

EVALUATING ZINC REQUIREMENTS OF CORN, SMALL GRAINS, AND ALFALFA

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Many growers and crop advisors in the Intermountain west have recently reported Zn deficiencies in major cereal and forage crops. Further, many common fertilizer blends now include Zn. Most Zn fertilizer guidelines indicate that 5-10 lbs of Zn per acre should be applied when critical soil test Zn levels are less than about 0.8 ppm Zn. These guidelines in Utah and many other states in the region were developed decades ago and need to be reassessed. Therefore, we established Zn response and rate trials at 9 locations in Utah in 2021-2022 to evaluate current Extension Zn guidelines. It was difficult to find fields with less than 0.8 ppm Zn. Thus, we selected several fields with some of the lowest soil test Zn we could identify. In all of our trials, other required macronutrient and micronutrient besides Zn were applied according to Utah State University guidelines. Three Zn rate trials were established in corn in 2021 with treatments including a control, granular Zn SO₄-S at 5 and 10 lbs Zn/acre, and liquid Zn chelate at 5 lbs Zn/acre applied near the V4-V6 leaf stage. Soil test Zn ranged from 1.1 to 1.7 at these sites and no silage corn yield or quality response to Zn treatments were detected. Another Zn response trial was conducted at 19 site-years in Utah in 2021-2022 with treatments including 0 or 5-10 lbs Zn/acre as Zn SO₄-S or Zn chelate. These sites included nine alfalfa, five small grains, and five corn trials with soil test Zn levels of 0.8-3.0, 0.9-3.0, and 0.4-1.3 ppm, respectively. Preliminary results indicate that forage yield and quality were not impacted by Zn applications at any site. These results suggest that critical Zn soil test levels do not need to be raised and that Zn responses are rare and likely can be diagnosed and corrected in-season rather than as an integral part of a soil-based fertilizer program.