

## Introduction:

Soil and water research department of Kurdistan is located in Sanandaj city. It is one of research departments in Iran that is conducted by soil and water research institute (SWRI). The first activity of soil and water research department of Kurdistan was begun in 1969 as soil and water conservation group. The soil, water and plant analysis laboratory group in 1977, soil genesis and classification group in 1982, soil fertility and plant nutrition in 1983 and soil physics and irrigation in 1993 were established too. The main aim of the department is to carry out research activities on soil and water sciences mainly at identifying to specify scientific and economic ways for using soil and water resources in agricultural production and environmental protection. At present, this department comprises of the four research groups consist of: 1- Soil Fertility and Plant Nutrition 2-Soil Physics and Irrigation 3- Soil, Water and Plant Analysis Laboratory 4-Land Evaluation

## Research Pivots:

- Evaluation of the fertility potentials of arable soils and crop nutrition based on soil and plant analysis, determining the time, rate and methods of fertilizer application, increasing the efficiency of phosphorous and micronutrients uptake by crops, effect of different fertilizers on plant drought and cold stress, studying the effects of organic fertilizers on the soil physical and chemical characteristics and crop yield, determining the critical level of nutrient elements for different crops
- Determination of the water requirements of crops in their successive stages of growth, the efficiency of different irrigation methods, inter-action of water and fertilizer on crop yields
- Conducting researches to maximize the biological nitrogen fixation potential of soils for optimization of chemical fertilizer use, improving the nitrogen nutrition of plants with the use of free-living bacteria associated with Graminae, producing liquid P-solvable inoculants to reduce the application rates of phosphate fertilizers

## Research Activities:

Title of Project	Location	From	To
Effect of application of wheat straw disposal on soil physics and chemical properties	Ghamloo Station- Kurdistan Province-Iran	1989	1994
Effect of micronutrients on the yield of irrigated wheat -National Project	28 farms in Kurdistan Province-Iran	1994	1996
The effects of micronutrients on wheat yield nutritional quality and improved safety Humans(National Project)	Kurdistan Province-Iran	1996	1997
Study the effect of foliar application of calcium chloride on shelf-life and quality of strawberry	Grizeh Station-Kurdistan Province-Iran	1999	2001
Effect of fertigation in two surface and drip irrigation system on Strawberry	Grizeh Station-Sanandaj-Iran	2000	2004
Study on complex spraying of micronutrients and(pesticides and Herbicides)on wheat (National Project)	Ghamloo Station- Kurdistan Province -Iran	2000	2002
Evaluation of manure, Azatobacter inoculation and nitrogen fertilizer on quality and yield of rain fed wheat	Ghamloo and Maragheh Stations-Iran	2003	2005
Achieving the technology of Azatobacter bio-fertilizer production for wheat Crop (National Project)	Grizeh station- Kurdistan Province- Iran	2004	2005
Studying the effect of foliar application of Urea, Zinc, Boron and Magnesium on yield and fruit of rain fed grapevine (Rasheh cultivar)	Marivan - Kurdistan Province-Iran	2004	2007
Study the effect of Nitrogen and Potassium fertilizers on drought tolerance, quality and quantity of rain fed wheat	Ghamloo station -Kurdistan Province -Iran	2005	2007

## Achievements:

- Recommendation of single irrigation as a risk reduction and increase of rain fed wheat production
- Fertilizer recommendations for yield increase of wheat, barley, sunflower, clover and chickpea
- Determining of time, amounts and sources of nitrogen fertilizer application in wheat
- Determining water requirements of reference plant and alfalfa using by Lysimeter
- Determining the critical level of micronutrients requirements for rain fed and irrigated wheat in calcareous soils in Kurdistan
- Recommendation of seed inoculation instead of nitrogen fertilizer application in dry land chickpea
- Recommendation of application of wheat straw disposal practices during fallow
- Period in order to soil properties improvement and increasing of dry land wheat grain yield and protein
- Recommendation of calcium chloride foliar spraying for maintaining the increase of fruit strawberry
- Recommendation of foliar application urea instead of solid application for increasing of yield and quality of dry land wheat
- Recommendation of micronutrient fertilizers and pesticides for increasing of yield and quality of dry land wheat
- Recommendation of balance application of micronutrient fertilizers for increasing yield and enrichment and reducing molar ratio of phytic acid/zinc of wheat grain and bran
- The study announcement of potassium and phosphorous status on basis of soil testing for soils of Kurdistan province
- Recommendation of Zinc-Sulfate for increasing and enrichment of rain fed and irrigated wheat