

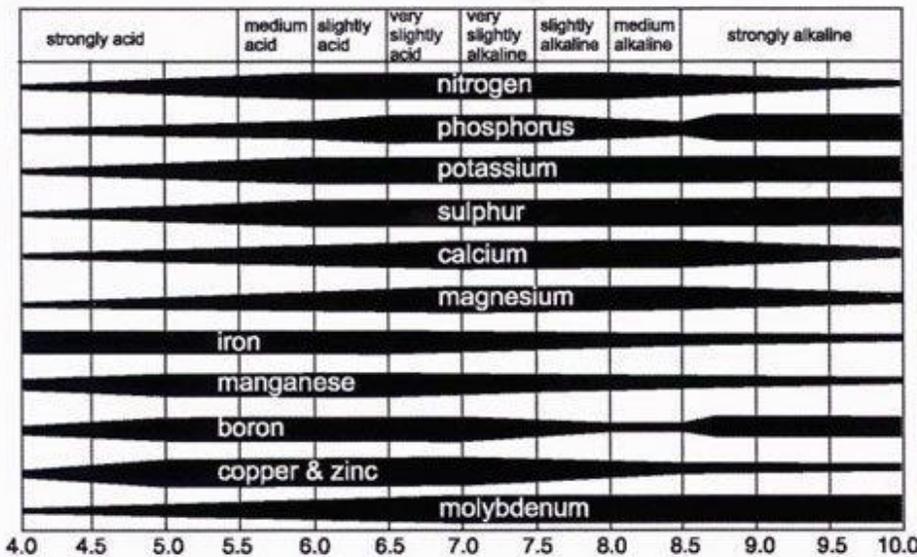


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pH, what does this mean for your fields?

Soil pH, it's one of the simplest things a grower or landlord can adjust in their field but the effects it has on our fields goes way beyond just adjusting a simple number. Chemical and nutrients can greatly be affected by the pH of their surroundings. If you could remember your chemistry lessons from back in high school you will remember that pH is the measurement of Proton (H⁺) ions in a solution relative to the hydroxyl (OH⁻) ions in a solution. So, a solution that has more proton ions than hydroxyl ions is considered acidic and if the opposite is true, it is considered basic. How we measure this is on a scale of 1-14 with 1 being completely acidic and 14 being completely basic with 7 being neutral. Most soils in this area of the world maintain a slightly acidic pH that lies in the 6's. This brings up the question what does this mean to me? How does pH effect my farming operation?

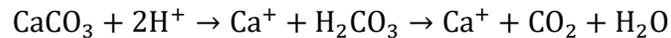


Above is a picture of availability of nutrients across various pH values. The thicker the bar the more available the nutrients. As you can see, most nutrients are highly available around a pH of 6.5 which is the ideal pH for corn and soybeans. This number for best pH changes greatly depending on the plant you want to raise with a lot of our forage legumes preferring pH's near 6.9 on one end and a plant like a blueberry preferring a pH around 5. This graph is a very powerful visual because it demonstrates how you can add as much fertilizer to a field as possible but if your pH is out of balance than you are doing yourself no favors. Remember, pH is the key that unlocks the nutrients in our soil and fertilizers.

So how does our soil pH get off balance and what can we do to correct it? Typically, pH in crop land lowers over time due to the constant usage of nitrogen as well as the removal of basic cations. Of those 2 processes, the usage of nitrogen in our fields is the greatest contributor of soil acidity. The equation that follows demonstrates that point and this is the process in which soil ammonia is transformed into nitrate, a very common process which not only occurs in agricultural fields but any soil.



The main take-home lesson with this is on the second half of the equation. We are contributing 4 acidic H⁺ ions to the soil, therefore lowering the pH. So what can we do to correct this change? The simplest solution is to spread lime on your soils. What lime does for our soils is it essentially takes acidic ions and transforms them into water through this lengthy chemical reaction.



Not only does lime help balance pH but it provides calcium and in some cases magnesium to the soil which are both essential nutrients for plant growth. After lime applications, the soils in fields tend to be more malleable and easier working than those without lime. Lime can be hauled in from local quarries and stockpiled in field edges or waterways until it is time for application.

Final Thoughts

Remembering back to the days when I was just getting started on a blueberry field in Petersburg Illinois, I recalled a lesson which I still find important today. It was to always make sure your pH is correct before you even start fertilizing. No matter how poor your soil nutrient tests are, your soil pH will always determine how much use you get out of the fertilizer you put down. Whether you are applying a flat rate of lime or making a variable rate application, it is always a good idea to get the lime as soon as possible and get it spread. Like always, my job is to give you the best advice possible, what you do with it is up to you.