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Influence of gypsum and zinc on economics of Groundnut

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Abstract
At the Department of Agronomy, SHUATS, Prayagraj (U.P), a field experiment was carried out in the month of Zaid 2022. The experiment was set up using a Randomized Block Design, with each of the ten treatments being reproduced three times. The outcome indicated that economics, including most gross profit (Rs.147500.00), net return (Rs.105190.00) and B:C ratio (2.49) was found with the application of Gypsum 400 kg/ha +Zinc 400 ppm compared to other treatments.

Keywords: Groundnut, economics

Introduction
Groundnut is a significant grain, legume, and oil seed crop. India is the second-largest producer of groundnuts after China. The groundnut, a belongs to the Leguminaceae family and frequently referred to as "The King of Oilseeds," is the fourth-largest source of edible oil and the third-largest source of vegetable protein. Groundnut is the most extensively cultivated oil seed and a substantial revenue crop in India. Groundnuts play a crucial role in meeting the nutritional needs of poor mothers and children. Animal feed is made of haulm. Groundnut oil is made up of several glycerides, which has a high concentration of the unsaturated fatty acids oleic (50–65%) and linoleic acid (18–30%). Groundnut contains amino acids including cysteines which are essential for animal growth. The groundnut cake obtained after oil extraction is rich in protein and considered as valuable organic manure and animal feed, which contains 7 to 8% N, 1.5% P and 1% K. The name *Arachis hypogaea L.* is derived from the Greek word Arachis which means the legume and hypogaea means below ground. Calcium and sulphur, which are absorbed by pegs and growing pods, are frequently supplied by gypsum the quantity and quality of the kernels depend on the amount of calcium present in the root and pod zones. Symptoms of calcium shortage include browning of embryonic plumules and empty pops, sometimes referred to as pops. Sulphur deficiency is a prevalent issue in India. After potassium, phosphorus, and nitrogen, it is the fourth most crucial nutrient. (Sakal *et al*. 2001) [1]. It significantly contributes to increasing the sunflower crop's seed quality and the effectiveness with which nitrogen and phosphorus are used. Sulphur is essential for the growth of seeds and enhancing quality in oilseeds. (Naser *et al*., 2012) [2].
Zinc plays a significant role in plant metabolism, through its effects on hydrogenase and carbonic anhydrase activity as well as the stabilisation of ribosomal proteins. For its physiological needs, maize has the highest sensitivity to Zn shortage among crops. Zn works to activate plant enzymes via regulating auxin production, preserving the integrity of cell membranes, and metabolism of carbohydrates. Because zinc aids in the creation of tryptophan, It is an intermediary compound for indole-3-acetic acid (IAA), it is crucial for the auxin synthesis process. Zn has a major impact on several essential plant processes, such as photosynthesis and defence against reactive oxygen species. Nitrogen metabolism, the ability to make chlorophyll, carbonic anhydrase activity, and resistance to biotic and abiotic stresses. By 2025, zinc deficiency in Indian soils is predicted to rise from 49 to 63%, as the majority of marginal soils put under agriculture already exhibit zinc deficiency. (Singh,2006) [5]. Crops can receive Zn directly from the soil, through seed treatments, as fertilizers, or by fertilizing the leaves. The study's main goal was to determine how applying zing to the soil and the leaves of maize affected its development and yield (Kumar *et al*. 2019) [4].

Materials and Methods
The experiment was conducted at the Sam Higginbottom University of Agriculture

Technology and Sciences (SHUATS), Prayagraj (U.P.), CRF, Department of Agronomy, during the Zaid season of 2022. The data were computed and analysed by following the statistical method of Gomez and Gomez (1984) [3]. The experiment was set up using a Randomized Block Design with Ten treatments and replicated three times. Treatment combination consisted of two factors i.e., Gypsum and Zinc of different levels. Different rates of Sulphur levels *viz*., 200, 300, 400 kg/ha with three $ZnSO_4$ levels *viz*., 2000, 3000, 4000 ppm and recommended doses of fertilizer are Nitrogen @20 kg/ha, Phosphorus @60 kg/ha and potassium @40 kg/ha. At a seed rate of 90 kg/ha, seeds are sown at a spacing of 30 cm 10 cm. We used urea, SSP, and MOP as sources of N, P, and K in fertilizers, respectively.

Treatment combinations

T_1: Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm
T_2: Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 3000 ppm
T_3: Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 4000 ppm
T_4: Gypsum 300 kg ha^{-1} + $ZnSO_4$ at 2000 ppm
T_5: Gypsum 300 kg ha^{-1} + $ZnSO_4$ at 3000 ppm
T_6: Gypsum 300 kg ha^{-1} + $ZnSO_4$ at 4000 ppm
T_7: Gypsum 400 kg ha^{-1} + $ZnSO_4$ at 2000 ppm
T_8: Gypsum 400 kg ha^{-1} + $ZnSO_4$ at 3000 ppm
T_9: Gypsum 400 kg ha^{-1} + $ZnSO_4$ at 4000 ppm
T_{10}: Control RDF

Results and Discussions

Because differing quantities of gypsum and zinc affect groundnut yield and other yield components differently, the cost of cultivation varies. Rs.42310 to Rs.38140 /ha.

Gross returns changed as a result of changing amounts of gypsum and zinc on groundnut yield and yield components. Treatment with Gypsum 400 kg ha^{-1} + Zinc 4000 ppm recorded higher gross returns (Rs.147500.00/ha) as against other treatment which was closely followed by Gypsum 400 kg ha^{-1} + Zinc 3000 ppm.

Net returns fluctuated because of variation in different levels of Gypsum and Zinc on Yield and Yield components of Groundnut. Treatment with Gypsum 400 kg ha^{-1} + Zinc 4000 ppm recorded higher net returns (Rs.105190.00/ha) as against other treatment which was closely followed by Gypsum 400 kg ha^{-1} + Zinc 3000 ppm.

Table 1: Response of gypsum and zinc on economics of groundnut

S. No.	Treatment combinations	Cost of Cultivation (INR ha^{-1})	Gross returns (INR ha^{-1})	Net Returns (INR ha^{-1})	B C Ratio
1.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	40225.00	125000.00	84775.00	2.11
2.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	41267.50	126000.00	84732.50	2.05
3.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	42310.00	128500.00	86190.00	2.04
4.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	40225.00	133000.00	92775.00	2.31
5.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	41267.50	137000.00	95732.50	2.32
6.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	42310.00	141000.00	98690.00	2.33
7.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	40225.00	135500.00	95275.00	2.37
8.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	41267.50	142000.00	100732.50	2.44
9.	Gypsum 200 kg ha^{-1} + $ZnSO_4$ at 2000 ppm	42310.00	147500.00	105190.00	2.49
10.	Control RDF	38140.00	105000.00	66860.00	1.75

Conclusion

From this study, it may be concluded that improvement in yield as well as in economics by the application of Gypsum and zinc foliar spray in treatment 9 in groundnut crop.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

1. Sakal R, Singh AP, Choudhary BC, Shahi B. Sulphur status of Ustifluvents and response of crops to sulphur application. Fertiliser News. 2001;46(10):61-66.
2. Naser A, Sarvajeet A, Gill S, Umar S, Ahmed I, Durate AC, *et al*. Improving growth and productivity of Oliferous brassica under changing environment. Significance of nitrogen and sulphur nutrient and underlying mechanisms. The Scientific World Journal; c2012. p. 21.
3. Gomez KA, Gomez AA. Statistical procedures for Agricultural Research. 2nd ed. New York: John Wiley & Sons; c1976. p. 680.
4. Kumar M, Singh S, Singh V, Singh K, Khanna R. Effect of zinc and boron on growth and yield of maize (*Zea mays* L.). Progressive Research-An International Journal. 2019;14(3):215-221.
5. Singh MV. Micronutrients in crops and in soils of India. In: Alloway BJ (ed.) Micronutrients for global crop production. Springer. Business; c2006.