

## Soil science consulting | FROM PAGE 19

In terms of setting his fees, Bordenave said that a low professional fee generally reduces the legit aspect and respect for the whole profession. "The best clients are looking for the best, not the cheapest," he said.

Soil science consultants should bill on a consistent and timely manner. Don't allow an invoice to go beyond its due date. Even if the consultant does not have a full-time accountant or bookkeeper, one should be hired on a part-time basis to ensure that billing is done consistently and to follow up with any past due invoices.

Bordenave gives a number of interesting guidelines on scheduling and time management, which is critical to success in consulting. The most important lesson in time management is learning how to say no.

"Schedule the day, prioritize the week, plan out the month, and set goals for the year," Bordenave said. Basically, consultants need to set long-term goals, such as what they want to accomplish in five years. Bordenave recommended writing these down because if it is not documented, it does not exist. The consultant's goals should match up with the time and energy it takes to open and successfully build the business.

Also, the consultant should avoid the numerous time wasters that we all face such as telephones, socializing, disorganization, inability to say no, obsessively checking and responding to email, unannounced visitors, and excessive meetings.

"If you had to leave for two months, what are the three things you would get done by the end of the week?" Bordenave asked.

If your consulting business has no clients, then you have no consulting business. Part of the consultant's job is marketing services to people who may not even be aware that they need those services. Bordenave said the difference between advertising and marketing is that advertising is a random search for clients while marketing is a targeted way to reach clients. ■

## NAPT working for you

### Pay attention to the units

**By Keith Reid**, soil fertility specialist, Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA), Stratford, ON, Canada, and chair of the NAPT Oversight Committee

**I**t is easy to assume that every soil test is the same, but that would lead to improper interpretation of soil test results and poor advice to your clients. Every soil test report should list the units that are being reported, and every CCA should have some understanding of what these units mean.

#### Different units that really aren't

A variety of different units are used to report concentration of nutrients on soil test reports, but most of them are actually the same. The common factor is that the mass of extracted nutrient is reported per million masses of soil, or in parts per million (ppm). This may also be reported as milligrams per kilogram (mg/kg, or sometimes  $\text{mg kg}^{-1}$ , which means the same thing) or grams per megagram (g/Mg). In all these cases, the large number is one million times the small number, so the concentrations reported are directly comparable.

Since many soil tests are scooped rather than weighed, the purists will report the soil test value as milligrams per liter of soil (mg/L). What you need to remember is that a dried and ground soil, as scooped, will have a bulk density that is not far off of 1 kg/L, so treating these numbers as part per million will not introduce a significant error into your interpretations.

#### Parts per million or pounds per acre?

Most soil tests report the concentration of nutrient in the soil, but a number of states have traditionally reported the nutrient concentration as pounds of available nutrient per acre. The underlying assumption is that most of the available nutrients are in the topsoil and that each acre-furrow slice weighs about 2 million lb. This means that the nutrients reported in pounds per acre are double those reported in parts per million since the report is actually in units of "parts per 2 million." For those in the metric system, the conversion factor is still 2 since the calculated weight of a hectare-furrow slice is very close to 2 million kg.

The picture gets a little more complex when soil nitrate is measured since this is generally a deeper sample than for P or K. The multiplier to convert from parts per million to pounds per acre would increase to 4 for a 1-ft (30-cm) sample and 8 for a 2-ft (60-cm) sample.

#### Element or oxide?

A further complication is the chemical species that is actually reported, particularly by labs that analyze both feeds and plant tissue. The standard in most feed analyses is to report nitrate ( $\text{NO}_3^-$ ) and sulfate ( $\text{SO}_4^{2-}$ ). In contrast, most soil and plant tissue analyses report the elemental equivalent, so it is nitrate N and sulfate S. Since one includes the weight of the oxygen, and the other does not, the numbers reported will be widely different. Knowing for sure which is being reported will avoid confusion. ■

