



CLIPPINGS a weekly column from Iowa State University Extension and Outreach

Week of February 10, 2020

For Immediate Release

Soil Fertility Thoughts for 2020

Joel DeJong, Field Agronomist

Commodity markets have been scary again lately. Managing expenses while keeping high yields is an annual goal for crop producers, and this year is no exception. Soil fertility expenses per acre are a big part of that management.

Iowa State University has done research on yields, soil test levels and nutrient removal rates over many years. We have a lot of data that helps us develop the odds for getting a return on your investment for adding nutrients to the soil, and also what it might cost to not add nutrients. I always suggest starting with a “balance sheet” of what you removed with your crop during the last one or two years. ISU’s publication PM-1688 is a great reference piece, titled “A General Guide for Crop Nutrient and Limestone Recommendations in Iowa,” downloadable for free at <https://store.extension.iastate.edu/product/5232>. Recent research shows that the removal rate for some crops is lower than what we thought 30 years ago. For example, this publication shows that a bushel of corn removes 0.32 pound of P₂O₅ (phosphate), and 0.22 pound of K₂O (potash). That means a 200 bushel per acre corn crop has 64 pounds of phosphate and 44 pounds of potash that leave the field in your grain wagons.

Once we know what the crop removed, we need to ask ourselves if we need to replace that amount, can we get by with less in short cash-flow years, or do we need to put on more than we remove? That is where good soil tests help. Soil tests numbers offer us an index of the potential responsiveness of investing in fertilizer applications. ISU research has shown that fertilizing soils with test levels in the very low category produce an economic yield response 80 percent of the time. That number drops to a 65 percent positive response in the low category and is at 25 percent for the optimum category. A positive economic response occurs 5 percent of the time in the high category, and less than 1 percent of the time in the very high soil test range. In general, if your tests are in the Optimum category, we recommend replacing what you removed. If soil tests are higher than the optimum category, consider less than removal rate or nothing, but remember to re-test your soil fertility levels frequently. For low and very low soil test levels, ISU has observed an advantage to applying a rate a little higher than what you removed; the economics have shown a positive return to that practice. You do not need to build it up to the optimum level in a short time, but some fertilizer levels above removal rates can be beneficial.

Do you want to learn more? ISU Extension and Outreach in Northwest Iowa will be offering two workshops on “Soil Testing Interpretation & Investment” this winter. The first is on Feb. 20 in Monona County at the Western Research Farm near Castana. The second is at the Le Mars Convention Center on March 13. Enrollment at each site is limited to 25 people per site and will cost \$40 per attendee. Details can be found online at <https://www.extension.iastate.edu/plymouth/> or by calling our Plymouth County office at 712-546-7835. If you have additional questions, please contact an ISU Extension and Outreach Field Agronomist.

In accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, religious creed, disability, age, political beliefs, or reprisal or retaliation for prior civil rights activity. To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online at <https://www.octio.usda.gov/document/ad-3027>, from any USDA office, by calling 866-632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by: (1) Mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW Washington, D.C. 20250-9410; or (2) Fax: 833-256-1665 or 202-690-7442; or (3) Email: program.intake@usda.gov. This institution is an equal opportunity provider. For the full non-discrimination statement or accommodation inquiries, go to www.extension.iastate.edu/diversity/ext.

Joel DeJong, Field Agronomist
Iowa State University Extension and Outreach
712-546-7835 or jldejong@iastate.edu