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MINERAL NUTRITION OF WHEAT: I. ORGAN AND CROP STAGE RELATIONSHIPS

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ABSTRACT: Winter wheat (*Triticum aestivum* L. cv. Astral) was grown under seven fertilizer treatments on five experimental sites. Regression analysis was performed to model the relationships between different organ weights in the same or consecutive stages. The frequency of highly significant relationships between weights was higher during flowering and shooting than during the other stages studied: *i.e.* tillering, post-anthesis, and harvesting. The relationship between the plant weight and the weights of the flag leaf or the 2nd youngest leaf was closer than that between the plant weight and that of the third youngest leaf and plant weight. The coefficient of correlation was higher than when ear weight was related to the plant weight in post-anthesis, where there was no 2nd or 3rd youngest leaves. This relationship was closer than in flowering. Plant growth before anthesis was more regular than after anthesis. It appeared that the development of the leaf and of the ear affected the relationships between themselves and the rest of the plant. In terms of weight, the relationships were closest at the stage of maximum development. The weight of the youngest leaves at anthesis, when it attained a maximum, was a suitable indicator of plant biomass. It can, therefore, be used as a reference in the relationship between plant biomass and mineral content that expresses the nutritional status of the plant.

INTRODUCTION

Plant nutritional studies have generally been performed in controlled systems that allow easy manipulation of the factors involved (1). When such studies are done, crop development is affected by external factors, such as climatic conditions or properties of the soil. These factors can make interpretation of the results difficult.