IMPACT OF GIBBERLIN AND DENSITY ON WHEAT FOR MANAGING OF ENVIRONMENTAL POLLUTION

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Abstract- Gibberellins (GAs) control a wide range of physiological functions in plants from germination to flowering. The present investigation was carried out by conducting field experiments on wheat during winter seasons of 2013 at Farm in Bam City for managing of Environmental pollution. Experiments were laid in split plot design at Block Random with three replications. Gibberlic acid as a B factor include: 0 200 400 ppm and three levels of plant density as a A factor include: 200, 400 and500 plant per meters to wheat crop. The influence of these treatments on growth and yield of wheat was studied in detail. In this experiment, the traits including grain yield, biological weight, thousand grain weight, plant height and flag leaf area, were measured. The result of this study indicated that the effect of density and hormone was only significantly on the plant height and the density has positive effect on the spikelet length and the area of flag leaf so that the highest spikelet length was observed in the density of 500 plants per m^2. The density hadn't meaningful effect on the other traits and effect of gibberlic acid on the height was meaningful and the maximum height was related to using gibberlic acid ppm400 rate. But the effect of gibberlic acid on the other traits wasn't meaningful.

Key words- Environment, wheat, gibberlic acid, Plant density, yield.

I. INTRODUCTION

In addition to the main problems of environmental pollution, these materials (chemical) are major barrier in achieving sustainable production. The future agriculture systems focus on decreasing the use of energy and chemical inputs and appropriate management of water and soil and biological resources and protect the environment in order to achieve the desirable and sustainable yield. (triticum.sp) is one of the most important and widely consumed herbs in the world. The flour obtained from wheat grains is widely used to make bread and the bread is one of primary materials for human consumption especially in developing countries it supplies about 60 to 70 percents of food energy .wheat production and under cultivation area is the most important agricultural crop In Iran and increasing day by day in terms of economic production and suppy of staple food is very important. (khoda bandeh 1371). About 160 years ago, Japanese scientists discovered that in rice farms, many plants grow more than others because of the attack of a fungus called .Gibberellic acid is a chemical found in plants that is related to plant growth. Specifically, the growth hormone causes plant cells to grow and to elongate. The 79 types of gibberellic acid are found in varying combinations depending on which plant is studied. One plant may have up to a dozen or more forms of gibberellic acid, with each form controlling the plant in a specific way. Like other plant hormones, gibberellic acid can impact the dormancy of a plant. It has been found to promote germination of seeds, thus it is used as a natural means of starting seedlings. This is important to horticulture and agriculture because increased germination usually results in higher yields. .Zare (1383) reported that the gibberllic acid hormone will accelerate the growth of wheat seedlings. Etminan (1388) reported that gibberllic acid has meaningful effect on wheat rash in the level of one protect .Khanzadeh (1389) .reported that the reduction of nitrogen and density , it causes soil productivity and yield increase .Ramteke (2001) reported that gibberllic acid causes coarsening of grape and it causes grape seeds is a shrink.Gavaly (2007) studied the effect of soy on hormone gibberllic acid on the growth of all the factors evaluated positive .Kochaki (1379) by studied the wheat agronomy ,suggested the density of 300 plants per square meters (m^2).Panahian (1389) suggested 140 kg nitrogen per hectar with the density of 400 wheat plants per square meter ($m^{2)}$ in Ardabil (mnggh) . Veeing (2008) showed that 120ppm gibberllic acid increases yield and length of the corn cob .Rahman (2008) reported the use of gibberlic acid is increased wheat yield .Dudish (1972), Anderson (1990) and zang (2008) offered similar reports about the density and hormone level and mentioned that density decrease. causes increasing in growth factors such as leaf area .Imungure (2007) reported that the effect of gibberlic acid on many physiological process , the gibberlic acid results in increasing the number and length of cells in the stem that finally causes the increase in fresh and dry weight of stem .Santoze et al (1998) stating that the carbide gibberlic acid increased the growth of carrot leaves.Imungur (2007) reported the use of gibberlic acid in about seven days after planting cowpea plants significantly increased vegetative growth .Ali valki (1995) reported that using the concentration of 250 and 500 mg gibberlic acid before cultivation , increase the fresh weight in the plants and spraying 500mg on the rhizomes before cultivation decreases the fresh weight of flower .Abdel et al (2008) reported gibberlic acid leads to the elongation of the stem inter node , it leads to rising fresh and dry weight .Lis balchin (2002) reported various factors affecting the quantity and

quality of the plant ingredients. Hassan pour et al (2008)(1387) found similar results in plants sperm has been reported . it can be said that the primary metabolism of plant growth regulators have a key role among regulators gibberlic acid because of this well-known work on plant growth could play a key role in improving the content and function of active ingredient medicinal herbs and increase the metabolic path ways of biosynthesis of secondary products.Abdollah et al (2008) mentioned that gibberlins increase cellular division. So the external application of gibberllic acid can increase the photo synthesis and shoot growth .Akter et al (2004) effect of gibberellic on growth and yield of mustard with concentrations up to 75 ppm showed that are different concentrations of significant influence on plant height and plant height at a concentration of 50 milligrams per liter was highest . and vice versa highest concentrations of gibberllic acid reduces plant height .Alnegar et al (2008) gibbere llic acid can cause the beginning of flowering and this can lead to an increased rate of production of essential oil from in florescence's of most important organs in lavender.Ekter et al (2007) reported that gibberllic acid regulated plant growth in plant physiological activation, consequently increases some growth parameters such as the number of leaves and leaf area. And this causes the increase in the biomass.

II. MATRIALS AND METHODS

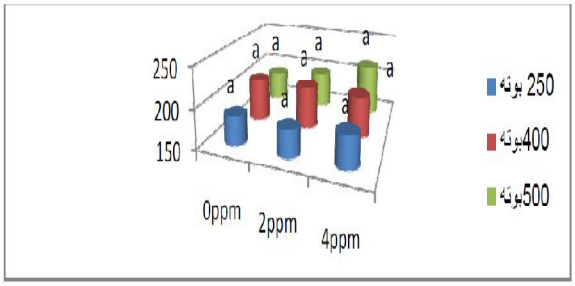
This research crop year 2012-2013 geographical location of the city of bam with 58 degrees and 18 minutes east longitude and 29 degree north latitude and 5 minutes with a height of1120 meters above sea level, was performed .This region has dry climate . It's minimum and maximum annually temperature is 12,15 and 24, 0/6 . The average of ten year precipitation in this region was 37.3 mm . in the experiment year , the average precipitation was 9.43 mm .3.3 farm operations (agronomic operations) the land was tasted was fallow since 1370.before the examination , provided the land , it was plowed , operation cancel boundaries irrigation was performed by the worker . after preparation the fertilizer phosphor , potassium and zinc , before planting and after plowing , were incorporated to the soil .The level of phosphor (triple super phosphor) was 100kg/ hector , potassium fertilizer (potassium sulfate) the amount of 100kg/hector and nitrogen (bun) 100kg per hector (one –third before planting +one –third the time of begging stem +one –third the time of flowering) were used .In the first day, the land was cultivated and dry weather conditions as autumn wheat , planted . The grains were received from jahad office. The seeds were cultivated linearly. Before cultivation the seeds were disinfected with captain fungicide. Immediately after planting, the grains were irrigated. The second irrigation was performed for one week after cultivation. And subsequent irrigation was applied according to the local conventions. At physiological maturity, to expedite drying, irrigation was stopped fight against weeds control manually .The experiment was performed as split plots in the form of completely randomized blocks, with three replications. Factor A or main plot includes the density in three levels. Factor B or secondary plot includes gibberllic acid hormone in three levels .The main factor: A1: 250 plants per m^2 A_2: 400 plants per m^2 $A_{3:}$ 500 plants per m^2.The secondary (sub) factor: B1:0 ppm $B_{2:}$ 200 ppm $B_{3:}$ 400 ppm .

Results &Discussion:

1. Grain yield per hector:

The result of analysis of variance indicated the effect of density and gibberllic acid their mutual effect on grain yield wasn't meaningful in the level of one percent (1%) and 5 percent (5%).

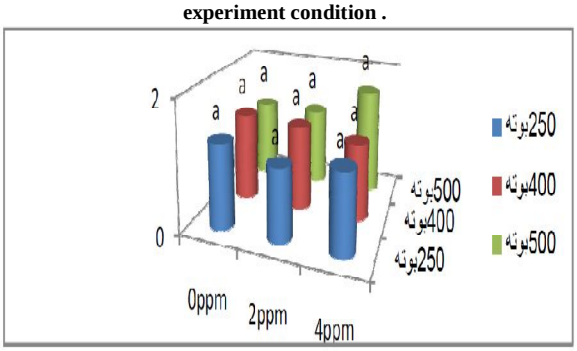
Diagram 1 : comparing the means of mutual effect of gibbellic acid and density on grain yield per hector in the experiment conditions .



2. Biologic weight:

According to the results obtained from ANOVA it was clear that the effect of gibberllic acid and density and their mutual effect on biologic weight weren't meaningful in the level of 1%

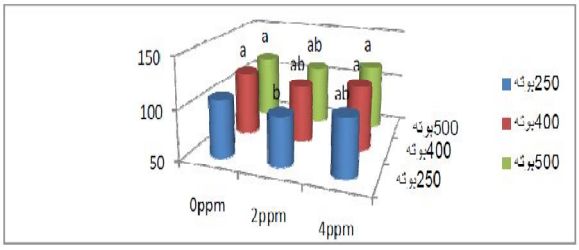
.Diagram 2 : comparing the means of the mutual effects of gibberllic acid and density on biologic weight in the experiment condition .



III. PLANT HEIGHT

The results of ANOVA indicated that the effects of density on height are meaningful and the effect of gibberllic acid and the mutual effect of density and gibberllic acid on height of plant is meaningful in the level of 1%. The highest height was observed in a_3b_3 treatment and lowest height was observed in a_2b_1 treatment that lakes using gibberllic acid.

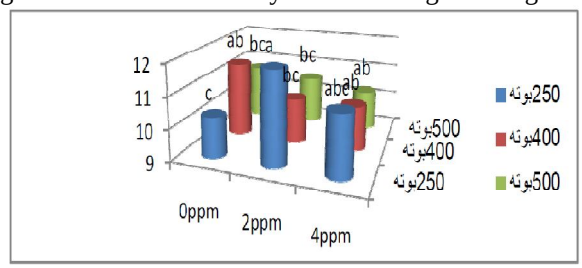
Diagram 3 : camparing the means of mutual effects of gibberllic acid and density on plant height in the experiment condition.



IV. THOUSAND GRAIN WEIGHT

According to Anova results the effects of density and mutual effect of gibber and density on thousand grain weight hasn't meaningful in 10/0level.

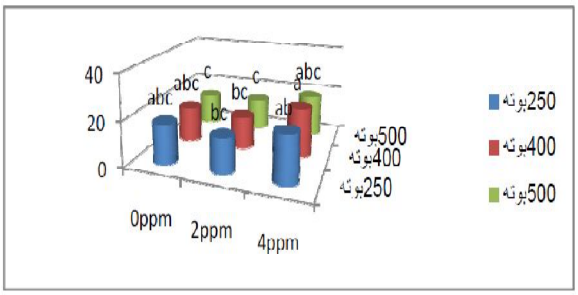
Diagram4: comparing the means of mutual effects of gibberllic acid and density on thousand grain weight.



V. FLAG LEAF AREA

According to Anova results the effects of density was meaningful in. 10/0level .and the effect of gibberllic was not meaningful. Also the mutual effect of density and gibberllic acid on the area of flag is meaningful. The highest area of leaf was observed in 500plants treatment and the lowest area of leaf was observed in 260plats treatment. Data showed that the leaf area increases as the density increases.

Diagram5: comparing the means of mutual effects of gibberllic acid and density on the area of stamen leaf in experiment condition.



CONCLUSION

It was clear that the effect of density and gibberllin and their mutual effect on the traits such as grain yield per hectar . root weight , stem weight biologic weight and node number isn't meaningful the effect of density on the area of stamen leaf and ear length was meaningful and gibberllic acid is meaningful effect on height and ash .The highest height was observed in a_3b_3 treatment and lowest height was observed in a_2b_1 treatment that lacks gibberllic acid . It was clear that the effect of density on the ear length is meaningful in level of 1% and the effect of gibberllic and mutual effect of density and gibberllic on the ear length isn't meaningful in level of 1% . the highest length of ear was observed in 500 plants treatment and lowest length of ear was observed in 250 plants treatment . the largest area of leaf is observed in 500 plants treatment and smallest area of leaf is observed in 250 plants treatment and data indicated that the area of stamen leaf increases as the density increased .The results of ANOVA showed that the effect of density on ash is meaningful in the level of 10/0 and the effect of gibberllic acid wasn't meaningful .the data indicated that the ash increases as density increases as the density increases .Finally the results from the study of suapnil is supported who performed an experiment in the agriculture college delhi university in 2008 and studied the effect of gibberllic acid on wheat plant .he showed that GA3 Hormone only effects on the plant height and doesn't show any effect on other growth parameters and wheat yields. The discovery of this hormone increases height in rice but crop plants has not effected an growth and yield . According to the studies it has showed the important effect than garden plants especially grape and pomegranate .the congestion due to the tillering of wheat in good condition .That is cannot be a factor around enhancing yield. So by using hormone we can reduce the amount of chemical properties like fertilizer or pesticide for conservation of our environment.

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