





### ***M.A. Thesis:***

## Effect of foliar application of humic acid and nano iron fertilizer on yield and yield components of wheat cv. Chamran

In order to evaluate the effect of foliar application of humic acid and nano iron fertilizer on yield and yield components of wheat cv. Chamran, a factorial experiment in a randomized complete block design with three replications was conducted in Joghatai county. Experimental factors include time of foliar application of nano iron fertilizer in six levels: foliar application at tillering, stem elongation, heading, tillering+stem elongation, tillering+heading and stem elongation+ heading stages and application of humic acid at two levels: no foliar application and foliar application of humic acid. The nano iron fertilizer and humic acid foliar application was conducted at a concentration of 2 parts per thousand and 2.5 parts per thousand, respectively. The results indicated that the foliar application time of nano iron fertilizer had significant effect on all characteristics, except for plant height and tiller number per plant. Two foliar application of nano iron in tillering and stem elongation stages produced the highest number of reproductive tillers per plant. The maximum seed weight and biological yield of wheat were obtained with two foliar application of nano iron fertilizer at tillering and heading stages. Two foliar application of nano iron fertilizer in stem elongation and heading stages, produced the highest spike length, number of seeds per spike, seed yield and harvest index. The foliar application of humic acid had no significant effect on number of tillers per plant, but its effect on plant height, yield and yield components of wheat were significant. The foliar application of humic acid significantly increased plant height, number of reproductive tillers per plant, spike length, number of seeds per spike, seed weight, seed yield, biological yield and harvest index. The foliar application of humic acid in combination with nano iron fertilizer improved wheat response to nano iron foliar application and increased plant height, seed yield, biological yield and harvest index compared with nano iron foliar application alone. According to the results, two foliar application of nano iron fertilizer in combination with humic acid in stem elongation and heading stages is recommended to ensure maximum yield of wheat in similar weather conditions.