Study ingredients a yield plant corn on regimes different irrigated

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Abstract : The understanding of drought stress effect mechanisms in dry and semiarid lands, play a key role in management of various irrigation regimes to confronting with environmental adverse conditions and also to promote function and farm management in corn plant. This research is performed in 2008 summer, at Shahid Salami irrigation institute farm in Ahvaz County (in Iran) and with 256 mm rainfall average.Experiment location has dry and semi-arid climate and with considering Ahvaz weather forecasting statistics of 40 years, annual mean rainfall 213.94mm, annual mean temperature degree 25.24, the mean of maximum annual temperature degree 32.92,the mean of minimum annual temperature degree 18.4 centigrade. Test is done in the form of factorial plot and in accidentally complete blokes' plot with four repetitions. Factores contents : 4 time of stopping irrigation (Optimal irrigation =I_0 , stopping irrigation in 10 leaf phases =I_1, stopping irrigation at stage of flowering= I_2 ,stopping irrigation at stage of filling seed=I_3) in secondary factor have three date sowing contents(20 July & 5 August & 20 August) According to variance breakdown results, water stress, the different dates of planting and reciprocal effects of them on seed function, harvest index and biological function were meaningful , but a bout weight of thousand seeds, only the effect of different dotes of planting on this functional component was not meaning full, and also about row number effect of water tension and different dates of planting were not meaningful. Drought tension caused the reduction of biological function, seed function, harvest index, weight of thousand seeds, seed number of row and row number of maize. Seed function in I_3 treatment, was 9.43 ton in hectare, which regarding to ware shortage and famine phenomena, it is under consideration. [New York Science Journal 2010;3(5):63-67]. (ISSN: 1554-0200).

Key words: corn, yield, drought stress

1. Introduction

Anderid & coligouse (1996-2000), with a complete survey on the effect of seed yield like below:

(1) Gy = RAD . RI(%) . GLD . RUE . HI

Which in this formula the parameters below are analyzed in this order:
GY: grain yield, AD: Radiation received per day (E.g. 20 megajule in square meters)
RI%: Radiation over crop life cycle (E.g.50%)
GLD: green leaf duration (E.g. 100 days)
RUE: Radiation use efficiency (E.g. 1.5gr in Mj^{-1})
HI: Harvest index (0.45) (under ideal irrigation conditions is between 0.4 to 0.55)
By land tension, with change in estimated components above, the decrease of corn seed yield is described in an order that with the decrease of GLD component, the land tension, has a direct effect on green leaf surface and it diminishes the radiation use efficiency (RUE), Which in conclusion the producted photo synthesis and biomass has a remarkable decrease and this phenomenon will effect on the down fall of grain (seed) yield.

(Pasivra) (1977), gave the calculated estimation of corn seed yield under tension of water condition, like below:

2) Gy Gy=w_0 WUE.HI

Which the analyze of formulas parameters are:
W: water transpired crop (E.g. 450 mm)
WUE: water use efficiency: biomass quotient on transpired water until (E.g. 4 $g.m^{-2}.mm^{-1}$)
(Pasipora) believes that the land tension will increase the WUE, so the amount of dry material which was producted for each water unit is going to increase, but HI which means devotion of dry material on seed will have depletion. Variations of W, has severe undulation and this pendulums will result in misgrowth and deer ease of biomass the assessment of seed yield at its component can be calculated and evaluated down here:

3)Gy = Plant/m^2 . EPP . GPE . WPG

Which in this formula
$plant/m^2$: Number of settled crop in one square meter (E.g. 5.5 crop in square meter
EPP: ease per plant (E.g. 1.1)

GPE: grains pre ease (E.g. 446 grain in each eases)
WPG: weight per grain (E.g. 3 gr)
Land tension results in decrease of settled crop in unit, disorder pollen and tensity in sterility phenomenon, and also, it will conclude in decrease of GPE & EPP components, and in the end grain yield will diminish. In the other hand, with non compietion of grains fillment course, WPG components, dropdown, and in coundusion, HI will dropdown too, which this phenomenon has bad effect on seed yield.
(Selnarago & evotayarge)(1993), evaluated the irrigation time on the basis of proportion of irrigated water quantity to total quantity of suppressed evaporation from basin A(IW/CPE), on the crop surface in crop, and two care 50 & 75% water concluded, which in 757 care, LAI, increased in regard to 50%.
Grant et al (1989) assessed the effect of welter tension on courses of corn crop growth and declared that if water pressure, stated 2-7 days after appearance of silks and finished 16-22 days after appearance of silks, a remarkable dear ease will result in crop yield components & number of seed and last the ease mange will distribute.
(Avida)(1989), in an experiment examined the usable soil humidity evacuation percentage, (yield) performance and its components with irrigation in different times: (20-30%)(40-50%)(60-70%)(80-90%), and reported that the irrigation in time of (20-30%), usable soil humidity evacuation percentage, resulted in increase of ease length, quantity of seed in unit and harvest index.
(philit) et al (1999), reported that the increase of harvest index from 0.44 in favorable humid regime condition, to 0.54 in unfavorable moisture regime, showed the harmful effect in producted biomass in germination growth courses interval and the crop compensate this harmful effect by increasing harvest index although the compensation is not completely happening, philit declares that in water tension conditions, the usage of germplasm corn with high HI looks useful.
Sin clear (1999), Bolanse & demied (1993), declare that land tension effects in blossom level results in dear ease or constancy of corn crops harvest index different researchers announced various effects on growth, yield and HI components under water shortage situations which the growth cigcle, quantity and tension intensity, air relative humidity percentage and… parameter concluded in change of results.
(Bolanse & admidas) (1996) declared that grain yield connection with eases per spring (r^2= 0.94), grains weight (r^2 = 0.74) and weight per grain (r^2 =0.89) has a positive correlation, which is reported the minimum quantity correlation with grains weight, but grain yield correlation is negative with the appearance time distance of masculine flower to Vulva (ASI) and the more the distance is increased, seed yield is lower, they evaluated that by land tension in blossom course and germination, ease per plant and by land tension in welter tension course (ASI), increase and will have harmful effect on grain yield.
Kasen & shaow (1970) with the reasons of decrease in holes (LAI downfall) their pollen and sterility grain quantity downfall, and also with the land tension of three components of grain its, parts and arid talk weight, has a decreasing process and will show depletion.
According to the region challenges about dryness tension occurance by the aim of investigating the effect of irrigation regirne) on the seed operation & operative operative parts in order to a suitable exploitation & farm management promotion, this research was done.

2. Materials and Methods

This experiment was done at the field of Ahvaz's shahid salamy Irrigation institute in 2008 as factorial plan within plan of random complete blocks with 4 times repetition. That experiment factors include: 4 time of stopping irrigation (Optimal irrigation =I_0 , stopping irrigation in 10 leaf phases =I_1, stopping irrigation at stage of flowering= I_2 ,stopping irrigation at stage of filling seed=I_3) and at second factor, 3date of planting(20 July & 5 August & 20 August) were done.

The final soil analysis results are given in table 1. Also three constant parameters, that is, field capacity=21.22, withered point=13.7, and pa=1.19 g/cm3 were measured by pressure plate and volumimetric cylinder.

Table 1-Soil Analysis Results

Depth	Potas%	Organic	PH	EC	Type of Soil
0-30	138	0.54	7.5	2.3	**Loam**
30-60	127	0.56	7.8	1.9	**Clay Loam**

The area of field was 2250m , after performing each of planting, the complete irrigation for growing and complete locating of field was done and on the basis of growing stages of plant and definition of drought tension care, this care performed at its time, that measurements and performing of variables and carings are us follows:

1-performing drought tension care on the basis of certain cycle of plant life was designed and performed and care of planting date to determining of the most suitable planting time that have the must desirable performance with respect to moisture tension, was done.
2-seed function is estimated and provided by two direct way of day weight of seed at three lines of final harvest area and also by extermination of components of seed function.
After ensuring the forming of black layer that have been identifier by several sampling, final harvest was done at 3 middle line with marginal elimination. After harvest, measurements like row number of maize, seed number of row and weight of thousand seeds and determination of day weight of stem, leaf , wood of maize and seed calculated separately and sum of these numbers was calculated as biological function. To comparing the means of analyzed data, Duncan multi-slope test was used, to performing variance analysis was used SAS software and the diagrams were drawn by Excel 2007 software program.

3. Results

The results of variance analysis of water tension, the different dates of planting and reciprocal effects of them on seed function, harvest index and biological function were meaningful , but a bout weight of thousand seeds, only the effect of different dotes of planting on this functional component was not meaning full, and also about row number effect of water tension and different dates of planting were not meaningful. Drought tension caused the reduction of biological function, seed function, harvest index, weight of thousand seeds, seed number of row and row number of maize (table2).

3.1. Biological function: water tension, ever in the mildest state of it, ie $i_1$care, caused reducing of this component. Example care, without water tension with means of day substance assembling of 28.59 ton per Hec. Provided the highest and I_3 care of 20.58 ton per Hec. provided the lowest value. (table3)

3.2. Weight of thousand seeds: By performing of different, levels of water tension, weight of thousand seeds decreased. The highest value of thousand seeds weight was 324 g in example care and the lowest value of it was 304 g at I_3 care(table 3).

3.3. Number of row in maize: By performing water tension , by average the number of rows decreased to ½ and the highest row number in example care with value of 18.15 row and the lowest in I_3 care with value of 16.75 row was obtained. (table3)

3.4. Seed Number of each row: By performing different levels of water, number of seed in each row decreased. The highest number of seed in row at example care was 24.23 and the lowest of it I_3 care was 18.51(table3).

3.5. Harvest index: By performing of different levels of water tension. This index decreased. Example and I_3 care produced 49.55% and 44.95% us the highest and the lowest of harvest index respectively(table3).

4.Discussion

Smith (2001) said that disorder in the process of main food ingredients' absorption such as azote, phosphorous & particularly azote, for the primitive penods of the growth , caused the plant became small , the surface of the leaf low & the accumulation of the dry substance less: the less the dry substance was, the less the process of economic operation for the seed would be, which eventually was followed by server declining of the seed's operation.

Process of seed function changes altered proportional with biological function, therefore example care with numerical value of 14.25 showed the highest seed function and I_3 care with value of 9.43 was the lowest of it.

Giyang (2002) stated that a large mount of the plant energy spent for adjusting osmosis pressure of the leaf tubing & rising the stomas 'insistence; in other words, the dryners tension created conditions with which spent a lot of energy to confront it; for example about adjusting osmosis pressure, it took approximately one month to decreasing its osmosis potential that a lot of energy have been spent for increasing active absorption of potassivre & also protein polimeres.

Sinha(1999)informed that decreasing growth speed of the product in sever tensions cause to decreasing the seed's operation.

Vestgitt (1994) reported also decreasing of the duration, of filling seed in effect of tension due to decreasing of weight of corn seed.

Sakinezhad (2003) stated that relationship of seed function with attributes of maize number of crucible, seed weight and seed number of each maize have positive correlation, that the lowest value of correlation with seed weight have been reported, but correlation of seed function with time interval of appearing of male flower to pistil have been more, seed function became lower. By effect of drought tension during flowering and growing, number of maize in each crucible and as the reason of drought tension during interval of male flower to pistil, have been increased and have negative effect on seed function.

Summerfield (2001) said that as the reason of drought tension, process of developing of leaf surface index decreased due to reduction of leaf water potential and lack of necessary Torger pressure for growing leaf, this reduction of leaf sun face index, caused reduction of the amount of receiving light and decline of photosynthesis

outcome that have negative effect on seed function. And also khokpour (1994) observed that strict drought tension coused reduction of corn harvest index, but aligned this reduction to more declination of seed function to total dry weight.

Table 2: summary of variance analysis results (square means)and meaningfulness level of components of corn in test.

Harvest index	Row number of each maize	Seed number of each row	Weight of thousand seeds	Seed function	Function of dry material	df	Changes resource
0.19^{*}	$0.73^{n.s}$	$0.17^{n.s}$	$0.99^{n.s}$	$0.016^{n.s}$	$0.050^{n.s}$	3	**repetition**
14.99^{**}	3.43^{**}	4.59^{**}	30^{**}	11.29^{**}	40.23^{**}	11	**care**
53.99^{**}	40.06^{**}	9.39^{**}	54.97^{**}	39.74^{**}	138.02^{**}	3	**Water tension (I)**
0.50^{**}	$0.80^{n.s}$	1.67^{**}	$1.03^{n.s}$	1.55^{**}	8.63^{**}	2	**Dates of planting**
0.311^{**}	$0.83^{n.s}$	3.50^{**}	27.16^{**}	0.32^{**}	1.86^{**}	6	**Reciprocal effect**
0.042	0.89	0.5	1.23	0.015	0.073	33	**error**
12.60	14	13.7	13.33	11.2	11.2	-	**CV%**

, ns show meaningfulness at level of 1% , 5% and un meaningfulness, respectively.

Table3: comparison of average with Duncan test wag at 5% level

Harvest index	Row number of mize	Seed number of row	Weight of thousand seeds	Seed function	Performance of day material	Care
						Water tension(I)
49.55a	18.15a	24.23a	324a	14.25a	28.59a	**I_0**
49.15b	18.15a	22.13b	323a	12.98b	26.21b	**I_1**
47.15c	16.75b	22.63b	320b	12.13c	25.48c	**I_2**
44.95d	16.75b	18.15c	304c	9.43d	20.58d	**I_3**
						Various levels of potassium fertilizer
49.65a	17.15a	27a	303a	14.11a	28.17a	**d_1**
49.85a	17.55a	27.15a	304a	14.16a	28.34a	**d_2**
47.95b	17.15a	23.56b	302a	12.53b	25.92b	**d_3**

In each column, being on common article between 2avernage show unmeaning fullness 5% level.

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33-

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