

*5<sup>th</sup> International Eurasian Congress on*

**‘Natural Nutrition,  
Healthy Life & Sport’**

*02-06 October 2019, Ankara, Turkey*

**PROCEEDINGS BOOK  
Vol: II (2019)**

*‘Road to Conscious Healthy Life’*

*Editors*

**Prof.Dr. Mehmet Rüstü Karaman**

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## **Effect of Zn Application on P / Zn Ratio in Plants**

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**Abstract:** There are important relationships between plant growth and plant nutrients. Fertilizer applications are of great importance in increasing the amount of product taken from the unit area. However, the effects of nutrients on other nutrients should be considered. Particular attention should be paid to the ratio between the amount of phosphorus in the plant and the zinc nutrient. For this purpose, the effects of three different doses (0, 200 and 400 g da<sup>-1</sup>) of zinc in wheat plant were investigated. At the end of the vegetation period, wheat plants were harvested and phosphorus and zinc were determined in the stalk parts above the soil parts. As a result of the study, the amount of phosphorus in the plant increased depending on the amount of zinc applied. However, with increasing zinc doses, phosphorus levels in the plant decreased. When these results were taken into consideration, it was determined that zinc applications were effective on the amount of phosphorus in the plant and that zinc application above a certain dose negatively affected the phosphorus level in the plant.

**Key words:** Zinc, phosphorus, wheat

### **1. Introduction**

Wheat plant, which has an important plantation area and quantity in our country, has great importance in terms of human nutrition. However, the amount of product taken from the unit area is quite low, or the products obtained are of poor quality. In our country, the applications so far are generally applications aimed at increasing efficiency and quality comes second. Generally applied inputs cause negative correlation between yield and quality. Especially nitrate and phosphate fertilizers applied as product enhancers, depending on the soil properties or vegetative parts by increasing the quality or reduce, or washed and fixed in the soil plants can not be converted into a form. As a result of excessive and unconscious

fertilization, significant decreases occur in the amount of nutrients useful for plants in the soil.

Zinc is one of the plant nutrients which is important in plant nutrition and affects quality in plant. In general, product enhancing effect occurs with zinc application. However, in some studies, the effectiveness of with zinc fertilizers is low. Especially in Central Anatolia conditions, some studies on wheat have explained the important effects of zinc on yield (Ekiz et al., 1997; Kalayci et al., 1997). Zinc element is effective on the growth and development of the plant, deficiency of plant growth and reduction in cell proliferation is reported to be deficient (Oktay, 1999). Müftüoğlu et al. (2003), applied 15-15-15 fertilizer with and without zinc. At the end of the study, it was stated that the use of without zinc 15-15-15 fertilizer in wheat plant is more suitable than the use of 15-15-15 fertilizer with zinc and the dose to be used should be 25 kg da<sup>-1</sup>.

As a result of this study, it was determined that zinc and humic acid application significantly increased grain yield on bread wheat. In addition, the researchers found that if zinc was applied with humic acid or alone, significant increases compared to control. As a result of this study, it was determined that zinc and humic acid application significantly increased grain yield on bread wheat. In addition, the researchers found that if zinc was applied with humic acid or alone, significant increases compared to control. As a result of this study, it was determined that zinc and humic acid application significantly increased grain yield on bread wheat. In addition, the researchers found that if zinc was applied with humic acid or alone, significant increases compared to control. Kaya et al. (2005) has done a study. As a result of this study, it was determined that zinc and humic acid application significantly increased grain yield on bread wheat. In addition, the researchers found that if zinc was applied with humic acid or alone, significant increases compared to control. Kaya et al. (2005),

## **2. Materials and Methods**

In order to determine the effect of different doses of zinc applications on the wheat P, Zn and P/Zn rate. 3 different doses of zinc (0, 200 and 400 g da<sup>-1</sup>) were carried out in 15 pots in 5 replications under greenhouse conditions. Following the application of phosphorus and nitrogen, seed were sown. Zinc application was applied by mixing with N and P fertilizers. The water needs of the soils were determined by taking into consideration the field capacity and the soil moisture level was kept at the field capacity by continuous controls. At the end of the vegetation period of approximately 3 months, the plants were harvested. At the end of the vegetation period, plant samples were taken from all pots. P and Zn contents were determined in taken samples.

### 3. Results and Discussion

The amount of P in the plant varied significantly depending on the zinc doses applied at different doses (Table 1). Depending on the zinc doses, the amounts of P contents decreased, while the amounts of Zn contents increased. The highest P contents were obtained from control group. The highest Zinc contents were determined from zinc application at 400 g da<sup>-1</sup>.

When the effect of different doses of zinc application on the amount of P/Zn examined, the amount of P/Zn decreased depending on the dose of zinc. The highest P/Zn ratio was obtained from no-zinc application at control group.

Table 1. Effects of different zinc doses on plant P and Zn contents with P Zn<sup>-1</sup>

Zn doses, g da <sup>-1</sup>	P	Zn	P/Zn
0	2200	55,46	39,67
200	2760	76,66	36,00
400	1980	92,34	21,44

### 4. Conclusion

In this study, it was determined that the application of different doses of zinc on the amount of P and Zn contents of plant were determined. It was determined that excessive amount of zinc application had significant effect of plant P content and P/Zn ratio. Particular attention should be paid to the amounts of fertilizers to be applied in order to effectively benefit from phosphorus or zinc in the soil in plants.

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