Fertility priorities for high quality legumes in Atlantic Canada
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There is much to consider when growing high quality forages for high performance feeding programs. In this article we will only focus on fertility requirements.

Many farms have been improving soil health by including amendments in their programs which has increased yield and quality. Fields with low soil health levels require significant input to maximize their potential. The most economical method to increase soil health is to plan and prioritize. The following order of priority has worked well in our crop management programs, and provides the "biggest bang for the buck" are:

1. **pH** - increasing pH levels to 6.5+ have shown a significant increase in yield/quality potential. There is still the misconception in Atlantic Canada (AC) that 6.0 is good. ***Don't underestimate the power of improving your pH!*** Since AC soils are naturally acidic, and fields are hit with acid rain and nitrogen fertilizers, this will be an on-going part of your program. The good news is that once pH is up, maintenance programs are less expensive than building programs.

2. **Potassium (K)** – yield/quality relies on good K levels. Each cut of forage removes large amounts so K management will also always be a significant part of your program. AC soils are naturally low in K. Not all manures provide the enough K to replace all the K that was removed. Fields closest to barn usually have excessive K, which can cause cow problems. Apply manure on fields that need it within 48-72 hours after taking a cut, otherwise do not apply as you can damage alfalfa crowns.

3. **Nitrogen (N)** – another misconception is that legumes will produce all its own N. Conditions in AC reduce N fixation therefore doesn't feed the crop enough N. Cold wet springs reduce N uptake for the most important 1st cut that farmers rely on. Feed it N! Fields with low pH, phosphorus and K also reduce N fixation. Low phosphorus fields may not start to fix N for up to 16 weeks after planting. Much too late for new seeded fields.

4. **Boron (B)** – B is mostly undetectable or very low in AC fields. B is very important for nodulation, protein, nutrient uptake, faster regrowth and legume quality. In low B fields, the leaves will dry too quickly and fall off at harvest which further decreases quality.

5. **Sulfur (S)**– alfalfa is very responsive to S. AC soil levels have decreased since pollution emission control has improved. S is important for N uptake, stand productivity, reducing disease and "antifreeze" for overwintering. Manure has very little S. Research has shown adding S to fertilizer blends can increase yields by 10-25%! There are different forms of S, very slow release elemental S and quicker available sulfate S. A mix of both should be used.

- **Phosphorus (P)** – essential for seed germination, root development and forage digestibility. Low P fields will be very susceptible to dry conditions. A good opportunity to increase P is at planting.

Balance of nutrients is very important. Nutrients can either work together or if they are out of balance, they can compete and reduce the uptake of other nutrients.

Fertilize after each cut - farmers that are not feeding their forages after taking a cut are further depleting the soils and stressing the crop. The **only** time that just nitrogen is applied after a cut, is if the field has a good-high level of nutrients or an amendment has been applied (i.e. manure, ash or another nutrient source).