



University of Kentucky
UKnowledge

Soil Science News and Views

Plant and Soil Sciences

7-1981

The Status of Sulfur Fertilization of Crops in Kentucky

Lloyd W. Murdock

University of Kentucky, lmurdock@uky.edu

Right click to open a feedback form in a new tab to let us know how this document benefits you.

Follow this and additional works at: https://uknowledge.uky.edu/pss_views

 Part of the [Soil Science Commons](#)

Repository Citation

Murdock, Lloyd W., "The Status of Sulfur Fertilization of Crops in Kentucky" (1981). *Soil Science News and Views*. 76.
https://uknowledge.uky.edu/pss_views/76

This Report is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in Soil Science News and Views by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

Department of Agronomy

Soil Science News & Views



Vol. 2. No. 7, July 1981

The Status of Sulfur Fertilization of Crops in Kentucky Lloyd Murdock

Sulfur has long been recognized as being essential for the growth of plants and animals due to it being necessary for production of several amino acids. Although regarded as a "secondary" element, it is required by plants in fairly high amounts, very similar to that of phosphorus. Sulfur deficiency symptoms in plants are somewhat similar to those of nitrogen since an overall uniform pale-green leaf color develops. Sulfur deficiencies are often found in crops growing on sandy soils with low organic matter content.

There has been concern for sulfur deficiency in recent years due to higher crop yields, the low content of sulfur in high-analysis fertilizers, decreased use of high-sulfur fuels, and decreased soil organic matter content resulting from increased soil erosion. Because of this, many agronomists recommend use of supplemental sulfur for crop production.

Soil Content of Sulfur - The amount of atmospheric fallout of sulfur onto Kentucky soils is substantial. Measurements in Kentucky and surrounding states over the past 10 years show little change in the amount of sulfur fallout over that timespan. Sulfur is taken up by plants from the soil in the sulfate form which results from soluble sulfates or from mineralization of sulfur contained in organic matter.

Soil Tests For Sulfur - Although many soil testing laboratories offer a test for plant available sulfur, the University of Kentucky does not. Agronomists at UK do not consider the results of sulfur soil tests to be very reliable in predicting soil content of plant available sulfur because such tests usually do not measure mineralizable sulfur. Because of factors influencing the mineralization of sulfur, soil test levels of sulfate-sulfur often vary greatly, not only during the growing season, but also from year-to-year.

Diagnosing Sulfur Deficiency in Crops - Plant analysis is the best way to determine whether sulfur is limiting crop yields. The UK Agronomy Department now offers a routine, rapid, plant analysis program, in cooperation with the University of Georgia. Details of this program are available at local extension offices.

In addition to the actual tissue concentration of sulfur, the ratio of total plant nitrogen to total plant sulfur is also an indicator of the sulfur status of plants. Generally, the N:S ratio of healthy plants should be about 15:1, although it may be as high as 17:1 in healthy forage legumes such as alfalfa and clovers. Ratios exceeding these are indicators of insufficient plant content of sulfur.

Need for Sulfur Fertilization in Kentucky - Many field trials testing for crop growth responses to sulfur have been conducted in Kentucky over a number of years. These have shown no growth response to sulfur fertilization. We feel this is due largely to the native content of soil sulfur and the substantial annual fallout of atmospheric sulfur. The UK Agronomy Department feels that soil content of plant available sulfur is adequate for maximum crop production of crops in Kentucky.

Animal Dietary Requirements for Sulfur - The dietary N:S ratio for some classes of livestock may be considerably lower than that indicated above as being adequate for plant growth. Results from the forage testing program offered through the UK Animal Sciences Department indicate that although the N:S ratios of silages and hays were adequate for good plant growth, they are sometimes inadequate for providing sulfur levels for some classes of livestock. In these cases, supplemental sulfur is recommended as a feed additive in amounts needed to provide animal dietary requirements.

Summary - The UK Agronomy Department considers the soil content of sulfur in Kentucky to be adequate for maximum crop production. If sulfur deficiency in a crop is suspected, plant analysis is the best diagnostic procedure to use.