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ANALYSIS AND CLASSIFICATION OF DIFFERENT VARIETIES OF WHEAT WITH INFLUENCE OF BIO MANURE HUMAT ON DECISION-MAKING MODEL BASED SAW

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ABSTRACT

An experiment to investigate the effect of drought on wheat and fertilizer, biological effects of potassium Humat using a decision model saw the four cultivars (Gascogen, Gasparad, sabalan, Sardari) and planted in 4 conditions (control, drought stress, tension Humat, and Humat and irrigation) using the seven traits plant height, spike length, spike weight, number of grains per spike, grain weight, harvest index, grain yield per ha was evaluated. Model output was determined according to the conditions tested using normal irrigation and fertilizer potassium Humat most points allocated also evaluated cultivars Sardari cultivar had the lowest value Gascogen figures and Gaspard were the top choices. Gaspard is the best choice in terms of tension and saw results were observed with respect to irrigated conditions Humat potassium fertilizer application and irrigation with normal potassium Humat best choice for planting and increase yield.

Keywords: Wheat, Drought, Fertilizer Potassium Humat, Saw Models

INTRODUCTION

Triticum aestivum is the most important crop in the world. Extensive extent and high adaptation of this plant as well as its diverse consumptions in the human nutrition lead to presented as the most important cereal in the world, especially in developing countries, and it can provided 20 percent food resources of the world people **[1]**. According to evaluation

which performed in the international bureau of food regulation, wheat demand rate in the world will increase by 2010, significantly, while available resources to producing wheat has the limitations. So, it is predicted that there is lack of wheat supply about 100 million tone in the global market at 2020 **[2]**.

Iran was located on world's desert belt and identified as a dry and semidry area. Rainfall mean is about 250 Mm in country, and this rat is one third (1/3) of the world's one, while it has 1.2 percent of worlds drought lands. On the other hand, of 18.5 million hectare of agricultural lands, 6.2 million hectare (33.5 %) is dedicated to dry cultivation. Of 1.2 million hectare of dry lands under cultivation, there is rainfall more than 400 Mm **[3]**.

Long term statistics (40 years) show that rainfall in provinces like West-Azerbaijan, East-Azerbaijan, Khorasan, Ardabil, Zanjan and Hamadan is 301,347,386,310,438 and 340 Mm, respectively, which primarily happened at fall, winter and early spring **[4]**. The more dry region, the high rainfall oscillations, so that rainless and more humid years was created from average to periodical rate. Therefore, we must select varieties for these areas which can produce cost-effective and stable yield at rainless years, and also they were tolerant to drought and can utilize humidity which reserved in the soil at the most optimal conditions **[5]**. Even in the most weather conditions, irregular raining lead to limiting available water and thus to shorten plant growth **[6]**. Of 2.3 million hectare irrigated wheat in the country, about 900 thousand hectare of irrigated wheat varieties was cultivated at cold regions **[7]**.

In these areas, farmers do not obtained optimal results in high-need varieties to irrigation due to lack of adequate water in spring and/or lack of enough irrigation as a result of consumption of irrigation water for summer agricultures, consequently the wheat agriculture suffered from drought stress in end of season **[8]**.

Drought stress is one of the major problems of agriculture in the world and is considered an important factor in reducing yield. According to the FAO, 90% of the country is arid and semi-arid areas in order to determine the type of soil planting medium should be considered primarily because of the wet material to dry places of the earth is different. In this case, the soil must be sandy or humid sand. When the clay is ground in wet areas, low soil permeability **[9]**. Multiple criteria decision making in complex and changeable conditions, one cannot take the form of one-dimensional taking a look at the only criterion for judgment on the Information strengthen their tasks. The man was forced to constantly

compare your targets with multiple criteria, to rank them. There are various models for multi-criteria decision-making is the most famous of them are:

SAW, TOPSIS, ELECTRE and AHP, since the SAW method is used in this thesis the methods and techniques described here:

A simple model of weighted sum, i.e. SAW, one of the simplest methods is MADAM. By calculating the indexes weights, this method can be easily used. To use this method, the following steps are necessary.

Quantitative decision matrix - non-linear scaling values decision matrix - matrix multiplication of the scale of weights and measures - the best (A *) using the following criteria

$$A^* = \left\{ A_i \mid Max \sum_{j=1}^{n} n_{ij} w_{ij} \right\}$$

In other words, the SAW method option is selected (A^*) weighted sum of scaled values of ($n_{ij} w_{ij}$), is higher than the other options **[10]**. Due to environmental concerns, the use of organic acids to improve the quantity and quality of agricultural crops and gardens has found great popularity. Very small amounts of organic acids in significant impacts on physical characteristics, chemical and biological soil because of the beneficial effects of increased production of hormones and compounds and improve the quality of agricultural products **[11]**.

MATERIALS AND METHODS

This study was designed to investigate the effects of potassium fertilizer on the drought last season Humat life on four cultivars of wheat using multi-criteria decision-making (technique MADAM) was studied by saw. The data required for evaluation of planted wheat in 1388 was paid by the Agricultural Engineers the study consisted of four wheat genotypes Gascogen, sabalan, Sardari and Gaspard of Agriculture and Natural Resources Research Centre of Ardabil prepared. Dominant in a randomized complete block design with four levels of factor treatments (full irrigation, full irrigation with potassium application Humat stress after pollination, pollinators, along with application of tension after Humat K) and sub-plots included four genotypes of wheat. Ground was chosen for the experiment. Saw was used to compare the results of the decision model.

RESULTS AND DISCUSSION

According to the obtained results were observed between environmental conditions Humat irrigation in all characters to the highest value and the highest value is assigned. In all of the figures stacked Gaspard and Gascogen highest value, respectively. Given the characters shown in drought

tolerance between cultivars and fertilizer potassium Humat Gascogen the most studied traits Gascogen the highest class, respectively the drought tolerance of the cultivars studied without taking potassium Humat sabalan the highest values of the characters according to the results, it was determined under normal irrigation and fertilizer potassium Humat among cultivars Sardari cultivar evaluation top class won the majority of characters Gaspard Humat potassium fertilizer without irrigation in most of the characters had the highest value. Also, environmental conditions **(Figure 1)** According to the results, the total number of characters for every irrigation Humat with potassium fertilizer had the highest total weight. And stress-free environment with low potassium intake Humat for each cultivar had the highest total weight.

According Asna *et al.*, **[12]** in drought conditions, the number of grains per spike and grain weight is of utmost importance. Drought at vegetative stage reduces the number of potential spike at flowering stage, the grain size is reduced. Yang *et al.*, **[13]** reported that humic substances can directly and indirectly affect plant growth and physiological processes. Direct effects include an increase in cell membrane permeability, respiration, nucleic acid synthesis, ion adsorption, enzyme activity and enzyme-like activity. Humat potassium fertilizer reduces the effects of stress and thus increased grain weight and performance. It can be concluded that the model can be used to select the appropriate method saw appropriate.

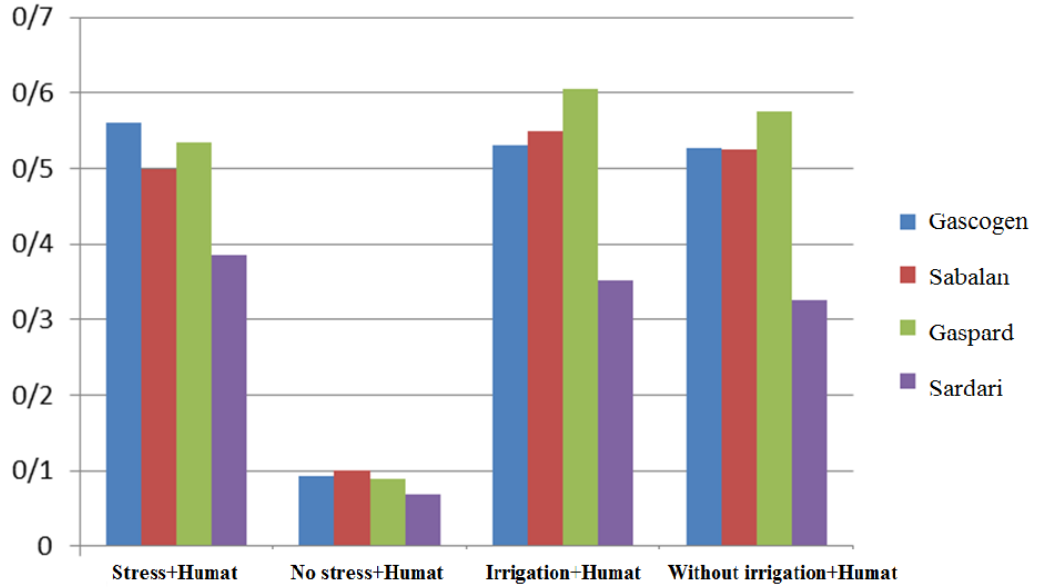

Figure 1: Total weight of attributes for different environmental conditions

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