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Farm Update

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AGRICULTURE & NATURAL RESOURCES
EDUCATION

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January 4, 2025

Basis of Nutrient Recommendations

The anticipated cost of fertilizer has decreased slightly from a year ago and considerably decreased from 2022. Corn and soybean prices have lowered as well, keeping enterprise budgets for corn and soybeans in the red for the 2025 crop year. For corn that will be grown, most are considering changes to their selected source of nitrogen, the total rate applied, and the timing of application in an effort to enhance effectiveness and reduce the total amount used. For phosphorus and potassium, questions have pertained to how much their rate can be reduced before yield is affected. The University has what some consider conservative nutrient recommendations for the high yields modern corn and soybean brands are capable of. Based on a soil test, UK recommended nutrient additions are only made when a yield response has been measured for that crop under Kentucky soil-climate research conditions. The Kentucky Agricultural Experiment Station has conducted many field studies under Kentucky farm conditions to determine the extent of any primary, secondary, or micronutrient needs. Yield and soil test data from these studies serve as guidelines for establishing recommendations provided with soil test results and in the Lime and Fertilizer AGR-1 publication which can be used to develop recommendations from any laboratory test that uses Mehlich III solution to extract P,

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potassium (K), calcium (Ca), magnesium (Mg), and zinc (Zn). AGR-1 is available online on my website under Additional Information at <https://daviess.ca.uky.edu/anr>.

UK recommendations supply sufficient levels of available plant nutrients, regardless of seasonal weather, and assume good management practices. The rates recommended are for the production of a crop to be grown each year and will increase soil test values slowly for P and K. Using these recommended rates would likely take four years or longer of annual nutrient application at the recommended rates to result in appreciably higher soil test levels of P and K. The result of sufficiency recommendation methods is nutrients supplied in an amount adequate for optimum growth in a given year but do not suggest additional material be applied for “maintenance” to increase soil fertility levels.

When making decisions for this year regarding fertilizer, fields testing low in P and K obviously require fertilizer applied at the recommended rates. For planters equipped with fertilizer application one-third to one-half of the recommended amounts of P and/or K for corn can be used if it is banded 2 to 4 inches from the row in low testing fields. For fields testing in the medium range for P and K, there is a 50% chance fertilizer applied for the crop to be grown will provide any benefit to yield. If soil test levels for P and K are so high that no nutrient recommendation is made for the current year, any P or K fertilizer applied will have no effect on the yield of the crop grown this year. Likewise, if no fertilizer is applied, there is no assurance that the high levels will be maintained for optimal production in the following years, requiring annual soil testing to track levels closely. If you don't have recent soil test information about a field, this is the year to get it. If recommendations without soil test results must be made, you can only assume low levels of residual P and K.

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The points to take away from this article regarding P and K fertilizer applied this year are that you can not remove them from production in fields already low without reducing yield. You can't remove them from production in fields testing medium without encountering a 50% chance you will reduce yield. You can refrain from applying additional P and K on fields testing high, and redirect that to low and medium testing fields. We all know that 2024 makes 12 years since we've had a poor crop overall and statistically we are due for one, but we cannot manage with an expectation of lower production due to the environment or we will guarantee lower production based on our own decision. If the risk is too great on land you farm to swing for a homerun yield in corn this year, then let soybeans be planted where they match your level of risk tolerance.

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