	225	225	225	50*	50*
500	275		155	135	110	90	90	90	50*	50*	455	380	305	250	250	250	50*	50*

Minimum N = 20 *Starter rate only

The phosphorus guideline will be increased 10 lb for every 1% soil carbonate. The maximum adjustment is 120 lb/acre.

Rye

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
30	70	45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	95	65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	120	80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	145	95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	170	110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	190	125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	215	145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10							AGVISE Broadcast/Maintenance										
30	70	45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	95	65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	120	80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	145	95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	170	110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	190	125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	215	145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10							AGVISE Band										
30	70	25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	95	30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	120	40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	145	50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	170	55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	190	65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	215	70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10							AGVISE Band/Maintenance										
30	70	25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	95	30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	120	40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	145	50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	170	55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	190	65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	215	70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
Minimum N = 10							University Broadcast										
30	75	30	20	15*	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
40	100	35	25	15*	15*	15*	15*	15*	0	95	70	40	15	10*	10*	10*	0
50	125	45	35	20	15*	15*	15*	15*	0	120	85	50	15	10*	10*	10*	0
60	150	55	40	25	15*	15*	15*	15*	0	140	100	60	20	10*	10*	10*	0
70	175	65	45	30	15*	15*	15*	15*	0	165	120	70	25	10*	10*	10*	0
80	200	75	55	30	15*	15*	15*	15*	0	190	135	80	25	10*	10*	10*	0
90	225	85	60	35	15*	15*	15*	15*	0	215	150	90	30	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Safflower

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
1200	60		35	30	25	20	0	0	0	0	50	40	30	0	0	0	0	0
1400	75		40	35	30	25	0	0	0	0	60	45	35	20	0	0	0	0
1600	85		45	40	35	30	20	0	0	0	70	55	40	25	0	0	0	0
1800	95		50	45	40	30	25	0	0	0	75	60	45	25	0	0	0	0
2000	105		55	50	40	35	30	0	0	0	85	65	50	30	0	0	0	0
2200	115		65	55	45	40	30	0	0	0	95	75	50	30	0	0	0	0
2400	125		70	60	50	40	35	0	0	0	105	80	55	35	0	0	0	0
								AGVISE Broadcast/Maintenance										
1200	60		35	30	25	20	15	10	0	0	50	40	30	15	15	15	0	0
1400	75		40	35	30	25	20	10	0	0	60	45	35	20	15	15	0	0
1600	85		45	40	35	30	20	10	0	0	70	55	40	25	15	15	0	0
1800	95		50	45	40	30	25	15	0	0	75	60	45	25	20	20	0	0
2000	105		55	50	40	35	30	15	0	0	85	65	50	30	20	20	0	0
2200	115		65	55	45	40	30	15	0	0	95	75	50	30	25	25	0	0
2400	125		70	60	50	40	35	20	0	0	105	80	55	35	25	25	0	0
								AGVISE Band										
1200	60		20	15	10	10*	10*	10*	10*	0	25	20	15	5	0	0	0	0
1400	75		20	20	15	10	10*	10*	10*	0	30	25	15	10	0	0	0	0
1600	85		25	20	15	10	10*	10*	10*	0	35	30	20	10	0	0	0	0
1800	95		30	25	20	15	10*	10*	10*	0	40	30	20	10	0	0	0	0
2000	105		30	25	20	15	10*	10*	10*	0	45	35	25	10	0	0	0	0
2200	115		35	30	25	15	10	10*	10*	0	50	40	25	15	0	0	0	0
2400	125		40	30	25	20	15	10*	10*	0	55	40	30	15	0	0	0	0
								AGVISE Band/Maintenance										
1200	60		20	15	10	10*	10*	10*	10*	0	25	20	15	15	15	15	0	0
1400	75		20	20	15	10	10	10	10*	0	30	25	15	15	15	15	0	0
1600	85		25	20	15	10	10	10	10*	0	35	30	20	15	15	15	0	0
1800	95		30	25	20	15	15	15	10*	0	40	30	20	20	20	20	0	0
2000	105		30	25	20	15	15	15	10*	0	45	35	25	20	20	20	0	0
2200	115		35	30	25	15	15	15	10*	0	50	40	25	25	25	25	0	0
2400	125		40	30	25	20	20	20	10*	0	55	40	30	25	25	25	0	0
								University Broadcast										
1200	60		30	20	10	0	0	0	0	0	50	35	20	10	0	0	0	0
1400	70		35	25	15	0	0	0	0	0	60	40	25	10	0	0	0	0
1600	80		40	25	15	10	0	0	0	0	65	50	30	10	0	0	0	0
1800	90		40	30	20	10	0	0	0	0	75	55	30	10	0	0	0	0
2000	100		45	35	20	10	0	0	0	0	85	60	35	10	0	0	0	0
2200	110		50	35	20	10	0	0	0	0	90	65	40	15	0	0	0	0
2400	120		55	40	25	10	0	0	0	0	100	70	45	15	0	0	0	0

*Starter rate only

Sainfoin

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
2	0		35	25	20	0	0	0	0	0	90	65	40	0	0	0	0	0
3	0		50	40	25	15	0	0	0	0	130	95	60	25	0	0	0	0
4	0		70	55	35	20	0	0	0	0	175	130	80	30	0	0	0	0
5	0		85	65	45	25	0	0	0	0	220	160	100	40	0	0	0	0
6	0		105	80	55	30	0	0	0	0	265	190	120	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
2	0		35	25	20	20	20	20	0	0	100	100	100	100	100	100	0	0
3	0		50	40	30	30	30	30	0	0	150	150	150	150	150	150	0	0
4	0		70	55	40	40	40	40	0	0	200	200	200	200	200	200	0	0
5	0		85	65	50	50	50	50	0	0	250	250	250	250	250	250	0	0
6	0		105	80	60	60	60	60	0	0	300	300	300	300	300	300	0	0
								AGVISE Band										
2	0		20	15	15	10*	10*	10*	10*	0	65	50	35	20	10*	10*	10*	0
3	0		35	25	20	15	10*	10*	10*	0	95	75	55	30	10*	10*	10*	0
4	0		45	35	25	20	10*	10*	10*	0	130	100	70	45	15	10*	10*	0
5	0		55	45	35	20	10	10*	10*	0	160	125	90	55	20	10*	10*	0
6	0		65	55	40	25	15	10*	10*	0	195	150	110	65	20	10*	10*	0
								AGVISE Band/Maintenance										
2	0		20	20	20	20	20	20	10*	0	100	100	100	100	100	100	10*	0
3	0		35	30	30	30	30	30	10*	0	150	150	150	150	150	150	10*	0
4	0		45	40	40	40	40	40	10*	0	200	200	200	200	200	200	10*	0
5	0		55	50	50	50	50	50	10*	0	250	250	250	250	250	250	10*	0
6	0		65	60	60	60	60	60	10*	0	300	300	300	300	300	300	10*	0

*Starter rate only

Small grain, hay

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
1	25		20	15	10	10*	10*	10*	10*	0	35	30	20	15	10*	10*	10*	0
2	50		40	30	20	15	10*	10*	10*	0	70	55	40	25	10	10*	10*	0
3	75		55	45	30	20	10*	10*	10*	0	100	80	60	40	20	10*	10*	0
4	100		75	60	40	25	10	10*	10*	0	140	110	80	50	20	10*	10*	0
5	125		90	70	50	30	15	10*	10*	0	170	135	100	65	30	10*	10*	0
6	150		110	90	60	40	15	10*	10*	0	200	160	120	75	30	10*	10*	0
								AGVISE Band										
1	25		10	10	10*	10*	10*	10*	10*	0	20	15	10	10*	10*	10*	10*	0
2	50		20	15	15	10	10*	10*	10*	0	35	30	20	15	10*	10*	10*	0
3	75		30	25	20	15	10	10*	10*	0	50	40	30	20	10*	10*	10*	0
4	100		40	35	30	20	15	10*	10*	0	70	55	40	25	10	10*	10*	0
5	125		50	45	35	25	20	10*	10*	0	85	70	50	30	15	10*	10*	0
6	150		60	50	40	30	20	10*	10*	0	100	80	60	40	20	10*	10*	0

*Starter rate only

Small grain, silage

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								

Sorghum, grain

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
50	60		45	40	35	30	25	10*	10*	0	65	50	40	25	0	0	0	0
70	85		65	60	50	40	35	10*	10*	0	90	70	55	35	0	0	0	0
90	110		85	75	65	55	40	10*	10*	0	120	95	70	45	20	0	0	0
110	130		105	90	80	65	50	10	10*	0	145	115	85	55	25	0	0	0
130	155		125	110	90	75	60	15	10*	0	170	135	100	65	30	0	0	0
150	180		145	125	105	90	70	15	10*	0	195	155	115	75	35	0	0	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
50	60		45	40	35	30	25	20	10*	0	65	50	40	25	10	10	0	0
70	85		65	60	50	40	35	30	10*	0	90	70	55	35	15	15	0	0
90	110		85	75	65	55	40	35	10*	0	120	95	70	45	20	20	0	0
110	130		105	90	80	65	50	45	10*	0	145	115	85	55	25	25	0	0
130	155		125	110	90	75	60	50	10*	0	170	135	100	65	30	30	0	0
150	180		145	125	105	90	70	60	10*	0	195	155	115	75	35	35	0	0
Minimum N = 10								AGVISE Band										
50	60		25	20	15	10	10*	10*	10*	0	35	30	20	10	5	0	0	0
70	85		35	30	20	15	10*	10*	10*	0	50	40	30	15	5	0	0	0
90	110		45	35	30	20	10	10*	10*	0	65	50	35	20	5	0	0	0
110	130		55	45	35	25	15	10*	10*	0	80	60	45	25	10	0	0	0
130	155		65	55	40	30	15	10*	10*	0	95	70	50	30	10	0	0	0
150	180		75	60	50	35	20	10*	10*	0	110	85	60	35	10	0	0	0
Minimum N = 10								AGVISE Band/Maintenance										
50	60		25	20	20	20	20	20	10*	0	35	30	20	10	10	10	0	0
70	85		35	30	30	30	30	30	10*	0	50	40	30	15	15	15	0	0
90	110		45	35	35	35	35	35	10*	0	65	50	35	20	20	20	0	0
110	130		55	45	45	45	45	45	10*	0	80	60	45	25	25	25	0	0
130	155		65	55	50	50	50	50	10*	0	95	70	50	30	30	30	0	0
150	180		75	60	60	60	60	60	10*	0	110	85	60	35	35	35	0	0
Minimum N = 10								University Broadcast										
50	55		30	20	15	10*	10*	10*	10*	0	40	25	15	0	0	0	0	0
70	75		40	30	20	10*	10*	10*	10*	0	55	35	20	0	0	0	0	0
90	100		55	40	25	10*	10*	10*	10*	0	70	45	25	10	0	0	0	0
110	120		65	45	30	10*	10*	10*	10*	0	85	60	30	10	0	0	0	0
130	145		75	55	35	10*	10*	10*	10*	0	100	70	40	10	0	0	0	0
150	165		90	65	40	15	10*	10*	10*	0	115	80	45	10	0	0	0	0

Minimum N = 10

*Starter rate only

Sorghum, hay

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
4	100	45	35	30	20	0	0	0	0	155	115	70	30	0	0	0	0
5	125	60	45	35	25	0	0	0	0	195	140	90	40	0	0	0	0
6	150	70	55	45	30	15	0	0	0	230	170	110	45	0	0	0	0
7	175	80	65	50	35	20	0	0	0	270	200	125	55	0	0	0	0
8	200	95	75	55	40	20	0	0	0	310	225	145	60	0	0	0	0
9	225	105	85	65	45	25	0	0	0	350	255	160	70	0	0	0	0
10	250	115	95	70	50	25	0	0	0	390	285	180	75	0	0	0	0
							AGVISE Broadcast/Maintenance										
4	100	50	50	50	50	50	50	0	0	155	150	150	150	150	150	0	0
5	125	60	60	60	60	60	60	0	0	195	190	190	190	190	190	0	0
6	150	70	70	70	70	70	70	0	0	230	230	230	230	230	230	0	0
7	175	85	85	85	85	85	85	0	0	270	265	265	265	265	265	0	0
8	200	95	95	95	95	95	95	0	0	310	305	305	305	305	305	0	0
9	225	110	110	110	110	110	110	0	0	350	340	340	340	340	340	0	0
10	250	120	120	120	120	120	120	0	0	390	380	380	380	380	380	0	0
							AGVISE Band										
4	100	25	25	20	15	15	10*	10*	0	95	70	40	10	0	0	0	0
5	125	35	30	25	20	15	10*	10*	0	120	85	50	15	0	0	0	0
6	150	40	35	30	25	20	10*	10*	0	145	105	60	15	0	0	0	0
7	175	45	40	35	30	25	10*	10*	0	170	120	70	20	0	0	0	0
8	200	55	45	40	35	30	10*	10*	0	195	135	80	20	0	0	0	0
9	225	60	55	45	40	30	10*	10*	0	220	155	90	25	0	0	0	0
10	250	65	60	50	45	35	10	10*	0	245	170	100	25	0	0	0	0
							AGVISE Band/Maintenance										
4	100	50	50	50	50	50	50	10*	0	150	150	150	150	150	150	0	0
5	125	60	60	60	60	60	60	10*	0	190	190	190	190	190	190	0	0
6	150	70	70	70	70	70	70	10*	0	230	230	230	230	230	230	0	0
7	175	85	85	85	85	85	85	10*	0	265	265	265	265	265	265	0	0
8	200	95	95	95	95	95	95	10*	0	305	305	305	305	305	305	0	0
9	225	110	110	110	110	110	110	10*	0	340	340	340	340	340	340	0	0
10	250	120	120	120	120	120	120	10*	0	380	380	380	380	380	380	0	0
							University Broadcast										
4	100	40	25	15	0	0	0	0	0	150	110	70	25	0	0	0	0
5	125	50	35	20	10	0	0	0	0	190	135	85	35	0	0	0	0
6	150	60	40	25	10	0	0	0	0	225	165	100	40	0	0	0	0
7	175	65	50	30	10	0	0	0	0	265	190	120	45	0	0	0	0
8	200	75	55	30	10	0	0	0	0	300	220	135	55	0	0	0	0
9	225	85	60	35	10	0	0	0	0	340	245	155	60	0	0	0	0
10	250	95	70	40	10	0	0	0	0	380	275	170	65	0	0	0	0

*Starter rate only

Sorghum, silage

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
10	90	45	40	30	25	15	0	0	0	150	110	70	25	0	0	0	0
12	110	55	45	35	25	20	0	0	0	180	130	80	30	0	0	0	0
14	125	65	55	45	30	20	0	0	0	210	155	95	35	0	0	0	0
16	145	75	60	50	35	25	0	0	0	240	175	110	40	0	0	0	0
18	160	85	70	55	40	25	0	0	0	270	195	120	45	0	0	0	0
20	180	95	80	60	45	30	0	0	0	300	220	135	50	0	0	0	0
22	200	105	85	70	50	35	0	0	0	330	240	150	60	0	0	0	0
							AGVISE Broadcast/Maintenance										
10	90	45	40	30	30	30	30	0	0	150	120	120	120	120	120	0	0
12	110	55	45	35	35	35	35	0	0	180	145	145	145	145	145	0	0
14	125	65	55	45	40	40	40	0	0	210	170	170	170	170	170	0	0
16	145	75	60	50	50	50	50	0	0	240	190	190	190	190	190	0	0
18	160	85	70	55	55	55	55	0	0	270	215	215	215	215	215	0	0
20	180	95	80	60	60	60	60	0	0	300	240	240	240	240	240	0	0
22	200	105	85	70	65	65	65	0	0	330	265	265	265	265	265	0	0
							AGVISE Band										
10	90	30	25	20	20	15	10*	10*	0	95	70	40	10	0	0	0	0
12	110	35	30	25	25	20	10*	10*	0	115	80	50	15	0	0	0	0
14	125	40	35	30	25	20	10*	10*	0	135	95	55	15	0	0	0	0
16	145	45	40	35	30	25	10*	10*	0	155	110	65	15	0	0	0	0
18	160	50	45	40	35	30	10	10*	0	175	125	70	20	0	0	0	0
20	180	55	50	45	40	30	10	10*	0	195	135	80	20	0	0	0	0
22	200	65	55	50	40	35	15	10*	0	215	150	90	25	0	0	0	0
							AGVISE Band/Maintenance										
10	90	30	30	30	30	30	30	10*	0	120	120	120	120	120	120	0	0
12	110	35	35	35	35	35	35	10*	0	145	145	145	145	145	145	0	0
14	125	40	40	40	40	40	40	10*	0	170	170	170	170	170	170	0	0
16	145	50	50	50	50	50	50	10*	0	190	190	190	190	190	190	0	0
18	160	55	55	55	55	55	55	10*	0	215	215	215	215	215	215	0	0
20	180	60	60	60	60	60	60	10*	0	240	240	240	240	240	240	0	0
22	200	65	65	65	65	65	65	10*	0	265	265	265	265	265	265	0	0

*Starter rate only

Soybean

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
20	60		35	30	25	0	0	0	0	0	50	40	30	20	0	0	0	0
30	60		55	45	35	25	0	0	0	0	70	60	45	30	20	0	0	0
40	60		75	60	50	35	25	0	0	0	95	80	60	40	25	0	0	0
50	60		95	80	60	45	30	0	0	0	120	95	75	55	30	0	0	0
60	60		110	95	75	55	35	0	0	0	145	115	90	65	35	0	0	0
70	60		130	110	85	65	40	0	0	0	170	135	105	75	40	0	0	0
								AGVISE Broadcast/Maintenance										
20	60		35	30	25	20	15	15	0	0	50	40	30	25	25	25	0	0
30	60		55	45	35	25	20	20	0	0	70	60	45	35	35	35	0	0
40	60		75	60	50	35	30	30	0	0	95	80	60	45	45	45	0	0
50	60		95	80	60	45	35	35	0	0	120	95	75	60	60	60	0	0
60	60		110	95	75	55	45	45	0	0	145	115	90	70	70	70	0	0
70	60		130	110	85	65	50	50	0	0	170	135	105	80	80	80	0	0
								AGVISE Band										
20	60		20	20	15	10	10*	10*	10*	0	25	20	15	10	0	0	0	0
30	60		30	25	20	15	10	10*	10*	0	35	30	25	15	10	0	0	0
40	60		40	35	30	25	15	10*	10*	0	50	40	30	25	15	0	0	0
50	60		55	45	35	30	20	10*	10*	0	60	50	40	30	20	0	0	0
60	60		65	55	45	35	25	10*	10*	0	70	60	45	35	20	0	0	0
70	60		75	65	50	40	30	10*	10*	0	85	70	55	40	25	0	0	0
								AGVISE Band/Maintenance										
20	60		20	20	15	15	15	15	10*	0	25	25	25	25	25	25	0	0
30	60		30	25	20	20	20	20	10*	0	35	35	35	35	35	35	0	0
40	60		40	35	30	30	30	30	10*	0	50	45	45	45	45	45	0	0
50	60		55	45	35	35	35	35	10*	0	60	60	60	60	60	60	0	0
60	60		65	55	45	45	45	45	10*	0	70	70	70	70	70	70	0	0
70	60		75	65	50	50	50	50	10*	0	85	80	80	80	80	80	0	0
								University Broadcast										
20	50		25	15	0	0	0	0	0	0	35	30	20	15	10	0	0	0
30	50		40	20	0	0	0	0	0	0	55	45	35	25	10	0	0	0
40	50		50	30	10	0	0	0	0	0	75	60	45	30	15	0	0	0
50	50		65	35	10	0	0	0	0	0	90	75	55	40	20	0	0	0
60	50		75	45	10	0	0	0	0	0	110	90	65	45	25	0	0	0
70	50		90	50	10	0	0	0	0	0	130	105	80	55	30	0	0	0

Soybean may not respond to nitrogen fertilization if soybean history is established or inoculation is effective. *Starter rate only

Strawberry

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
season /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
1	100		160	150	135	120	110	70	0	0	205	150	100	50	25*	0	0	0

*Starter rate only

Sugar beet, 6 lb/ton N

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
16	95		70	55	45	35	20	0	0	0	95	75	50	30	0	0	0	0
18	110		75	65	50	40	25	0	0	0	110	85	55	30	0	0	0	0
20	120		85	70	55	40	30	0	0	0	120	90	65	35	0	0	0	0
22	130		95	80	60	45	30	0	0	0	135	100	70	40	0	0	0	0
24	145		100	85	70	50	35	0	0	0	145	110	75	40	0	0	0	0
26	155		110	90	75	55	35	0	0	0	160	120	85	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
16	95		70	55	45	35	30	30	0	0	95	75	50	50	0	0	0	0
18	110		75	65	50	40	30	30	0	0	110	85	55	55	0	0	0	0
20	120		85	70	55	40	35	35	0	0	120	90	65	60	0	0	0	0
22	130		95	80	60	45	40	40	0	0	135	100	70	65	0	0	0	0
24	145		100	85	70	50	40	40	0	0	145	110	75	70	0	0	0	0
26	155		110	90	75	55	45	45	0	0	160	120	85	80	0	0	0	0
								AGVISE Band										
16	95		35	30	25	20	15	10*	10*	0	50	35	25	10	0	0	0	0
18	110		40	35	30	25	20	10*	10*	0	55	40	25	10	0	0	0	0
20	120		45	40	30	25	20	10*	10*	0	60	45	30	15	0	0	0	0
22	130		50	40	35	30	20	10*	10*	0	70	50	35	15	0	0	0	0
24	145		50	45	40	30	25	10*	10*	0	75	55	35	15	0	0	0	0
26	155		55	50	40	35	25	10*	10*	0	80	60	40	20	0	0	0	0
								AGVISE Band/Maintenance										
16	95		35	30	30	30	30	30	10*	0	50	50	50	50	0	0	0	0
18	110		40	35	30	30	30	30	10*	0	55	55	55	55	0	0	0	0
20	120		45	40	35	35	35	35	10*	0	60	60	60	60	0	0	0	0
22	130		50	40	40	40	40	40	10*	0	70	65	65	65	0	0	0	0
24	145		50	45	40	40	40	40	10*	0	75	70	70	70	0	0	0	0
26	155		55	50	45	45	45	45	10*	0	80	80	80	80	0	0	0	0
								University Broadcast										
16	95		60	45	25	10	0	0	0	0	90	60	35	10	0	0	0	0
18	110		70	50	30	10	0	0	0	0	100	70	40	10	0	0	0	0
20	120		75	55	35	10	0	0	0	0	110	75	45	10	0	0	0	0
22	130		85	60	35	15	0	0	0	0	120	85	45	10	0	0	0	0
24	145		90	65	40	15	0	0	0	0	130	90	50	10	0	0	0	0
26	155		100	70	45	15	0	0	0	0	145	100	55	10	0	0	0	0

*Starter rate only

Sugar beet, 7 lb/ton N

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
16	110		70	55	45	35	20	0	0	0	95	75	50	30	0	0	0	0
18	125		75	65	50	40	25	0	0	0	110	85	55	30	0	0	0	0
20	140		85	70	55	40	30	0	0	0	120	90	65	35	0	0	0	0
22	155		95	80	60	45	30	0	0	0	135	100	70	40	0	0	0	0
24	170		100	85	70	50	35	0	0	0	145	110	75	40	0	0	0	0
26	180		110	90	75	55	35	0	0	0	160	120	85	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
16	110		70	55	45	35	30	30	0	0	95	75	50	50	0	0	0	0
18	125		75	65	50	40	30	30	0	0	110	85	55	55	0	0	0	0
20	140		85	70	55	40	35	35	0	0	120	90	65	60	0	0	0	0
22	155		95	80	60	45	40	40	0	0	135	100	70	65	0	0	0	0
24	170		100	85	70	50	40	40	0	0	145	110	75	70	0	0	0	0
26	180		110	90	75	55	45	45	0	0	160	120	85	80	0	0	0	0
								AGVISE Band										
16	110		35	30	25	20	15	10*	10*	0	50	35	25	10	0	0	0	0
18	125		40	35	30	25	20	10*	10*	0	55	40	25	10	0	0	0	0
20	140		45	40	30	25	20	10*	10*	0	60	45	30	15	0	0	0	0
22	155		50	40	35	30	20	10*	10*	0	70	50	35	15	0	0	0	0
24	170		50	45	40	30	25	10*	10*	0	75	55	35	15	0	0	0	0
26	180		55	50	40	35	25	10*	10*	0	80	60	40	20	0	0	0	0
								AGVISE Band/Maintenance										
16	110		35	30	30	30	30	30	10*	0	50	50	50	50	0	0	0	0
18	125		40	35	30	30	30	30	10*	0	55	55	55	55	0	0	0	0
20	140		45	40	35	35	35	35	10*	0	60	60	60	60	0	0	0	0
22	155		50	40	40	40	40	40	10*	0	70	65	65	65	0	0	0	0
24	170		50	45	40	40	40	40	10*	0	75	70	70	70	0	0	0	0
26	180		55	50	45	45	45	45	10*	0	80	80	80	80	0	0	0	0
								University Broadcast										
16	110		60	45	25	10	0	0	0	0	90	60	35	10	0	0	0	0
18	125		70	50	30	10	0	0	0	0	100	70	40	10	0	0	0	0
20	140		75	55	35	10	0	0	0	0	110	75	45	10	0	0	0	0
22	155		85	60	35	15	0	0	0	0	120	85	45	10	0	0	0	0
24	170		90	65	40	15	0	0	0	0	130	90	50	10	0	0	0	0
26	180		100	70	45	15	0	0	0	0	145	100	55	10	0	0	0	0

*Starter rate only

Sugar beet, 130/100 N

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton /acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
NA	100 or 130*		85	70	55	40	30	0	0	0	120	90	65	35	0	0	0	0
								AGVISE Broadcast/Maintenance										
NA	100 or 130*		85	70	55	40	35	35	0	0	120	90	65	60	0	0	0	0
								AGVISE Band										
NA	100 or 130*		45	40	30	25	20	10*	10*	0	60	45	30	15	0	0	0	0
								AGVISE Band/Maintenance										
NA	100 or 130*		45	40	35	35	35	35	10*	0	60	60	60	60	0	0	0	0
								University Broadcast										
NA	100 or 130*		75	55	35	10	0	0	0	0	110	75	45	10	0	0	0	0

*Starter rate only

Nitrogen guidelines suggested by American Crystal Sugar Company, Minn-Dak Farmers Co-op, & Southern Minnesota Beet Sugar Co-op

*The 100 lb nitrogen guideline is used for 2-foot samples.

*The 130 lb nitrogen guideline is used for 4-foot samples.

Sugar beet, Sidney Sugar

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
16	110		70	55	45	35	20	0	0	0	95	75	50	30	0	0	0	0
18	125		75	65	50	40	25	0	0	0	110	85	55	30	0	0	0	0
20	140		85	70	55	40	30	0	0	0	120	90	65	35	0	0	0	0
22	155		95	80	60	45	30	0	0	0	135	100	70	40	0	0	0	0
24	165		100	85	70	50	35	0	0	0	145	110	75	40	0	0	0	0
26	165		110	90	75	55	35	0	0	0	160	120	85	45	0	0	0	0
								AGVISE Broadcast/Maintenance										
16	110		70	55	45	35	30	30	0	0	95	75	50	50	0	0	0	0
18	125		75	65	50	40	30	30	0	0	110	85	55	55	0	0	0	0
20	140		85	70	55	40	35	35	0	0	120	90	65	60	0	0	0	0
22	155		95	80	60	45	40	40	0	0	135	100	70	65	0	0	0	0
24	165		100	85	70	50	40	40	0	0	145	110	75	70	0	0	0	0
26	165		110	90	75	55	45	45	0	0	160	120	85	80	0	0	0	0
								AGVISE Band										
16	110		35	30	25	20	15	10*	10*	0	50	35	25	10	0	0	0	0
18	125		40	35	30	25	20	10*	10*	0	55	40	25	10	0	0	0	0
20	140		45	40	30	25	20	10*	10*	0	60	45	30	15	0	0	0	0
22	155		50	40	35	30	20	10*	10*	0	70	50	35	15	0	0	0	0
24	165		50	45	40	30	25	10*	10*	0	75	55	35	15	0	0	0	0
26	165		55	50	40	35	25	10*	10*	0	80	60	40	20	0	0	0	0
								AGVISE Band/Maintenance										
16	110		35	30	30	30	30	30	10*	0	50	50	50	50	0	0	0	0
18	125		40	35	30	30	30	30	10*	0	55	55	55	55	0	0	0	0
20	140		45	40	35	35	35	35	10*	0	60	60	60	60	0	0	0	0
22	155		50	40	40	40	40	40	10*	0	70	65	65	65	0	0	0	0
24	165		50	45	40	40	40	40	10*	0	75	70	70	70	0	0	0	0
26	165		55	50	45	45	45	45	10**	0	80	80	80	80	0	0	0	0
								University Broadcast										
16	110		60	45	25	10	0	0	0	0	90	60	35	10	0	0	0	0
18	125		70	50	30	10	0	0	0	0	100	70	40	10	0	0	0	0
20	140		75	55	35	10	0	0	0	0	110	75	45	10	0	0	0	0
22	155		85	60	35	15	0	0	0	0	120	85	45	10	0	0	0	0
24	165		90	65	40	15	0	0	0	0	130	90	50	10	0	0	0	0
26	165		100	70	45	15	0	0	0	0	145	100	55	10	0	0	0	0

Nitrogen guidelines suggested by Sidney Sugars Inc. *Starter rate only

All nitrogen in the 0-48 inch profile is considered available.

Example: 0-24 N = 70 lb/ac; 24-28 N = 30 lb/acre. Calculated Available N = (70 + 30) = 100 lb/acre.

Total soil plus fertilizer nitrogen should not exceed 165 lb/acre.

Sugar beet, SMSBC

Yield goal	Nitrogen	Soil test phosphorus (ppm)									Soil test potassium (ppm)							
ton/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
									AGVISE Broadcast									
	lb/acre N					lb/acre P_2O_5								lb/acre K_2O				
20	90		75	55	35	10	0	0	0	0	110	75	45	10	0	0	0	0

Sunflower

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
lb/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
AGVISE Broadcast																		
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
1400	70		35	30	25	0	0	0	0	0	65	50	35	25	0	0	0	0
1600	80		40	30	25	20	0	0	0	0	75	60	45	25	0	0	0	0
1800	90		40	35	30	20	0	0	0	0	85	65	50	30	0	0	0	0
2000	100		45	40	30	25	0	0	0	0	95	75	55	35	0	0	0	0
2200	110		50	40	35	25	0	0	0	0	105	80	60	40	0	0	0	0
2400	120		55	45	35	30	20	0	0	0	115	90	65	45	20	0	0	0
2600	130		60	50	40	30	20	0	0	0	120	95	75	50	25	0	0	0
AGVISE Broadcast/Maintenance																		
1400	70		35	30	25	20	15	10	0	0	65	50	35	25	15	15	0	0
1600	80		40	30	25	20	15	15	0	0	75	60	45	25	15	15	0	0
1800	90		40	35	30	20	15	15	0	0	85	65	50	30	20	20	0	0
2000	100		45	40	30	25	20	20	0	0	95	75	55	35	20	20	0	0
2200	110		50	40	35	25	20	20	0	0	105	80	60	40	25	25	0	0
2400	120		55	45	35	30	20	20	0	0	115	90	65	45	25	25	0	0
2600	130		60	50	40	30	25	25	0	0	120	95	75	50	30	30	0	0
AGVISE Band																		
1400	70		20	15	15	10	10*	10*	10*	0	35	30	25	20	10	5	0	0
1600	80		20	20	15	15	10*	10*	10*	0	40	35	25	20	15	10	0	0
1800	90		25	20	20	15	10	10*	10*	0	45	35	30	25	15	10	0	0
2000	100		25	25	20	15	15	10*	10*	0	50	40	35	25	20	10	0	0
2200	110		30	25	20	20	15	10*	10*	0	55	45	35	30	20	10	0	0
2400	120		30	30	25	20	15	10*	10*	0	60	50	40	30	20	10	0	0
2600	130		35	30	25	25	20	10*	10*	0	65	55	45	35	25	15	0	0
AGVISE Band/Maintenance																		
1400	70		20	15	15	10	10	10	10*	0	35	30	25	20	15	15	0	0
1600	80		20	20	15	15	15	15	10*	0	40	35	25	20	15	15	0	0
1800	90		25	20	20	15	15	15	10*	0	45	35	30	25	20	20	0	0
2000	100		25	25	20	20	20	20	10*	0	50	40	35	25	20	20	0	0
2200	110		30	25	20	20	20	20	10*	0	55	45	35	30	25	25	0	0
2400	120		30	30	25	20	20	20	10*	0	60	50	40	30	25	25	0	0
2600	130		35	30	25	25	25	25	10*	0	65	55	45	35	30	30	0	0
University Broadcast																		
1400	70		30	20	10	0	0	0	0	0	50	35	20	0	0	0	0	0
1600	80		30	25	15	0	0	0	0	0	55	40	20	10	0	0	0	0
1800	90		35	25	15	10	0	0	0	0	65	45	25	10	0	0	0	0
2000	100		40	30	15	10	0	0	0	0	70	50	30	10	0	0	0	0
2200	110		45	30	20	10	0	0	0	0	80	55	30	10	0	0	0	0
2400	120		45	35	20	10	0	0	0	0	85	60	35	10	0	0	0	0
2600	130		50	35	20	10	0	0	0	0	95	65	35	10	0	0	0	0

*Starter rate only

Tomato

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
cwt/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N		lb/acre P_2O_5								lb/acre K_2O							
200	110		115	105	95	85	70	40	0	0	180	145	110	75	40	20*	0	0
250	135		145	130	115	105	90	50	0	0	230	185	140	95	50	20*	0	0
300	160		175	155	140	125	110	60	0	0	275	220	170	115	60	20*	0	0
350	190		200	185	165	145	125	70	0	0	320	255	195	135	70	20*	0	0
400	215		230	210	190	165	145	80	0	0	365	295	225	155	85	20*	0	0

*Starter rate only

Triticale

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
40	110		65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	135		80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	160		95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	190		110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	215		125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	245		145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
100	270		160	130	105	75	45	15*	15*	0	240	185	130	75	20	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
40	110		65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	135		80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	160		95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	190		110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	215		125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	245		145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
100	270		160	130	105	75	60	60	15*	0	240	185	130	75	35	35	10*	0
Minimum N = 10								AGVISE Band										
40	110		30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	135		40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	160		50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	190		55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	215		65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	245		70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
100	270		80	65	55	40	25	15*	15*	0	125	100	70	40	15	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
40	110		30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	135		40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	160		50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	190		55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	215		65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	245		70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
100	270		80	65	60	60	60	60	15*	0	125	100	70	40	35	35	10*	0

Minimum N = 10

*Starter rate only

Wheat, durum

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen 0-3 / Bray 0-5	4-7 / 6-10	8-11 / 11-15	12-15 / 16-20	16-19 / 20-25	20-40 / 26-53	41-75 / 54-100	76+ / 101+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
							AGVISE Broadcast										
	lb/acre N	lb/acre P_2O_5								lb/acre K_2O							
30	80	45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	110	65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	135	80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	160	95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	190	110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	215	125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	245	145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10							AGVISE Broadcast/Maintenance										
30	80	45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	110	65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	135	80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	160	95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	190	110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	215	125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	245	145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10							AGVISE Band										
30	80	25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	110	30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	135	40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	160	50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	190	55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	215	65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	245	70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10							AGVISE Band/Maintenance										
30	80	25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	110	30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	135	40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	160	50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	190	55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	215	65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	245	70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
Minimum N = 10							University Broadcast										
30	75	30	20	15*	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
40	100	35	25	15*	15*	15*	15*	15*	0	95	70	40	15	10*	10*	10*	0
50	125	45	35	20	15*	15*	15*	15*	0	120	85	50	15	10*	10*	10*	0
60	150	55	40	25	15*	15*	15*	15*	0	140	100	60	20	10*	10*	10*	0
70	175	65	45	30	15*	15*	15*	15*	0	165	120	70	25	10*	10*	10*	0
80	200	75	55	30	15*	15*	15*	15*	0	190	135	80	25	10*	10*	10*	0
90	225	85	60	35	15*	15*	15*	15*	0	215	150	90	30	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Wheat, high protein

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
30	90		45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	120		65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	150		80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	180		95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	210		110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	240		125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	270		145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
30	90		45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	120		65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	150		80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	180		95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	210		110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	240		125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	270		145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10								AGVISE Band										
30	90		25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	120		30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	150		40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	180		50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	210		55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	240		65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	270		70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
30	90		25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	120		30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	150		40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	180		50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	210		55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	240		65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	270		70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
Minimum N = 10								University Broadcast										
30	90		30	20	15*	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
40	120		35	25	15*	15*	15*	15*	15*	0	95	70	40	15	10*	10*	10*	0
50	150		45	35	20	15*	15*	15*	15*	0	120	85	50	15	10*	10*	10*	0
60	180		55	40	25	15*	15*	15*	15*	0	140	100	60	20	10*	10*	10*	0
70	210		65	45	30	15*	15*	15*	15*	0	165	120	70	25	10*	10*	10*	0
80	240		75	55	30	15*	15*	15*	15*	0	190	135	80	25	10*	10*	10*	0
90	270		85	60	35	15*	15*	15*	15*	0	215	150	90	30	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Wheat, low protein

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
8/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
30	65		45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	90		65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	110		80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	130		95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	155		110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	175		125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	200		145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
30	65		45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	90		65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	110		80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	130		95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	155		110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	175		125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	200		145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10								AGVISE Band										
30	65		25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	90		30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	110		40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	130		50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
0	155		55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	175		65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	200		70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
30	65		25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	90		30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	110		40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	130		50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
0	155		55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	175		65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	200		70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0

Minimum N = 10

*Starter rate only

Wheat, spring

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
30	80		45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	110		65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	135		80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	160		95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	190		110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	215		125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	245		145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
30	80		45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	110		65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	135		80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	160		95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	190		110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	215		125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	245		145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10								AGVISE Band										
30	80		25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	110		30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	135		40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	160		50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	190		55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	215		65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	245		70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
30	80		25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	110		30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	135		40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	160		50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	190		55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	215		65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	245		70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
Minimum N = 10								University Broadcast										
30	75		30	20	15*	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
40	100		35	25	15*	15*	15*	15*	15*	0	95	70	40	15	10*	10*	10*	0
50	125		45	35	20	15*	15*	15*	15*	0	120	85	50	15	10*	10*	10*	0
60	150		55	40	25	15*	15*	15*	15*	0	140	100	60	20	10*	10*	10*	0
70	175		65	45	30	15*	15*	15*	15*	0	165	120	70	25	10*	10*	10*	0
80	200		75	55	30	15*	15*	15*	15*	0	190	135	80	25	10*	10*	10*	0
90	225		85	60	35	15*	15*	15*	15*	0	215	150	90	30	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Wheat, winter

Yield goal	Nitrogen	Soil test phosphorus (ppm)								Soil test potassium (ppm)							
bu/ acre	soil + fertilizer	Olsen	0-3	4-7	8-11	12-15	16-19	20-40	41-75	76+	0-40	41-80	81-120	121-160	161-200	201-250	251-750	750+
		Bray	0-5	6-10	11-15	16-20	20-25	26-53	54-100	101+								
								AGVISE Broadcast										
	lb/acre N						lb/acre P_2O_5								lb/acre K_2O			
30	70		45	40	30	20	15*	15*	15*	0	70	55	40	20	10*	10*	10*	0
40	95		65	50	40	30	20	15*	15*	0	95	75	50	30	10*	10*	10*	0
50	120		80	65	50	35	25	15*	15*	0	120	95	65	35	10*	10*	10*	0
60	145		95	80	60	45	30	15*	15*	0	145	110	80	45	10*	10*	10*	0
70	170		110	90	70	50	35	15*	15*	0	170	130	90	50	10	10*	10*	0
80	190		125	105	80	60	40	15*	15*	0	195	150	105	60	15	10*	10*	0
90	215		145	120	95	65	40	15*	15*	0	215	165	115	65	15	10*	10*	0
Minimum N = 10								AGVISE Broadcast/Maintenance										
30	70		45	40	30	20	20	20	15*	0	70	55	40	20	10	10	10*	0
40	95		65	50	40	30	25	25	15*	0	95	75	50	30	15	15	10*	0
50	120		80	65	50	35	30	30	15*	0	120	95	65	35	20	20	10*	0
60	145		95	80	60	45	35	35	15*	0	145	110	80	45	20	20	10*	0
70	170		110	90	70	50	45	45	15*	0	170	130	90	50	25	25	10*	0
80	190		125	105	80	60	50	50	15*	0	195	150	105	60	30	30	10*	0
90	215		145	120	95	65	55	55	15*	0	215	165	115	65	35	35	10*	0
Minimum N = 10								AGVISE Band										
30	70		25	20	15	15*	15*	15*	15*	0	35	30	20	10	10*	10*	10*	0
40	95		30	25	20	15	15*	15*	15*	0	50	40	30	15	10*	10*	10*	0
50	120		40	35	25	20	15*	15*	15*	0	65	50	35	20	10*	10*	10*	0
60	145		50	40	30	25	15	15*	15*	0	75	60	40	25	10*	10*	10*	0
70	170		55	45	35	30	20	15*	15*	0	90	70	50	30	10*	10*	10*	0
80	190		65	55	40	30	20	15*	15*	0	100	80	55	35	10	10*	10*	0
90	215		70	60	50	35	25	15*	15*	0	115	90	65	35	10	10*	10*	0
Minimum N = 10								AGVISE Band/Maintenance										
30	70		25	20	20	20	20	20	15*	0	35	30	20	10	10	10	10*	0
40	95		30	25	25	25	25	25	15*	0	50	40	30	15	15	15	10*	0
50	120		40	35	30	30	30	30	15*	0	65	50	35	20	20	20	10*	0
60	145		50	40	35	35	35	35	15*	0	75	60	40	25	20	20	10*	0
70	170		55	45	45	45	45	45	15*	0	90	70	50	30	25	25	10*	0
80	190		65	55	50	50	50	50	15*	0	100	80	55	35	30	30	10*	0
90	215		70	60	55	55	55	55	15*	0	115	90	65	35	35	35	10*	0
Minimum N = 10								University Broadcast										
30	75		30	20	15*	15*	15*	15*	15*	0	70	50	30	10*	10*	10*	10*	0
40	100		35	25	15*	15*	15*	15*	15*	0	95	70	40	15	10*	10*	10*	0
50	125		45	35	20	15*	15*	15*	15*	0	120	85	50	15	10*	10*	10*	0
60	150		55	40	25	15*	15*	15*	15*	0	140	100	60	20	10*	10*	10*	0
70	175		65	45	30	15*	15*	15*	15*	0	165	120	70	25	10*	10*	10*	0
80	200		75	55	30	15*	15*	15*	15*	0	190	135	80	25	10*	10*	10*	0
90	225		85	60	35	15*	15*	15*	15*	0	215	150	90	30	10*	10*	10*	0

Minimum N = 10

*Starter rate only

Nutrient Specific Guidelines and Helpful Information

Soil Nitrogen Credits and Estimates

Previous Crop Nitrogen Credit

Previous crop nitrogen credit subtracted from nitrogen guideline.

	AGVISE		University
Previous crop	short-season crop	long-season crop	all crops
	lb/acre N		
Alfalfa	25	50	50
Chickpea	10	20	20
Clover	20	40	40
Corn, sweet	10	20	20
Bean, dry	15	30	40
Bean, faba	15	30	40
Lentil	10	20	20
Pea	15	30	20
Soybean	15	30	40

Soil Nitrogen Estimate

For soil samples where nitrate-nitrogen is not analyzed, soil nitrogen is estimated to improve the nitrogen guideline accuracy. For the university guideline, soil nitrogen is estimated where soil sample depth is less than 18 inches and nitrate-nitrate is analyzed. If the nitrate-nitrogen test value exceeds the estimated soil nitrogen, then the nitrate-nitrogen test value is used.

Soil organic matter	Estimated nitrogen
%	lb/acre N
not analyzed	20 + previous crop credit
≤3.0	20 + previous crop credit
>3.0	40 + previous crop credit

For AGVISE guidelines, soil nitrogen is estimated where the soil sample depth is less than 12 inches and nitrate-nitrate is analyzed.

Soil test nitrate-N	Estimated nitrogen
lb/acre, 0-6 inch depth	lb/acre N
<10	20 + previous crop credit
10-30	(Nitrate-N × 2) + previous crop credit
>30	(Nitrate-N + 30) + previous crop credit

For AGVISE guidelines, soil nitrogen is estimated where the soil sample depth is equal to 12 inches and nitrate-nitrogen is analyzed.

Estimated nitrogen = (Nitrate-N, 0-12 inch) × 1.5

Crop-specific Nitrogen Adjustments

Bean, dry

Adjustment when nitrate-N (0-6 inch) is less than 35 lb/acre N. Dry bean is a shallow-rooted crop that fixes only a small portion of its own nitrogen. In addition to seed inoculation, a small amount of nitrogen in the 0-6 inch soil profile is suggested. If the soil nitrate-N (0-24 inch) is high yet the soil nitrate-N (0-6 inch) is low, the nitrogen guideline will increase the total soil nitrate-N (0-6 inch) plus fertilizer N to 35 lb/acre N.

Example: If soil nitrate-N (0-24 inch) is 150 lb/acre N yet soil nitrate-N (0-6) is only 10 lb/acre N, then the nitrogen guideline is 25 lb/acre N. [35 lb/acre N – 10 lb/acre N = 25 lb/acre N]

Corn and small grains

Adjustment when nitrate-N (0-6 inch) is less than 50 lb/acre N. Cereal crops planted into cold soils require sufficient nitrogen in the early growing season. If the soil nitrate-N (0-24 inch) is high yet the soil nitrate-N (0-6 inch) is low, the nitrogen guideline will increase the total soil nitrate-N (0-6 inch) plus fertilizer N to 50 lb/acre N.

Example: If nitrate-N (0-24 inch) is 200 lb/acre N yet nitrate-N (0-6) is only 20 lb/acre N, then the nitrogen guideline is 30 lb/acre N. [50 lb/acre N – 20 lb/acre N = 30 lb/acre N]

Sugar beet: SMBSC crop choice

Discontinued February 2021 per SMBSC request.

Adjustment for Southern Minnesota Beet Sugar Cooperative (SMBSC) sugar beet crop choice.

- Sugar beet yield is set. The yield goal cannot be changed.
- Nitrogen guideline is based on soil sample depth. A minimum of soil nitrate-N (0-24 inch) analysis is required to generate nitrogen guideline.
    - If soil nitrate-N (0-48 inch), total soil nitrate-N plus fertilizer N equals 110 lb/acre N.
    - If soil nitrate-N (0-42 inch), total soil nitrate-N plus fertilizer N equals 100 lb/acre N.
    - If soil nitrate-N (0-36 inch), total soil nitrate-N plus fertilizer N equals 90 lb/acre N.
    - If soil nitrate-N (0-24 inch), total soil nitrate-N plus fertilizer N equals 90 lb/acre N.
- Minimum nitrogen guideline is 65 lb/acre N (0-24 inch), total soil nitrate-N plus fertilizer N. Required for early crop canopy development, regardless of deep soil nitrate-N.
- Previous crop nitrogen credit from university guideline.
- Phosphorus and potassium guidelines from university guideline.

Sugar beet: 130/100 N crop choice

Adjustment for 130/100 N sugar beet crop choice for sugar beet regions in Minnesota and North Dakota.

- Nitrogen guideline is based on soil sample depth. A minimum of soil nitrate-N (0-24 inch) analysis is required to generate nitrogen guideline.
    - If soil nitrate-N (0-48 inch), total soil nitrate-N plus fertilizer N equals 130 lb/acre N.
    - If soil nitrate-N (0-36 inch), total soil nitrate-N plus fertilizer N equals 115 lb/acre N.
    - If soil nitrate-N (0-24 inch), total soil nitrate-N plus fertilizer N equals 100 lb/acre N.

Example: If soil nitrate-N (0-24 inch) is 55 lb/acre N and soil nitrate-N (24-48 inch) is 30 lb/acre, then the nitrogen guideline is 45 lb/acre N. [130 lb/acre – (55 lb/acre N + 30 lb/acre N) = 45 lb/acre N]

Example: If soil nitrate-N (0-24 inch) is 55 lb/acre N and no deep soil nitrate-N, then the nitrogen guideline is 45 lb/acre N. [100 lb/acre – (55 lb/acre N) = 45 lb/acre N]

Boron Guidelines

Broadcast application only. Do not place boron with seed.

		High Sensitivity	Medium Sensitivity	Low Sensitivity
		Alfalfa Broccoli Cauliflower	Birdsfoot trefoil Cabbage Canola Carrot Clover Corn, sweet Potato Sainfoin Sugar beet Strawberry Sunflower Tomato Vegetable garden	Other crops
Soil test category	**Soil test B**			
	ppm, 0-6 inch	lb/acre B		
		broadcast	broadcast	broadcast
Very low	≤ 0.40	3	2	1
Low	0.41 – 0.80	2	1	0
Medium	0.81 – 1.20	1	0	0
High	> 1.20	0	0	0

Chloride Guidelines

A chloride guideline for small grains (barley, oat, rye, triticale, wheat) is generated. A chloride guideline for corn is generated as a trial. If soil chloride (0-24 inch) is less than 40 lb/acre Cl, the chloride guideline will increase the total soil chloride (0-24 inch) plus fertilizer chloride to 40 lb/acre Cl.

Copper Guidelines

		High Sensitivity		Medium Sensitivity		Low Sensitivity	
		Barley, grain Carrot Onion Vegetable garden Wheat		Alfalfa Barley, hay Birdsfoot trefoil Broccoli Cabbage Canary grass Cauliflower Clover Flax Grass, seed Potato Oat Sainfoin Sorghum Strawberry Sunflower Tomato		Other crops	
Soil test category	**Soil test Cu**						
	ppm, 0-6 inch	lb/acre Cu					
		broadcast	band	broadcast	band	broadcast	band
Very low	≤ 0.30	5	2	3	1	2	1
Low	0.31 – 0.50	3	1	2	1	0	0
Medium	0.51 – 0.80	2	1	1	0	0	0
High	> 0.80	0	0	0	0	0	0

Iron Guidelines

For iron deficiency chlorosis (IDC) of soybean and flax, soil carbonate and soluble salt (salinity) are more helpful factors in predicting IDC and crop response to iron fertilizer. Refer to section on soybean IDC.

Soil test category	Soil test Fe	All crops	
	ppm, 0-6 inch	lb/acre Fe	
		broadcast	band
Very low	≤ 1.5	5	2
Low	1.6 – 3.0	3	1
Medium	3.1 – 4.5	2	1
High	> 4.5	0	0

Magnesium Guidelines

		High Sensitivity		Medium Sensitivity	
Soil test category	Soil test Mg	Potato Onion Vegetable garden		Other crops	
	ppm, 0-6 inch	lb/acre Mg			
		broadcast	band	broadcast	band
Very low	≤ 50	100	50	50	25
Low	51 - 100	50	25	0	0
Medium	> 100	0	0	0	0

Manganese Guidelines

		High Sensitivity	Medium Sensitivity
Soil test category	Soil test Mn	Carrot Strawberry Tomato Vegetable garden	Other crops
	ppm, 0-6 inch	lb/acre Mn	
		broadcast	broadcast
Very low	≤ 0.5	3	3
Low	0.5 – 1.0	2	2
Medium	1.1 – 2.0	2	0
High	> 2.0	0	0

Sulfur Guidelines

		High Sensitivity		Medium Sensitivity	
		Alfalfa Canola Mustard Strawberry		Other crops	
Soil test category	**Soil test sulfate-S**				
	lb/acre, 0-6 inch	lb/acre sulfate-S			
		broadcast	band	broadcast	band
Very low	≤ 6	30	20	20	10
Low	7 - 14	25	17	15	7
Medium	15 - 30	20	15	10	5
High	> 30	10	10	0	0

Adjustments

- If subsoil sulfate-S (6-24 inch) is greater than 60 lb/acre sulfate-S, the sulfur guideline is reduced 10 lb/acre S for the following: barley, corn, oat, rye, triticale, sugar beet, wheat.
- If soil organic matter is less than 3%, then increase rate 5 lb/acre broadcast S guideline and 2 lb/acre band S guideline.
- Minimum sulfur application: 10 lb/acre S broadcast and 5 lb/acre S band.

Zinc Guidelines

		High Sensitivity		Medium Sensitivity		Low Sensitivity	
		Yield Goal		Yield Goal		Yield Goal	
Soil test category	**Soil test Zn**	Low	High	Low	High	Low	High
	ppm, 0-6 inch	lb/acre Zn broadcast					
Very low	≤ 0.30	8	10	3	5	2	3
Low	0.31 - 0.60	4	6	1	3	0	1
Medium	0.61 - 1.00	1	3	0	1	0	0
High	1.01 - 2.00	0	1	0	0	0	0
Very high	> 2.00	0	0	0	0	0	0

Crop-specific Zinc Sensitivity and Yield Goal Break

High Sensitivity		Medium Sensitivity		Low Sensitivity	
Bean, dry	2000 lb/ac	Alfalfa, seed		Alfalfa, hay	3 ton/ac
Bean, faba	2000 lb/ac	Buckwheat	40 bu/ac	Barley, grain	80 bu/ac
Bean, navy	2000 lb/ac	Canary grass, seed	1900 lb/ac	Barley, hay	4 ton/ac
Bean, pinto	2000 lb/ac	Canola	2200 lb/ac	Birdsfoot trefoil	3 ton/ac
Broccoli		Canola	44 bu/ac	Clover	3 ton/ac
Cabbage		Carrot	400 cwt/ac	Cotton	1200 lb/ac
Cauliflower		Chickpea	2000 lb/ac	Grass, hay/pasture	4 ton/ac
Corn, grain	160 bu/ac	Crambe	2000 lb/ac	Grass, lawn	
Corn, pop	75 bu/ac	Lentil	2000 lb/ac	Grass, seed	
Corn, silage	20 ton/ac	Millet, seed	1800 lb/ac	Grass, seed (brome)	500 lb/ac
Corn, sweet	8 ton/ac	Mustard	2200 lb/ac	Grass, timothy	
Flax	40 bu/ac	Pea, fresh green	2000 lb/ac	Hemp, seed	800 lb/ac
Grape		Safflower	1500 lb/ac	Oat, grain	120 bu/ac
Onion	400 cwt/ac	Soybean	40 bu/ac	Oat, silage	
Potato, dryland	275 cwt/ac	Sugar beet	20 ton/ac	Pea, dry field	40 bu/ac
Potato, irrigated	400 cwt/ac	Tomato	250 cwt/ac	Peanut	5000 lb/ac
Sorghum, grain	60 bu/ac			Rye	70 bu/ac
Sorghum, hay	8 ton/ac			Sainfoin	3 ton/ac
Sorghum, silage	15 ton/ac			Small grain, hay	4 ton/ac
Strawberry				Small grain, silage	10 ton/ac
Vegetable garden				Sunflower	2000 lb/ac
				Triticale	70 bu/ac
				Wheat, durum	70 bu/ac
				Wheat, spring	70 bu/ac
				Wheat, winter	70 bu/ac

Adjustments

- If yield goal is less than or equal to yield goal break, reduce rate 2 lb/acre Zn broadcast (low yield goal Zn guideline). Crops without yield goal break use low yield goal Zn guideline.
- For band application, reduce rate to 1/3 broadcast Zn guideline.
- Minimum application: 1 lb/acre Zn broadcast, 1 lb/acre Zn band

Lime Guidelines

		Target pH 6.5		Target pH 6.0		Target pH n/a
		Alfalfa Clover		Other crops		Blueberry Grass Potato
pH (1:1)	**Buffer pH (Sikora)**					
0-6 inch	0-6 inch	ton/acre				
		ENP	ag lime	ENP	ag lime	
6.5	--	0	0	0	0	0
6.4	--	1.00	2.0	0	0	0
6.3	--	1.00	2.0	0	0	0
6.2	--	1.50	3.0	0	0	0
6.1	--	1.50	3.0	0	0	0
6.0	--	1.50	3.0	0	0	0
< 6.0	6.8	1.50	3.0	1.00	2.0	0
< 6.0	6.7	1.75	3.5	1.00	2.0	0
< 6.0	6.6	2.00	4.0	1.00	2.0	0
< 6.0	6.5	2.25	4.5	1.25	2.5	0
< 6.0	6.4	2.50	5.0	1.50	3.0	0
< 6.0	6.3	2.75	5.5	1.75	3.5	0
< 6.0	6.2	3.00	6.0	2.00	4.0	0
< 6.0	6.1	3.25	6.5	2.25	4.5	0
< 6.0	6.0	3.50	7.0	2.50	5.0	0
< 6.0	5.9	3.75	7.5	2.75	5.5	0
< 6.0	5.8	4.00	8.0	3.00	6.0	0
< 6.0	5.7	4.25	8.5	3.25	6.5	0
< 6.0	≤ 5.6	4.50	9.0	3.50	7.0	0

Adjustments

- Effective neutralizing power (ENP) per ton lime is the State of Minnesota lime quality unit. Typical ag lime (crushed limestone) contains average 1000 lb ENP/ton ag lime.
- Reduce rate to 1/2 lime requirement for western Iowa, western Minnesota, North Dakota, South Dakota, Montana, and Manitoba.

Comments

- Soil pH determines if lime is needed.
- Buffer pH determines the amount of lime to increase soil pH to target pH.
- Soils with very low pH (<5.5) and high organic matter (peat) may have buffer pH suggesting no lime is necessary. A minimum of 1.0 ton/acre ENP may be required.
- Calcitic (calcium) and dolomitic (calcium and magnesium) limestone materials are equally effective, based on ENP rating. Dolomitic limestone may be preferred if soil test magnesium is low.

Fruit and Vegetable Guidelines

	N	Phosphorus (Olsen, ppm)						Potassium (ppm)						Sulfur (lb/acre)				Zinc (ppm)				Boron (ppm)		Copper (ppm)		
		0-7	8-15	16-25	26-33	34-41	40-49	≤40	41-80	81-120	121-160	161-200	>200	≤6	7-14	15-30	>30	≤0.3	0.3-0.6	0.6-1.0	1.0-2.0	≤0.4	0.4-0.9	≤0.3	0.3-0.5	0.5-0.8
Apple (established)	50	100	75	50	25	0	0	200	150	100	50	0	0	30	25	15	0	10	8	5	2	2	1	3	2	1
Bean, garden	80	100	50	20	0	0	0	100	75	50	25	0	0	30	25	15	0	10	8	5	2	1	0	1	0	0
Beet, red garden	120	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	4	2	2	1	0
Cantaloupe, muskmelon	120	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	6	4	2	0	2	1	2	1	0
Cucumber	120	150	100	75	50	25	0	200	125	50	25	25	0	30	25	15	0	10	8	5	2	1	0	2	1	0
Flower	110	130	90	50	40	25	0	180	150	120	90	50	0	30	25	15	0	10	8	5	2	1	0	2	1	0
Garlic	140	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	10	6	4	2	0	2	1	2	1	0
Grape (new)	80	150	125	100	75	50	25	250	200	150	100	50	0	30	25	15	0	10	8	5	2	2	1	1	0	0
Herb	140	120	100	70	40	20	0	120	100	70	40	20	0	30	25	15	0	6	4	2	0	2	1	2	1	0
Horseradish	160	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	2	1	2	1	0
Horseradish (SOM>20)	100	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	2	1	2	1	0
Kale (Florida)	140	150	100	75	50	25	0	200	150	100	75	50	0	35	30	25	15	6	4	2	0	2	1	2	1	0
Leek	150	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	2	1	1
Lettuce	140	150	100	75	50	25	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	3	2	1
Onion, green	100	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	3	2	1
Parsnip	140	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	6	4	2	0	2	1	2	1	0
Pepper, bell	160	150	100	75	50	25	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	2	1	0
Potato, sweet	80	120	100	80	40	0	0	120	100	80	40	0	0	30	25	15	0	6	4	2	0	1	0	2	1	0
Pumpkin	90	150	100	75	50	25	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	1	0	0
Radish	70	100	75	50	25	0	0	100	75	50	25	0	0	30	25	15	0	10	8	5	2	2	1	2	1	0
Radish, cover crop	40	40	30	10	0	0	0	50	35	25	0	0	0	15	10	0	0	4	2	0	0	1	0	1	0	0
Raspberry (established)	80	75	50	25	0	0	0	100	75	50	25	0	0	30	25	15	0	10	8	5	2	2	1	2	1	0
Raspberry (new)	80	100	75	50	25	0	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	2	1	2	1	0
Saskatoon, juneberry (established)	60	100	75	50	25	0	0	150	100	75	50	0	0	30	25	15	0	4	2	0	0	1	0	1	0	0
Saskatoon, juneberry (new)	100	150	125	100	75	50	25	200	150	100	50	0	0	30	25	15	0	4	2	0	0	1	0	1	0	0
Spinach	120	250	200	150	100	50	0	250	200	150	100	50	0	30	25	15	0	10	8	5	2	2	1	3	2	0
Squash	90	150	100	75	50	25	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	1	0	0
Strawberry	100	150	125	100	75	50	25	200	150	100	50	25	0	35	30	25	15	10	8	5	2	2	1	3	2	0
Tomato	150	250	200	150	100	50	25	250	200	150	100	50	0	30	25	15	0	10	8	5	2	4	2	3	2	0
Tree	120	100	75	40	0	0	0	200	125	50	25	25	0	30	25	15	0	6	4	2	0	1	0	1	0	0
Turnip	80	100	75	50	25	0	0	100	75	50	25	0	0	30	25	15	0	6	4	2	0	1	0	2	1	0
Turnip, cover crop	45	40	30	10	0	0	0	50	35	25	0	0	0	15	10	0	0	4	2	0	0	1	0	1	0	1
Watermelon	120	200	150	100	75	50	25	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	1	0	0
Zucchini	90	150	100	75	50	25	0	200	150	100	75	50	0	30	25	15	0	10	8	5	2	1	0	1	0	1

Fertilizer guideline rates in lb/acre on elemental basis and P_2O_5 and K_2O conventions.

Nitrogen guideline based on 24-inch soil depth. See nitrogen adjustments if nitrogen was not analyzed or only 0-6 inch depth analyzed.

University Fertilizer Guidelines

Sulfur Guidelines (1-depth)

		High Sensitivity	Low Sensitivity
Soil test category	**Soil test sulfate-S**	Alfalfa Canola	Other crops
	lb/acre, 0-6 inch	lb/acre sulfate-S	
		broadcast	broadcast
Very low	≤ 6	25	25
Low	7 - 14	25	25
Medium	15 - 30	25	0
High	> 30	0	0

Sulfur Guidelines (2-depth)

		High Sensitivity	Low Sensitivity
Soil test category	**Soil test sulfate-S**	Alfalfa Canola Mustard Strawberry	Other crops
	lb/acre, 0-24 inch	lb/acre sulfate-S	
		broadcast	broadcast
Very low	≤ 19	25	25
Low	20 - 29	25	20
Medium	30 - 39	25	15
High	≥ 40	25	0

Zinc Guidelines

		High Sensitivity		Low Sensitivity
Soil test category	**Soil test Zn**	Bean, dry Bean, faba Corn Flax Potato Sorghum		Other crops
	ppm, 0-6 inch	lb/acre Zn		
		broadcast	seed-placed	broadcast
Low	≤ 0.50	10	2	0
Medium	0.50 - 0.76	5	1	0
High	> 0.76	0	0	0

Soil Test Interpretation

Relative Soil Test Index Values

Soil Test Parameter	Unit	Depth (inch)	Soil Test Interpretation Category: Very Low	Low	Medium	High	Very High
Primary macronutrients							
Nitrate-N (residual NO_3-N)	lb/acre	0-6	≤10	11-20	21-30	31-40	>40
Nitrate-N (residual NO_3-N)	lb/acre	0-24	≤15	16-30	31-45	46-60	>60
Phosphorus (Bray-1 P)	ppm	0-6	≤5	6-10	11-15	16-20	>20
Phosphorus (Olsen P)	ppm	0-6	≤3	4-7	8-11	12-15	>15
Potassium (K)	ppm	0-6	≤50	51-100	101-150	151-200	>200
Secondary macronutrients							
Calcium (Ca)	ppm	0-6	≤500	501-1000	1001-1500	1501-2000	>2000
Magnesium (Mg)	ppm	0-6	≤83	84-166	167-250	251-400	>400
Sulfate-S (SO_4-S)	lb/acre	0-6	≤6	7-14	15-30	31-40	>40
Sulfate-S (SO_4-S)	lb/acre	0-24	≤25	26-56	61-120	>120	
Micronutrients							
Boron (B)	ppm	0-6	≤0.40	0.41-0.80	0.81-1.20	1.21-1.60	>1.60
Chloride (Cl)	lb/acre	0-24	≤15	16-30	31-40	41-60	>60
Copper (Cu)	ppm	0-6	≤0.20	0.21-0.40	0.41-0.60	0.61-0.80	>0.80
Iron (Fe)	ppm	0-6	≤2.5	2.6-5.0	5.1-7.5	7.6-10.0	>10.0
Manganese (Mn)	ppm	0-6	≤0.5	0.51-1.0	1.1-2.0	2.1-10.0	>10.0
Zinc (Zn)	ppm	0-6	≤0.30	0.31-0.60	0.61-1.00	1.01-2.00	>2.0
Soil properties							
pH (1:1)	---	0-6	<5.5	5.6-6.5	6.6-7.5	7.6-8.5	>8.5
Salinity (EC 1:1)	dS/m	0-6	<0.25	0.26-0.50	0.51-0.75	0.76-2.0	>2.0
Sodium (Na)	ppm	0-6	≤40	41-80	81-120	121-160	>160
Carbonate (CCE)	%	0-6	<1.0	1.1-2.5	2.6-5.0	5.1-10.0	>10.0
Organic matter	%	0-6	<1.5	1.6-3.0	3.1-4.5	4.6-6.0	>6.0

Estimating Soil Texture

Cation exchange capacity (CEC) can help estimate soil texture. For soils with pH > 7.3 or salinity > 0.5 dS/m, soil texture is not accurately estimated from CEC. For soils with pH < 7.3, an estimated soil texture from CEC will be generated.

Cation exchange capacity (CEC)	Soil organic matter	Estimated soil texture	Particle size family
$cmol_c/kg$	%		
< 10	< 20	Sand	Coarse
10 – 20	< 20	Coarse loam	Medium
21 – 30	< 20	Fine loam	Medium
> 30	< 20	Clay or clay loam	Fine
	> 20	Peat or muck	Organic

Seed-placed Fertilizer

General

- Do not use seed-placed blends containing urea, diammonium phosphate (DAP, 18-46-0), ammonium thiosulfate (ATS, 12-0-0-26S), or boron. Crop-specific allowances noted below.
- For sandy or dry soils, seedling injury may occur (reduced germination or emergence). Reduce seed-placed fertilizer rate by one-half.
- These guidelines are compiled from university and extension research in the upper Midwest, northern Great Plains, and Canadian Prairies.

Bean, dry

- Do not place any fertilizer with seed.

Buckwheat, canola, flax, mustard, safflower, sunflower

- Limit seed-placed N + K_2O (lb/acre) to less than 10 lb/acre.
- Response to starter fertilizer has not been consistent.

Corn

- Seed-placed 5 gal/acre ammonium polyphosphate (APP, 10-34-0) has shown good plant development and yield responses.
- For 30-inch rows, limit seed-placed N + K_2O (lb/acre) to less than 10 lb/acre.

Small grains

- Keep anhydrous ammonia at least 2 to 3 inches away from seed.
- For 6-8 inch rows, limit seed-placed urea to less than 15 lb/acre N, or 10 lb/acre N if soil is dry or sandy.
- For 6-8 inch rows, limit seed-placed N + K_2O (lb/acre) to less than 30 lb/acre.

Soybean

- For 30-inch rows, do not place any fertilizer with seed.
- For 6- to 8-inch rows, limit seed-placed N + K_2O (lb/acre) to less than 10 lb/acre.

Sugar beet

- Seed-placed 3 or 4 gal/acre ammonium polyphosphate (APP, 10-34-0) has shown good plant development and yield responses.
- Limit seed-placed ammonium polyphosphate (APP, 10-34-0) to less than 6 gal/acre.

Plant Analysis Sufficiency Ranges for Major Crops

		Barley, oat, rye, triticale, wheat		
		tiller	boot	heading
		whole plant	flag leaf	flag leaf
Primary macronutrients				
Nitrogen (N)	%	3.8-5.5	3.8-5.0	3.6-4.5
Phosphorus (P)	%	0.30-0.50	0.30-0.50	0.30-0.50
Potassium (K)	%	2.5-3.5	2.0-3.5	2.0-3.0
Secondary macronutrients				
Sulfur (S)	%	0.20-0.50	0.20-0.50	0.20-0.50
Calcium (Ca)	%	0.20-0.50	0.20-0.50	0.30-0.50
Magnesium (Mg)	%	0.13-0.40	0.15-0.40	0.15-0.40
Sodium (Na)	%	< 0.10	< 0.10	< 0.10
Micronutrients				
Boron (B)	ppm	3-40	3-40	3-24
Chloride (Cl)	%	0.30-0.60	0.21-0.50	0.21-0.50
Copper (Cu)	ppm	5-25	5-25	5-24
Iron (Fe)	ppm	50-250	50-250	50-250
Manganese (Mn)	ppm	25-100	25-100	25-100
Zinc (Zn)	ppm	20-70	20-70	20-70

		Corn			Soybean
		< 12 in	12 in to tassel	tassel	all stages
		whole plant	1st leaf	ear leaf	1st trifoliate
Primary macronutrients					
Nitrogen (N)	%	3.5-5.0	3.0-4.0	2.9-4.0	4.0-5.5
Phosphorus (P)	%	0.35-0.80	0.30-0.50	0.25-0.50	0.26-0.50
Potassium (K)	%	3.0-5.0	2.0-3.0	1.8-2.8	1.7-2.5
Secondary macronutrients					
Sulfur (S)	%	0.18-0.50	0.16-0.50	0.16-0.50	0.20-0.60
Calcium (Ca)	%	0.30-1.60	0.30-0.80	0.25-0.60	0.36-2.00
Magnesium (Mg)	%	0.21-0.80	0.16-0.60	0.16-0.40	0.26-1.00
Sodium (Na)	%	< 0.10	< 0.10	< 0.10	< 0.10
Micronutrients					
Boron (B)	ppm	6-25	5-25	5-25	20-55
Copper (Cu)	ppm	6-20	5-15	5-15	7-29
Iron (Fe)	ppm	50-300	50-250	50-250	50-350
Manganese (Mn)	ppm	50-160	18-150	18-150	21-100
Zinc (Zn)	ppm	20-75	20-75	19-75	21-50

		Alfalfa	Canola		Dry bean	Sugar beet
		all stages	rosette	bud	all stages	all stages
		upper 6 in	whole plant	5th leaf	1st trifoliate	1st leaf
Primary macronutrients						
Nitrogen (N)	%	2.6-3.7	2.5-4.0	2.0-4.5	3.1-6.0	3.5-5.0
Phosphorus (P)	%	0.26-0.70	0.28-0.69	0.25-0.50	0.26-0.50	0.31-0.80
Potassium (K)	%	2.5-3.8	1.5-2.5	2.9-5.1	1.9-2.5	2.0-6.0
Secondary macronutrients						
Sulfur (S)	%	0.31-0.50	0.25-0.50	0.17-1.04	0.21-0.40	0.25-0.50
Calcium (Ca)	%	0.51-3.00	0.50-4.00	1.00-3.00	0.81-3.00	0.50-1.50
Magnesium (Mg)	%	0.31-1.00	0.20-1.50	0.20-0.75	0.26-0.70	0.30-2.50
Sodium (Na)	%	< 0.10	< 0.10	0.02-0.50	< 0.10	0.03-3.70
Micronutrients						
Boron (B)	ppm	31-80	30-80	15-54	21-60	25-79
Copper (Cu)	ppm	8-29	3-20	4-25	7-20	6-30
Iron (Fe)	ppm	30-250	21-200	30-200	31-450	56-140
Manganese (Mn)	ppm	21-200	16-100	25-250	31-300	25-360
Zinc (Zn)	ppm	21-70	16-70	22-49	21-50	21-80

Corn Stalk Nitrate Test

The corn stalk nitrate test is a late-season or end-of-season plant analysis on mature corn stalks. Iowa State University developed the corn stalk sampling protocol and interpretation to help evaluate nitrogen management in corn after maturity. If corn does not have sufficient nitrogen, the corn stalk nitrate level will be low.

Interpretation

- Low: less than 250 ppm. Nitrogen was likely deficiency and limited yield potential.
- Sufficient: 250 – 2000 ppm.
- High: greater than 2000 ppm. Nitrogen supply exceeded plant requirement.

When to sample

Corn stalks may be collected one to three weeks after physiological maturity (black layer, R6 growth stage) through just after harvest. After harvest, nitrate in corn stalk may leach from plant tissue.

- Earliest: One-quarter milk line (R5 growth stage) on majority of corn kernels. Nitrate concentration may be higher if collected early.
- Optimum: One to three weeks after physiological maturity (black layer, R6 growth stage) on 80% of corn kernels.
- Latest: Up to harvest. Nitrate concentration may be low if nitrate leached from plant tissue.

How to sample

- Plant part: measure 6 inches from the ground, cut the next 8 inches of corn stalk (the 6-14 inch stalk section measured from plant base)
- Amount: 12 to 15 corn stalks
- Remove outside leaf sheath.
- Place corn stalks in ventilated plant tissue bag. Do not use plastic or Zip bag.
- Do not collect diseased or damaged corn stalks.

Collecting a good sample:

- Sample 1-3 weeks after black layer
- Collect 15 eight-inch stalk segments between six and 14 inches above the soil surface
- Randomly select stalks from about a one acre area that represents a larger area
- Separately sample different soil types and management areas
- Place stalks in paper bags, not plastic, for shipment to the lab
- Ship samples within one day or refrigerate until shipping

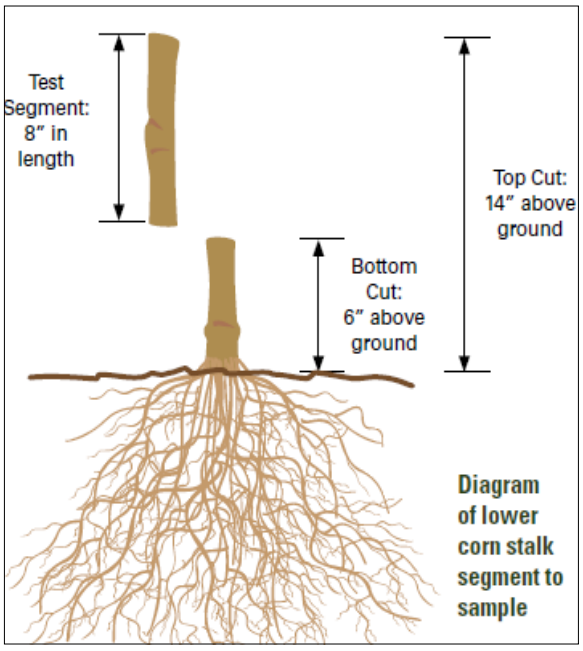

Diagram of lower corn stalk segment to sample

Feed Nitrate Nitrogen Test

Feed or forage with a high concentration of nitrate can result in livestock nitrate poisoning. A feed nitrate analysis can help producers prevent nitrate poisoning in livestock or help control the amount of nitrate fed in livestock rations. Nitrate accumulation in forages is a serious concern in drought years. Drought-stressed crops often accumulate nitrate because plant uptake of nitrate exceeds plant growth and nitrogen utilization. Some crops can also accumulate nitrate in non-drought years: millet, sudangrass, sorghum-sudan hybrids. Nitrate is usually concentrated in lower plant parts (lower stem or stalk). When livestock, particularly cattle and sheep, ingest forages with a high nitrate concentration, nitrate poisoning can occur.

When collecting plant samples for feed nitrate analysis, it is important to collect the plant parts that livestock will ultimately consume. If grazing, be mindful of the grazing height because the plant nitrate concentration will be lower near the base of the plant. If baling for hay or chopping for silage, cut at the intended cutter bar height.

When in doubt, any feed or forage suspected of high nitrate concentration should be analyzed before feeding. Contact your livestock nutrition specialist or veterinarian for assistance on feeding high-nitrate forages or blending high-nitrate forages in feed rations.

Feed Nitrate Nitrogen Guidelines

Nitrate (NO_3-N)	**Nitrate toxicity risk**	**Interpretation**
ppm		
0 – 550	Safe	Generally considered safe for all animals.
551 – 1100	Slight	Should not make up more than 50% of total intake for pregnant animals.
1101 – 2200	Moderate	Do not feed to pregnant animals. Limit to less than 50% of total intake for all other animals.
2201 – 3400	High	Exercise extreme caution when feeding.
3400+	Severe	Do NOT feed to any animals.

Soybean Cyst Nematode (SCN)

Soybean cyst nematode (SCN) populations can vary greatly across a field, especially when SCN density is low. In certain areas, the SCN population may be very high, while others are low. Examine soybean roots in late June and early July for SCN female cysts. Collect an SCN soil test, including infected soybean root tissue, to determine SCN severity. Soil sampling for SCN is the easiest way to confirm the presence or absence of SCN.

University SCN Guidelines

Soil test category	SCN Population	University Guideline
	eggs/100 g soil	
Very low	< 200	Susceptible soybean variety may be planted
Low	201 – 2,000	Resistant soybean variety should be planted
Medium	2,001 – 10,000	Resistant soybean variety may be planted, some yield loss expected
High	> 10,000	Soybean should not be planted

Crop Rotation after SCN Detected

- Year 1: Corn or other non-host crop
- Year 2: SCN-resistant soybean variety
- Year 3: Corn or other non-host crop
- Year 4: SCN-resistant soybean variety with different resistance trait than Year 2

Soil Sampling

- Soil depth: 0-6 or 0-8 inch
- Location: in the soybean row, collect root tissue
- Amount: 10 – 20 soil cores per sample
- Time of year
    - Just before or after soybean harvest (before any tillage)
    - Summer for troubleshooting problem areas
    - Paired “at-planting” and “at-harvest” to measure SCN population increase during growing season (e.g. SCN-resistance trait failure)

Soybean Iron Deficiency Chlorosis (IDC)

Soils with high carbonate content and salinity are more likely to develop iron deficiency chlorosis (IDC) in soybean. Soil testing for carbonate and salinity helps evaluate the risk potential for soybean IDC development. Always choose fields with the lowest carbonate and salinity for soybean. In management zones where carbonate and salinity are high, plant an IDC-tolerant soybean variety; this may increase the overall field average yield. Other crops sensitive to IDC are flax and dry bean if carbonate and salinity are high.

Soils with low carbonate and low salinity have low risk potential for soybean IDC development. Fields with high carbonate and high salinity have much higher risk potential for soybean IDC development and symptoms may be severe. All soils with pH > 7.3 should have carbonate (calcium carbonate equivalent, CCE) and salinity analyzed. Soils with high pH may widely different CCE content, ranging from near zero to over 20%. Soil carbonate content must be analyzed in the laboratory to assess soybean IDC risk potential.

Soybean IDC Guidelines

	Soybean IDC risk potential		
Salinity (1:1)	**Calcium carbonate equivalent (CCE)**		
dS/m	< 2.5 %	2.6 – 5.0 %	> 5.0 %
< 0.25	Low	Low	Moderate
0.26 – 0.50	Low	Moderate	High
0.51 – 1.00	Moderate	High	Very high
> 1.00	Very high	Very high	Extreme

- Low: Soybean IDC is not likely.
- Moderate: Soybean IDC may develop in certain management zones if cool, wet conditions are present. Choose an IDC-tolerant soybean variety.
- High: Soybean IDC is likely to develop in certain management zones if cool, wet conditions are present. Choose an IDC-tolerant soybean variety.
- Very high: Soybean IDC may be severe if cool, wet conditions are present. Choose an IDC-tolerant soybean variety, strongly advised.
- Extreme: Soybean IDC maybe be severe if cool, wet conditions are present. Soybean IDC severity may reduce yield significantly. Soybean is not recommended.