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Soil Testing

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## Potato Fertilization

The production of high yield quality potatoes depends upon many factors which may include: disease-free seed, a deep, prepared seedbed, proper soil pH, freedom from disease and insects, adequate heat and moisture, PLUS adequate fertility. The nutrients recommended on your soil lab reports should give optimum yields if all other essential requirements are provided.

When soils are analyzed at the PEI Analytical Laboratory, the recommendations for potatoes are based on the field's individual soil test results; however these may be adjusted for a number of factors dependent on the crop rotation and the specific variety. If the crop to be grown is indicated as POTATOES, then the recommendation is for general round varieties; if the variety is specified (i.e. POTATOES - BURBANK), then the nitrogen recommendations are adjusted for that variety.

### EXAMPLE:

To convert HECTARES into ACRES multiply by 2.47			To convert T/HECTARE into T/ACRE multiply by 0.45			To convert kg/ha into lbs/ACRE; multiply by 0.9			
Sample Information			Limestone application (T/Ha) to achieve			Required Applications (kg/ha)			
Lab Sample #	Field Number	Field Size (Ha)	Crop to be grown	pH 5.5	pH 6.0	pH 6.5	Nitrogen N	Phosphate P <sub>2</sub> O <sub>5</sub>	Potash K <sub>2</sub> O
9	5A ACRO WBAN	5.4	Potatoes		2	3	155	275	200
10	5B LEFT WBAN	3.1	Potatoes- BURBANK	1	2	3	185	135	135
11	9 MACDONALD	5.8	Potatoes-PROSPECT			2	130	200	135
12	11 MEADOW	8.7	Barley		2	3	50	25	25

It is important that adequate fertility be applied for the crop; however, excess fertilizer can do more harm than good. For a listing of some potential problems associated with deficiencies and excesses of common nutrients, refer to Table 1 at the end of this factsheet.

### Potato Fertilizer Application Methods

The amount of nutrient to reach the crop throughout the season can largely be affected by the fertilizer application method. For example, broadcast applied phosphorus (P) can be a very inefficient method of P fertilization for potatoes since it is highly immobile within the soil, and therefore this practice is not generally recommended. Whereas, nitrate-nitrogen can be either broadcast or banded at planting, and since it is relatively mobile within the soil, depending on the season, either method may provide similar availability to the crop and/or plant roots (although neither method will affect its potential to be lost in a wet spring before the crop can use it).



For more information on split application fertilizer methods for potatoes, refer to the factsheet “Split Nitrogen Applications for Potatoes” on the PEIDAF website, within the Factsheets section.

**TABLE 1:** Nutrient Deficiencies and Excesses

<b>ELEMENTS</b>	<b>DEFICIENCIES</b>	<b>EXCESSES</b>
Nitrogen	Reduced total yield Reduced tuber sizing Pale stunted foliage	Delayed maturity Excessive top growth Hollow heart & growth cracks Increased susceptibility to disease Reduced tuber specific gravity Difficulty in top killing
Phosphorus	Reduced early vigor Delayed maturity Reduced yield	Ties up other elements such as calcium and zinc
Potassium (Potash)	Reduced nitrogen uptake Reduced yield Increased storage black spot	Reduced tuber specific gravity Reduced calcium and/or magnesium uptake Poor soil structure
Calcium	Reduced root growth Deformed foliage growth tips Reduced yield Reduced tuber quality Poor soil structure	Reduced magnesium uptake
Magnesium	Reduced photosynthesis rate Reduced yield Reduced tuber formation	Reduced calcium uptake

(Revised April 2014)