

## Phosphorus and Potassium recommendations for B.C. crops

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Updated July 2020

The B.C. Nutrient Management Calculator provides phosphorus (P) and potassium (K) fertility recommendations based on location and soil test results. Soil test phosphorus and potassium results are converted to be equivalent with the “Kelowna” extraction and used to provide a recommendation based on crop groups and location from the B.C. soil test interpretation guidelines from Gough (1991).

The original guidelines from Gough (1991) are fertilizer recommendations meant to produce maximum economic yields for the crop groups at the time the recommendations were made. The guidelines assume good or above average management and favourable conditions for crop growth. The guidelines apply to mineral soils (less than 17% organic carbon or less than 30% organic matter by weight) and not Organic soils (e.g. muck or peat).

All soil test interpretations should take into account:

- Soil sampling and handling procedures
- Soil test laboratory methods
- The basis for the interpretation guidelines

In Tables 1 through 6, recommendations are provided based on the interpretation of results from soil samples taken to a depth of 15 cm. The interpretations are based on the “Kelowna” extraction for soil phosphorus and potassium, the last method adopted by the former provincial Soil Test Laboratory for British Columbia.

Reference:

Gough, N.A. 1991. (Republished in 1996). [Soil and plant tissue testing methods and interpretations of their results for British Columbia agricultural soils](#). BC Ministry of Agriculture and Food. Final draft report.

**Table 1. Recommended P<sub>2</sub>O<sub>5</sub> applications based on soil test phosphorus values for Vancouver Island, Lower Mainland, Okanagan, Kootenays, Kamloops, Williams Lake, and Quesnel**

P <sub>2</sub> O <sub>5</sub> Recommendations (kg/ha) based on Soil Test Phosphorus (0-15 cm) extraction by the Kelowna method										
Soil Test P ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended
	Tree Fruits: Apple, Apricot, Cherry, Peach Pear, Plum		Barley, Oats, Rye, Wheat (Spring & Winter)		Grasses, Flax, Rapeseed, Canola, Mustard, Alsike clover, Birdsfoot trefoil, Red Clover, Grass-Legume (10-50%)		Alfalfa, White clover, Sweet clover, Peas, Beans (bush & pole), Lettuce, Spinach, Corn, Soybeans, Cucumbers, Eggplant, Marrow, Muskmelon, Pumpkins, Squash, Grass-Legume (>50%)		Cole Crops, Beets, Carrots, Parsnip, Radishes, Turnips, Asparagus, Bulbs, Celery, Sweet Corn, Onions, Garlic, Peppers, Grapes, Small Fruits, Potatoes	
5	VL	P1	VL	120	VL	140	VL	170	VL	200
10	L	P1	L-	100	L-	120	L-	140	L-	170
15	L+	P1	L-	80	L	100	L	120	L	144
20	M	P1	L+	60	L+	80	L+	100	L+	100
25	M+	P1	M-	40	M-	60	M-	80	M-	80
30	H-	0	M	30	M	60	M	60	M	60
40	H-	0	M+	20	M+	30	M+	40	M+	50
50	H+	0	H-	15	H-	20	H-	30	H-	40
75	H+	0	H	15	H	20	H	30	H	40
100	H+	0	H+	15	H	20	H+	30	H+	40
999	VH	0	VH	0	VH	0	VH	0	VH	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility

VH - No response

Recommended P1: A phosphorus recommendation is made only for orchards that are about to planted. The P<sub>2</sub>O<sub>5</sub> is applied as 11-55-0 at a rate of 150g/100 L of soil that is placed in the planting hole of young trees.

**Table 2. Recommended P<sub>2</sub>O<sub>5</sub> applications based on soil test phosphorus values for McBride, Prince George, Vanderhood, and Smithers**

P <sub>2</sub> O <sub>5</sub> Recommendations (kg/ha) based on Soil Test Phosphorus (0-15 cm) extraction by the Kelowna method										
Soil Test P ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended
	Barley, Oats, Rye, Grasses, Grass Seed		Grass-Legume (10-50%), Wheat		Flax, Rapeseed, Canola, Mustard, Alfalfa (established), Alsike clover, Birdsfoot trefoil, Crimson clover, Red clover, established Grass-Legume (>50%)		Beans, Sweet Corn, Cucumbers, Lettuce, Marrow, Muskmelons, Peas (processing), Pumpkins, Spinach, Squash, Corn, Egg-plants, Alfalfa (new), White clover, Sweet clover, Vetch, Soybeans, new Grass-Legume (>50%)		Small Fruits, Turf, Potatoes, Cole Crops, Beets, Carrots, Parsnips, Radishes, Turnips, Asparagus, Bulbs, Celery, Eggplants, Garlic, Hops, Onions, Peppers, Rhubarb, Tomatoes	
5	VL	80	VL	100	VL	120	VL	140	VL	160
10	VL	80	VL	90	VL	100	VL	130	VL	140
15	L-	70	L-	80	L-	90	L-	120	L-	120
20	L	60	L	70	L	80	L	100	L	100
25	L+	50	L+	60	L+	70	L+	90	L+	90
30	M	40	M-	50	M-	60	M-	80	M-	80
40	M	30	M	40	M	50	M	70	M	70
50	M+	20	M+	30	M+	40	M+	60	M+	60
60	H-	15	H-	20	H-	30	H-	40	H-	50
75	H	15	H	20	H	30	H	40	H	50
100	H+	15	H+	20	H+	30	H+	40	H+	50
999	VH	0	VH	0	VH	0	VH	0	VH	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility

VH - No response

**Table 3. Recommended P<sub>2</sub>O<sub>5</sub> applications based on soil test phosphorus values for Peace River**

P <sub>2</sub> O <sub>5</sub> Recommendations (kg/ha) based on Soil Test Phosphorus (0-15 cm) extraction by the Kelowna method										
Soil Test P ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended
	Grass seed, Grasses, Barley, Oats, Rye, Wheat		Flax, Rapeseed, Mustard, Canola, Grass-Legume (10-50%)		Peas (dry), Soybeans, Alfalfa (established), Alsike clover, Birdsfoot trefoil, Crimson clover, Red clover, established Grass-Legume (>50%)		Beans, Sweet corn, Cucumbers, Lettuce, Marrow, Muskmelons, Peas (processing), Pumpkins, Spinach, Squash, Corn, Eggplants, Alfalfa (new), White clover, Sweet clover, Vetch, Soybeans, New Grass- Legume (>50%)		Small Fruits, Turf, Potatoes, Cole Crops, Beets, Carrots, Parsnips, Radishes, Turnips, Asparagus, Bulbs, Celery, Eggplants, Garlic, Hops, Onions, Peppers, Rhubarb	
5	VL	80	VL	100	VL	120	VL	140	VL	160
10	VL	80	VL	90	VL	100	VL	130	VL	140
15	L-	70	L-	80	L-	90	L-	120	L-	120
20	L	60	L	70	L	80	L	100	L	100
25	L+	50	L+	60	L+	70	L+	90	L+	90
30	M	40	M-	50	M-	60	M-	80	M-	80
40	M	30	M	40	M	50	M	70	M	70
50	M+	20	M+	30	M+	40	M+	60	M+	60
60	H-	15	H-	20	H-	30	H-	40	H-	50
75	H	15	H	20	H	30	H	40	H	50
100	H+	15	H+	20	H+	30	H+	40	H+	50
999	VH	0	VH	0	VH	0	VH	0	VH	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility

VH - No response

**Table 4. Recommended K<sub>2</sub>O Applications based on soil test potassium values for Vancouver Island and Lower Mainland**

K <sub>2</sub> O Recommendations (kg/ha) based on Soil Test Potassium (0-15 cm) extraction by the Kelowna method										
Soil Test K ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recommended	Rating	Recommended	Rating	Recommended	Rating	Recommended	Rating	Recommended
	Tree Fruits: Apple, Apricot, Cherry, Peach Pear, Plum		Barley, Oats, Rye, Wheat (Spring & Winter)		Grasses, Flax, Rapeseed, Canola, Mustard		Alfalfa, White clover, Peas, Beans (bush & pole), Corn, Lettuce, Spinach, grass-Legume, Alsike clover, Birdsfood trefoil, Crimson clover, Red clover, Sweet clover, Soybeans		Turf, Cole Crops, Beets, Carrots, Parsnip, Radishes, Turnips, Asparagus, Bulbs, Celery, Muskmelons, Eggplants, Cucumbers, Onions, Garlic, Marrow, Peppers, Grape, Small fruits, Potatoes, Pumpkins, Squash, Tomatoes	
25	L-	K1	VL	150	VL	200	VL	200	VL	250
35	L	K1	L-	100	L-	150	VL	200	VL	250
50	L+	K1	L	80	L	100	L-	200	VL	250
65	M-	K1	L+	60	L+	80	L	150	L-	250
80	M	K1	M-	40	M-	60	L+	100	L-	200
100	M+	K1	M	30	M	40	M-	80	L+	150
125	M+	K1	M+	30	M+	40	M	60	M-	100
150	H-	0	H-	20	H-	20	M	60	M	80
175	H	0	H-	20	H-	20	H-	40	M+	60
190	H+	0	H	20	H	20	H	40	H-	40
220	VH	0	H	20	H	20	H	40	H	40
250	VH	0	H+	20	H+	20	H+	40	H+	40
9999	VH	0	VH	0	VH	0	VH	0	VH	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility

Recommended K1: 250 lb K<sub>2</sub>O/acre recommended for soils testing low or medium in K

**Table 5. Recommended K<sub>2</sub>O Applications based on soil test potassium values for Okanagan, the Kootenays, Kamloops, William's Lake, and Quesnel**

K <sub>2</sub> O Recommendations (kg/ha) based on Soil Test Potassium (0-15 cm) extraction by the Kelowna method										
Soil Test K ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended	Rating	Recomended
	Tree Fruits: Apple, Apricot, Cherry, Peach Pear, Plum		Barley, Oats, Rye, Wheat (Spring & Winter)		Grasses, Flax, Rapeseed, Canola, Mustard		Alfalfa, White clover, Alsike clover, Birdsfoot trefoil, Crimson clover, Red clover, Sweet clover, Soybeans, Beans (bush & pole), Corn, lettuce, Spinach, Grass-legume		Turf, Cole crops, Beets, Carrots, Parsnip, Radishes, Turnips, Asparagus, Bulbs, Celery, Muskmelons, Eggplants, Cucumbers, Onions, Garlic, Marrow, Peppers, Grape, Small fruits, Potatoes, Pumpkin, Squash, Tomatoes	
25	L-	K1	VL	150	VL	200	VL	200	VL	250
35	L	K1	L-	100	L-	150	VL	200	VL	250
50	L+	K1	L	80	L	100	L-	200	VL	250
65	M-	K1	L+	60	L+	80	L	150	L-	250
80	M	K1	M-	40	M-	60	L+	100	L	200
100	M+	K1	M	30	M	40	M-	80	L+	150
125	M+	K1	M+	30	M+	40	M	60	M-	100
150	H-	0	H-	20	H-	20	M+	60	M	80
160	H	0	H	20	H	20	H-	40	M+	60
175	H+	0	H+	20	H+	20	H	40	H-	40
190	VH	0	VH	0	VH	0	H+	40	H	40
220	VH	0	VH	0	VH	0	VH	0	H	40
250	VH	0	VH	0	VH	0	VH	0	VH	0
9999	VH	0	VH	0	VH	0	VH	0	VH	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility

Recommended K1: 250 lb K<sub>2</sub>O/acre recommended for soils testing low or medium in K

**Table 6. Recommended K<sub>2</sub>O applications based on soil test potassium values for McBride, Prince George, Vanderhoof, Smithers, and Peace River**

K <sub>2</sub> O Recommendations (kg/ha) based on Soil Test Potassium (0-15 cm) extraction by the Kelowna method										
Soil Test K ug/ml 0-15cm	Crop Group 1		Crop Group 2		Crop Group 3		Crop Group 4		Crop Group 5	
	Rating	Recommended	Rating	Recommended	Rating	Recommended	Rating	Recommended	Rating	Recommended
	Grasses		Barley, Oats, Wheat, Rye, Grass-legume (10-50% legume), Flax, Rapeseed, Canola		Alfalfa, Alsike clover, Birdsfoot trefoil, Crimson clover, Red clover, White clover, Sweet clover, Vetch, Soybeans, Grass-legume (>50%)		Beans, Corn, Lettuce, Spinach, Peas, Potatoes (non-irrigated)		Small fruits, Turf, Potatoes (irrigated organics), Cole Crops, Beets, Carrots, Parsnips, Radishes, Turnips, Asparagus, Bulbs, Celery, Corn, Cucumbers, Eggplants, Garlic, Marrow, Muskmelons, Onions, Peppers, Pumpkins, Rhubarb, Squash, Tomatoes	
25	L-	100	VL	125	VL	150	VL	200	VL	250
35	L	80	L-	100	L-	125	VL	150	VL	200
50	L+	60	L	80	L	100	L-	125	VL	150
65	M-	40	L+	60	L+	80	L	100	L-	125
80	M	30	M-	50	M-	60	L+	80	L-	100
100	M+	30	M	50	M	50	M-	60	L+	80
125	H-	20	M+	30	M+	40	M	40	M-	60
150	H	15	H-	30	H-	40	M	40	M	40
175	H+	15	H-	30	H-	40	H-	40	M+	40
999	VH	0	H	0	H	0	H	40	H-	0

**Soil Test Rating**

VL - Large economical response to fertilizer nutrient

L - Moderate economical response

M - Small economical response

H - No immediate response. The suggested rate of fertilization is intended to maintain soil phosphorus fertility