



CUSTOMIZING YOUR FERTILIZER APPLICATIONS IN RELATION TO WEATHER

Contributed by **Dr. Thomas Jensen, Director, IPNI North American Program**

Don't forget the weather experienced during a crop year has the greatest effect on crop yields. Crops need sunlight, warmth, moisture, and nutrients to grow. When crops are grown under rain fed conditions, the only need we can supplement is nutrients by adding fertilizers and livestock manures as appropriate.

Access to irrigation allows addition of water if moisture is in short supply, but we can't do much if rainfall is excessive. The reality is that farmers are at the mercy of the weather. Most of the time the weather is conducive to reasonably good crop production, but sometimes we receive insufficient moisture, and or warmth, and crop yields are poor.

In contrast there are those extraordinary crop years when all the crop needs are supplied in just the right combination. **For example, 2013 was an example of one of those extraordinary crop years, as experienced in the Western Canadian Prairie provinces.** In Alberta the average yield of all wheat types was over 58 bu/A. This is the highest average wheat yield experienced from 1962 through to 2013. The average for the previous 9 crop years, 2004 through 2012, was just over 45 bu/A, so considering the past 10 years the 2013 crop year was 29% higher yielding than the average of the previous 9 years.

The question can be asked—did farmers fertilize sufficiently for that above average crop? **We could always apply the most correct source, rate, time, and placement of fertilizer inputs if we knew what the crop year weather was going to do.** The challenge is we don't know what the exact weather will be until after it happens. At the end of the crop year we can look back and see where adjustments could have been made to the fertilizer program. If we had cool and droughty conditions, lower fertilizer rates would have been adequate for the reduced crop potential. Also, in an ideally warm and sufficiently moist year, as in 2013, in many cases the above average crop yields could have been even higher if higher fertilizer rates were used.

In practical terms most farmers apply nutrients in anticipation of a slightly better than average crop year. But there are some nutrient management strategies that could be beneficial in those much better than average years. One is by soil testing regularly, e.g., every 3 years

or so, for plant nutrients that can be gradually built up and maintained at optimum levels, like P. It is suggested that optimum levels of Olsen soil test P could be 20 ppm, not the normal soil test level of 14 for most western Canadian soils.

Another strategy is to be capable and ready to supply additional nitrogen fertilizer as an in-crop application if much better than normal crop growth up to the stem elongation stage of crops is experienced. This would allow farmers to supply ample nutrients to optimize crop yields, when that much better than average weather is experienced.