Pasture productivity hinges on the ability of soil to provide nutrients needed for plant growth. In the absence of adequate nutrient levels weeds tolerant of low soil fertility often flourish while the desired crop may become stunted. When provided ample nutrition desirable species, however, usually dominate and out-compete weedy plants.

Soil testing is the best approach to determine the concentration of nutrients in pastures. Although all nutrients needed by plants are usually found in a soil sample, often one or more is not present in adequate amounts to sustain vigorous plant growth. Each nutrient serves a specific role (or multiple roles) in the plant, and nutrient needs vary according to location within the plant. For a brief listing of plant nutrients and some of their functions in plant cells, see Figure 1.

Furthermore, depending on plant species, the same nutrients are often needed in different amounts. With improved, fast-growing hybrids adequate nutrition is crucial if maximum yield potential is to be achieved. Only by sampling the soil, and then correctly interpreting analysis of the results, can current nutrient levels be accurately determined. If field concentrations of each nutrient are known, crop-specific fertilization rates may be established which correct nutrient deficiencies, without adding unneeded nutrients to the field ecosystem.

An appropriate analogy comes from our kitchens. By examining the ingredients in a recipe, and comparing the contents of the pantry with the recipe, a specific list of missing ingredients may be compiled and purchased. If plenty of one ingredient is already in stock, there is no reason to purchase more of that ingredient, allowing resources to be spent on replenishing only the missing ingredients. Similarly, if soil phosphorus is present in ample quantity, money used to purchase more phosphorus would be better spent on procuring nutrients that are found to be deficient. However, without the accounting of existing nutrient levels and crop needs by testing your soil, it is difficult to know with confidence which nutrients should be purchased and

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Don’t be intimidated by the contents of your soil test results. Contact cooperative extension personnel if you need help implementing recommendations. Cartoon source: clean-water. uwex.edu
applied. Over-application of fertilizers, besides being a potential waste of resources, can also result in soil and environmental contamination.

A soil test, derived of representative samples taken from various locations throughout the field, is one of the most valuable tools in a farmer’s tool belt. It helps to ensure the correct amounts of each nutrient are placed correctly and at the right time to optimize growth of a specified crop. For correct sampling procedures, refer to University of Arkansas Cooperative Extension Service bulletin FSA2121. For help interpreting soil test results, see University of Arkansas Cooperative Extension Service bulletin FSA2153.