

## RESPONSE OF SUNFLOWER TO DIFFERENT LEVELS OF SULFUR

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### ABSTRACT

Experiment was conducted to assess the effect of different levels of sulfur on yield and yield components of sunflower crop grown on silt loam soils on a farmer field at Surizai, District Peshawar. The soil contained 0.8 % organic matter, 11.8 %  $\text{CaCO}_3$  and  $37 \text{ mg kg}^{-1} \text{ SO}_4\text{-S}$ . Sulfur was applied @ 0, 25, 50, 75 and  $100 \text{ kg ha}^{-1}$  as gypsum along with basal dose of NPK ( $120 \text{ kg N}$ ,  $90 \text{ kg P}_2\text{O}_5$ ,  $60 \text{ kg K}_2\text{O ha}^{-1}$ ) replicated four times in RCB design. Soil and leaf samples were collected at disking and harvesting stages from each treatment for determination of S. Yield and yield components of sunflower were significantly ( $P < 0.05$ ) enhanced with the application of S over control. Sulfur dose of  $50 \text{ kg ha}^{-1}$  was superior in term of producing high yield of fresh matter, dry matter, fresh disc, 1000 seed and total seed yield than other treatments. Application of S above  $50 \text{ kg S ha}^{-1}$  reduced the yield and yield components suggesting a classical yield response curve. The analysis of soil samples at disking and harvesting stages from each treatment revealed that soil  $\text{SO}_4\text{-S}$  concentration increased significantly by S application reaching the level of  $96.0$  and  $86.9 \text{ mg kg}^{-1}$ , respectively with  $100 \text{ kg S ha}^{-1}$ . Sulfur concentration of leaves was significantly increased with the application of S over control. Application of sulfur at  $50 \text{ kg ha}^{-1}$  produced leaf S concentration of  $0.45$  % which is below the critical level of  $0.5$  % while higher treatments increased S concentration ranging from  $0.65$  to  $0.81$  %, which exceeded the value considered as high ( $0.5$  %) and excessive ( $0.8$  %). The elevated levels of tissue sulfate concentration induced by treatments greater than  $50 \text{ kg ha}^{-1}$  corroborate with the corresponding yield decreases of sunflower.

Key Words: Sulfur rates, Yield response, Sunflower.