University of Birjand

تنشهای محیطی در علوم زراعی
Environmental Stresses In Crop Sciences
Vol. 14, No. 4, pp. 961-975
Winter 2022
http://dx.doi.org/10.22077/escs.2020.3209.1823

Original article

The effect of urea and solopotass on morpho-physiological and biochemical characteristics of Super Sweet Corn (*Zea mays* var Basin) in response to different irrigation regimes

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Received 8 March 2020; Accepted 12 May 2020

Extended abstract

Introduction

Maize (*Zea mays* L.) is widely spread all over the world due to its many characteristics, especially its ability to adapt to different climatic conditions and occupies the third position after wheat and rice in terms of crop area. Currently, maize is cultivated in more than 240 hectares of Iranian land (Gheţe et al., 2018). Super Sweet Corn is a monocotyledonous, annual, single plant of the family poaceae, which is widely used in agriculture and industry (Gheţe et al., 2018). Abiotic stresses affect different aspects of plant growth, such as reduction and delay in germination, decrease in development rate, decrease in plant organs growth, and decrease in plant life duration and finally decrease in dry matter production. Among abiotic stresses, drought stress is considered to be the most influential type of stress in the production of oil seeds in the world and can greatly reduce production on many arable lands. One of the primary effects of drought is the reduction of water content of plant tissues (Ghanbari et al., 2016). Nitrogen is one of the major nutrients in biomass determination and crop yield through impact on leaf area index (radiation intake) and photosynthetic capacity per leaf area unit (Compelo et al., 2019). Potassium in physiological applications including: carbohydrate metabolism or starch formation; protein metabolism; control and regulation of various essential minerals activities; Stomach and water play a key role (Tisdale et al. 2003). This study was carried out to investigate the effect of urea fertilizers combination with solopotass fertilizers on yield and yield components of Super Sweet Corn in different irrigation regimes.

Material and Method

This research was carried out as a factorial experiment in a randomized complete block design with three replications in Varamin Agricultural and Livestock Complex in 2016. Factorial combinations of three treatments of water deficit stress (15% (un-stressed control), 30% (moderate stress) and 45% (severe stress) of FC depletion), four nitrogen fertilizer rate (zero (un-fertilized control), 150, 200 and 250 kg.ha-1) from urea and four potassium fertilizer rate (zero (un-fertilized control), 100, 150 and

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200 kg.ha^{-1}) from potassium sulfate were considered. Drip irrigation (T-tape) was applied the row length in each experimental plot was 6 m, 50 cm apart. The distance between the plots and between the repetitions was 1 and 3.5 m, respectively. Plant to plant distance within each row was 8 cm. The irrigation schedules were based on soil moisture discharge of field capacity at the root zone of Super Sweet Corn with a depth of about 30 cm.

Results

The results of this study showed that three-way interaction of irrigation time and chemical fertilizers was significant in leaf length and diameter, grain number, 1000 grain weight, photosynthesis rate and catalase enzyme. In moderate stress conditions, the highest grain yield was obtained from 150 kg urea and 200 kg solopotass, respectively. The highest photosynthesis rate and catalase activity were observed in the control treatment under severe stress conditions.

Conclusion

In general, it can be concluded that application of 150 kg urea and 200 kg solopotass increased 37.89% grain yield compared to control under moderate stress conditions, respectively, that indicates the ability of chemical fertilizers to increase yield and yield components as well as increase photosynthesis rate under stress conditions and is highly effective in the emergence of resistance to super sweet maize plant and severe yield loss. Finally, application of 150 kg urea and 200 kg solopotass on the moderate stress conditions is recommended for optimum yield.

***Keywords*:** Arid regions, Enzyme, Grain Corn, Water deficit stress, Yield components

Table1. Physicochemical properties of the studied soil

SD	EC	pH	O.M	T.N	P	K	S	PWP	FC	Texture
cm	dS.m^{-1}	-	---------%-------		--------mg.kg^{-1}--------			% by volume		-
0-30	1.1	7.6	0.8	0.12	17	228	51.5	9.52	18.27	loam

Table 2. Analysis of variance (mean square) of effect of chemical fertilizer on qualitative yield and physiological Characteristics in Super Sweet Corn (*Zea mays* var Basin) under different irrigation regimes

S.O.V	df	Plant height	Corn diameter	Leaf length	Leaf diameter	Rows number of grain	Grains in row
Block (Replication)	2	376.77^{ns}	1.03^{ns}	6.92^{ns}	0.14^{ns}	0.54^{ns}	0.67^{ns}
Irrigation Regimes (I)	2	28995.21**	0.81^{ns}	1651.38**	25.62**	43.29**	734.72**
Urea (U)	3	37528.32**	22.60**	7145.22**	77.32**	270.28**	1175.53**
I × U	6	193.76^{ns}	0.67^{ns}	90.07**	0.36**	6.58**	59.65**
Solopotass (S)	3	6279.34**	3.49**	1364.85**	8.46**	27.80**	130.69**
I × S	6	204.00^{ns}	0.36^{ns}	33.65**	0.13*	1.26^{ns}	4.10**
U × S	9	48.00^{ns}	0.92^{ns}	32.12**	0.25**	4.83**	2.33**
I × U × S	18	83.36^{ns}	0.56^{ns}	18.11**	0.15**	1.20^{ns}	1.65*
Error	94	174.80	0.48	6.71	0.05	0.93	0.90
CV (%)	-	*7.83*	*19.38*	*4.96*	*4.13*	*9.36*	*6.12*

Table 2. Continued

S.O.V	df	1000 grain weight	Grain yield	Harvest Index	Photosynthesis Rate	Grain protein	Catalase
Block (Replication)	2	50.61^{ns}	0.06^{ns}	5.03^{ns}	1.56^{**}	0.16^{ns}	0.01^{ns}
Irrigation Regimes (I)	2	10040.69^{**}	33.84^{**}	1544.17^{**}	1222.85^{**}	216.32^{**}	188.95^{**}
Urea (U)	3	98543.90^{**}	35.01^{**}	1430.28^{**}	485.69^{**}	12.40^{**}	8.35^{**}
I × U	6	22566.82^{**}	1.10^{**}	51.84^{**}	16.18^{**}	0.62^{**}	5.06^{**}
Solopotass (S)	3	10585.70^{**}	11.08^{**}	553.87^{**}	157.60^{**}	3.82^{**}	0.70^{**}
I × S	6	680.33^{**}	0.67^{*}	8.10^{*}	1.14^{**}	0.17^{ns}	1.77^{**}
U × S	9	220.24^{**}	0.28^{ns}	10.60^{**}	1.28^{**}	0.19^{ns}	0.04^{**}
I × U × S	18	251.33^{**}	0.23^{ns}	2.11^{ns}	0.99^{**}	0.19^{ns}	0.04^{**}
Error	94	85.32	0.24	3.18	0.30	0.11	0.005
CV (%)	-	*2.59*	*8.45*	*6.45*	*3.88*	*4.53*	*1.84*

**: significant at 1%; *: significant at 5%; ^{ns}: non-significant

Table 3. Main effects of irrigation regimes and urea and solopotass fertilizers on measured traits in Super Sweet Corn

Treatment		Plant height	Corn diameter	Grain yield	Grain protein
		cm	cm	$Ton.ha^{-1}$	$mg.g^{-1}FW$
Irrigation Regimes	**15% FC (Control)**	$195.\ 12^{a}$	3.69^{a}	6.55^{a}	9.50^{a}
	30% FC(Moderate Stress)	164.68^{b}	3.58^{a}	6.12^{b}	7.85^{b}
	45% FC (Severe Stress)	146.47^{c}	3.43^{a}	4.93^{c}	5.29^{c}
	LSD	*5.35*	*0.28*	*0.20*	*0.13*
Urea Fertilizer	**Control**	123.86^{d}	2.41^{c}	4.58^{d}	6.77^{d}
	150 $Kg.ha^{-1}$	167.63^{c}	3.83^{b}	5.67^{c}	7.44^{c}
	200 $Kg.ha^{-1}$	186.75^{b}	3.86^{ab}	6.86^{a}	7.87^{b}
	250 $Kg.ha^{-1}$	196.80^{a}	4.18^{a}	6.34^{b}	8.10^{a}
	LSD	*6.18*	*0.32*	*0.23*	*0.16*
Solopotass Fertilizer	**Control**	152.52^{d}	3.13^{b}	5.21^{d}	7.23^{c}
	100 $Kg.ha^{-1}$	164.75^{c}	3.65^{a}	5.63^{c}	7.32^{c}
	150 $Kg.ha^{-1}$	174.50^{b}	3.62^{a}	6.13^{b}	7.70^{b}
	200 $Kg.ha^{-1}$	183.27^{a}	3.87^{a}	6.47^{a}	7.92^{a}
	LSD	*6.18*	*0.32*	*0.23*	*0.16*

Means in each column followed by similar letter(s) are not significantly different at 1% probability level by the LSD test

Table 4. Interaction effects of irrigation regimes ×nitrogen fertilizer×potassium fertilizer on measured traits in Super Sweet Corn (Slice on the level of irrigation regimes and urea fertilizer).

Irrigation Regimes	Urea Fertilizer	Solopotass Fertilizer	Leaf length	Leaf diameter	Grains number in row
			cm	cm	
15% FC (Control)	Control	Control	30.66±1.76^{d}	4.00±0.11^{c}	8.83±0.32^{c}
		100 Kg.ha^{-1}	35.33±1.45^{c}	4.26±0.14^{b}	10.26±0.29^{b}
		150 Kg.ha^{-1}	40.66±0.66^{b}	4.43±0.12^{b}	11.23±0.14^{b}
		200 Kg.ha^{-1}	44.66±2.02^{a}	4.86±0.06^{a}	12.76±0.43^{a}
		LSD	*3.05*	*0.24*	*0.98*
	150 Kg.ha^{-1}	Control	45.00±1.73^{b}	5.16±0.12^{b}	10.76±0.14^{c}
		100 Kg.ha^{-1}	55.33±0.88^{a}	6.43±0.12^{a}	15.40±0.20^{b}
		150 Kg.ha^{-1}	57.33±0.88^{a}	6.56±0.06^{a}	15.76±1.12^{b}
		200 Kg.ha^{-1}	60.00±1.15^{a}	6.80±0.11^{a}	18.63±0.77^{a}
		LSD	*4.69*	*0.37*	*2.17*
	200 Kg.ha^{-1}	Control	62.33±1.45^{c}	6.73±0.17^{b}	20.83±0.20^{b}
		100 Kg.ha^{-1}	60.00±1.15^{c}	6.76±0.14^{b}	22.73±0.99^{b}
		150 Kg.ha^{-1}	66.33±0.88^{b}	7.20±0.11^{ab}	23.86±1.58^{ab}
		200 Kg.ha^{-1}	72.00±1.15^{a}	7.46±0.08^{a}	26.23±0.39^{a}
		LSD	*3.47*	*0.52*	*3.22*
	250 Kg.ha^{-1}	Control	70.00±0.57^{c}	7.10±0.05^{b}	24.40±0.37^{b}
		100 Kg.ha^{-1}	74.66±0.88^{b}	7.46±0.06^{a}	26.36±0.55^{ab}
		150 Kg.ha^{-1}	75.00±1.15^{b}	7.60±0.05^{a}	26.33±1.42^{ab}
		200 Kg.ha^{-1}	80.66±0.88^{a}	7.70±0.11^{a}	27.53±0.99^{a}
		LSD	*3.06*	*0.26*	*2.23*
30%^{c} FC (Moderate Stress)	Control	Control	26.00±2.30^{c}	3.00±0.11^{b}	7.00±0.11^{d}
		100 Kg.ha^{-1}	28.66±2.33^{bc}	3.33±0.12^{b}	7.76±0.14^{c}
		150 Kg.ha^{-1}	33.33±2.40^{b}	3.80±0.11^{a}	8.60±0.23^{b}
		200 Kg.ha^{-1}	42.00±1.52^{a}	4.23±0.14^{a}	9.23±0.14^{a}
		LSD	*7.00*	*0.46*	*0.62*
	150 Kg.ha^{-1}	Control	45.00±2.88^{c}	5.10±0.20^{b}	11.43±0.47^{c}
		100 Kg.ha^{-1}	50.33±0.88^{bc}	5.53±0.17^{b}	13.70±0.60^{bc}
		150 Kg.ha^{-1}	55.66±1.20^{ab}	6.26±0.14^{a}	15.33±0.35^{b}
		200 Kg.ha^{-1}	59.66±1.45^{a}	6.80±0.05^{a}	18.13±1.14^{a}
		LSD	*5.98*	*0.54*	*2.68*
	200 Kg.ha^{-1}	Control	60.33±2.90^{ab}	6.23±0.14^{bc}	16.50±0.40^{c}
		100 Kg.ha^{-1}	54.66±1.76^{b}	6.00±0.11^{c}	19.36±0.55^{b}
		150 Kg.ha^{-1}	60.33±1.45^{ab}	6.40±015^{b}	21.46±0.65^{ab}
		200 Kg.ha^{-1}	67.66±1.45^{a}	6.86±0.08^{a}	23.00±0.92^{a}
		LSD	*7.78*	*0.36*	*2.60*
	250 Kg.ha^{-1}	Control	52.33±1.45^{b}	6.06±0.17^{c}	19.56±0.23^{c}
		100 Kg.ha^{-1}	62.66±1.45^{b}	6.70±0.10^{b}	22.40±0.26^{b}
		150 Kg.ha^{-1}	67.33±1.76^{b}	7.00±0.11^{ab}	24.96±0.43^{a}
		200 Kg.ha^{-1}	67.33±145^{a}	7.26±0.14^{a}	25.83±0.44^{a}
		LSD	*5.65*	*0.52*	*1.39*
45% FC (Severe Stress)	Control	Control	19.66±0.88^{d}	2.30±0.10^{c}	4.30±0.20^{d}
		100 Kg.ha^{-1}	25.33±0.88^{c}	2.40±0.05^{bc}	5.63±0.08^{c}
		150 Kg.ha^{-1}	30.66±1.76^{b}	2.56±0.03^{b}	6.40±0.20^{b}
		200 Kg.ha^{-1}	36.00±1.15^{a}	2.86±0.06^{a}	7.56±0.23^{a}
		LSD	*3.93*	*0.26*	*0.56*
	150 Kg.ha^{-1}	Control	40.66±0.66^{c}	4.00±0.11^{c}	9.76±0.14^{d}
		100 Kg.ha^{-1}	40.66±0.66^{c}	5.00±0.11^{b}	11.16±0.20^{c}
		150 Kg.ha^{-1}	50.33±1.45^{b}	5.16±0.12^{b}	12.53±0.14^{b}
		200 Kg.ha^{-1}	57.66±1.45^{a}	5.53±0.08^{a}	13.30±0.15^{a}
		LSD	*4.46*	*0.30*	*0.25*
	200 Kg.ha^{-1}	Control	43.66±0.88^{c}	4.56±0.48^{b}	12.10±0.23^{d}
		100 Kg.ha^{-1}	47.66±1.45^{c}	5.53±0.08^{a}	12.80±0.23^{c}
		150 Kg.ha^{-1}	57.00±1.52^{b}	6.00±0.11^{a}	13.46±0.20^{b}
		200 Kg.ha^{-1}	65.00±1.73^{a}	6.36±0.08^{a}	14.50±0.17^{a}
		LSD	*5.03*	*0.87*	*0.44*
	250 Kg.ha^{-1}	Control	50.00±1.15^{c}	5.63±0.12^{c}	12.56±0.23^{d}
		100 Kg.ha^{-1}	53.66±1.45^{c}	6.06±0.06^{b}	13.56±0.12^{c}
		150 Kg.ha^{-1}	59.33±0.66^{b}	6.50±0.11^{a}	14.43±0.12^{b}
		200 Kg.ha^{-1}	65.00±1.73^{a}	6.76±0.14^{a}	15.63±0.12^{a}
		LSD	*5.11*	*0.42*	*0.51*

Table 4. Continued

Irrigation Regimes	Urea Fertilizer	Solopotass Fertilizer	1000 grain weight	Grain yield	Photosynthesis rate	Catalase
				Ton.ha^{-1}	μmolCO_2.m^{-2}.s^{-1}	mg.g^{-1}FW
15% FC (Control)	Control	Control	512.16±5.40^{a}	3.99±0.08^{d}	11.53±0.32^{d}	3.00±0.05^{a}
		100 Kg.ha^{-1}	495.58±4.32^{b}	4.69±0.08^{c}	12.76±0.37^{c}	2.61±0.03^{b}
		150 Kg.ha^{-1}	481.53±1.92^{bc}	5.12±0.05^{b}	14.43±0.29^{b}	2.32±0.02^{c}
		200 Kg.ha^{-1}	468.09±3.34^{c}	5.86±0.03^{a}	16.30±0.32^{a}	2.12±0.02^{d}
		LSD	*15.36*	*0.19*	*1.15*	*0.13*
	150 Kg.ha^{-1}	Control	467.17±10.68^{a}	5.66±0.05^{d}	15.20±0.52^{c}	2.65±0.05^{a}
		100 Kg.ha^{-1}	429.11±9.19^{b}	6.14±0.07^{c}	16.46±0.39^{bc}	2.40±0.02^{b}
		150 Kg.ha^{-1}	406.61±2.93^{b}	6.58±0.08^{b}	17.96±0.35^{b}	2.16±0.02^{c}
		200 Kg.ha^{-1}	372.17±8.00^{c}	7.21±0.13^{a}	20.70±0.32^{a}	1.91±0.02^{d}
		LSD	*31.82*	*0.15*	*1.51*	*0.10*
	200 Kg.ha^{-1}	Control	327.04±9.65^{a}	6.12±0.08^{d}	17.40±0.37^{d}	2.30±0.02^{a}
		100 Kg.ha^{-1}	302.34±11.47^{ab}	6.73±0.10^{c}	19.63±0.52^{c}	2.11±0.02^{b}
		150 Kg.ha^{-1}	285.63±2.94^{b}	7.49±0.09^{b}	21.50±0.32^{b}	1.84±0.03^{c}
		200 Kg.ha^{-1}	250.23±12.45^{c}	7.87±0.08^{a}	24.16±0.17^{a}	1.72±0.06^{d}
		LSD	*35.18*	*0.36*	*0.71*	*0.09*
	250 Kg.ha^{-1}	Control	294.18±2.74^{a}	6.97±0.06^{c}	21.20±0.30^{c}	2.21±0.01^{a}
		100 Kg.ha^{-1}	280.47±6.73^{a}	7.53±0.16^{b}	21.46±0.61^{c}	2.04±0.03^{b}
		150 Kg.ha^{-1}	287.07±3.38^{a}	8.26±0.08^{a}	24.23±0.29^{b}	1.86±0.05^{c}
		200 Kg.ha^{-1}	272.34±14.72^{a}	8.52±0.04^{a}	25.20±0.32^{a}	1.66±0.06^{d}
		LSD	*23.31*	*0.38*	*0.91*	*0.15*
30%^{c} FC (Moderate Stress)	Control	Control	424.36±5.78^{a}	4.13±0.03^{d}	5.83±0.27^{d}	2.11±0.04^{d}
		100 Kg.ha^{-1}	406.92±2.36^{b}	4.47±0.04^{c}	8.06±0.26^{c}	2.46±0.03^{c}
		150 Kg.ha^{-1}	396.22±3.21^{bc}	4.95±0.03^{b}	10.10±0.26^{b}	2.87±0.03^{b}
		200 Kg.ha^{-1}	384.74±3.93^{c}	5.26±0.06^{a}	12.70±0.37^{a}	3.26±0.03^{a}
		LSD	*15.40*	*0.13*	*1.06*	*0.13*
	150 Kg.ha^{-1}	Control	384.97±5.91^{a}	5.55±0.03^{d}	10.00±0.11^{d}	3.20±0.03^{d}
		100 Kg.ha^{-1}	371.13±2.70^{b}	5.88±0.03^{c}	11.76±0.46^{c}	3.37±0.03^{c}
		150 Kg.ha^{-1}	359.94±3.16^{c}	6.19±0.02^{b}	14.40±0.26^{b}	3.67±0.03^{b}
		200 Kg.ha^{-1}	346.17±2.14^{d}	6.65±0.08^{a}	16.26±0.23^{a}	3.96±0.03^{a}
		LSD	*7.19*	*0.10*	*0.72*	*0.05*
	200 Kg.ha^{-1}	Control	356.45±3.33^{a}	6.25±0.03^{d}	15.53±0.24^{d}	4.07±0.03^{d}
		100 Kg.ha^{-1}	347.87±4.22^{a}	6.55±0.03^{c}	16.33±0.37^{c}	4.19±0.02^{c}
		150 Kg.ha^{-1}	324.67±2.51^{b}	6.78±0.02^{b}	17.93±0.38^{b}	4.32±0.02^{b}
		200 Kg.ha^{-1}	322.32±4.31^{b}	7.05±0.03^{a}	19.96±0.32^{a}	4.51±0.03^{a}
		LSD	*12.72*	*0.10*	*0.63*	*0.11*
	250 Kg.ha^{-1}	Control	340.75±3.61^{a}	6.96±0.04^{a}	17.96±0.37^{c}	4.22±0.02^{d}
		100 Kg.ha^{-1}	308.70±2.22^{b}	7.11±0.04^{a}	19.10±0.15^{b}	4.38±0.01^{c}
		150 Kg.ha^{-1}	299.44±2.08^{c}	6.49±0.93^{a}	20.16±0.27^{ab}	4.53±0.03^{b}
		200 Kg.ha^{-1}	300.88±5.39^{c}	7.62±0.05^{a}	20.76±0.31^{a}	4.68±0.04^{a}
		LSD	*6.27*	*1.65*	*1.11*	*0.11*
45% FC (Severe Stress)	Control	Control	381.70±2.33^{a}	3.10±0.03^{a}	3.16±0.37^{d}	4.26±0.06^{d}
		100 Kg.ha^{-1}	369.37±2.14^{b}	3.48±0.03^{a}	4.93±0.26^{c}	4.76±0.05^{c}
		150 Kg.ha^{-1}	361.35±1.96^{b}	4.55±0.68^{a}	6.83±0.20^{b}	5.21±0.02^{b}
		200 Kg.ha^{-1}	360.89±3.98^{b}	4.34±0.03^{a}	8.20±0.25^{a}	5.64±0.04^{a}
		LSD	*8.81*	*2.93*	*0.69*	*0.11*
	150 Kg.ha^{-1}	Control	357.16±2.81^{a}	3.92±0.04^{d}	5.93±0.34^{d}	5.37±0.05^{d}
		100 Kg.ha^{-1}	347.26±2.24^{b}	4.27±0.04^{c}	7.13±0.43^{c}	5.75±0.07^{c}
		150 Kg.ha^{-1}	333.90±2.04^{c}	4.77±0.04^{b}	8.16±0.29^{b}	6.03±0.05^{b}
		200 Kg.ha^{-1}	333.92±2.86^{c}	5.20±0.03^{a}	9.73±0.24^{a}	6.32±0.08^{a}
		LSD	*9.75*	*0.17*	*0.33*	*0.11*
	200 Kg.ha^{-1}	Control	345.67±2.45^{a}	4.75±0.03^{d}	8.63±0.27^{d}	6.21±0.03^{d}
		100 Kg.ha^{-1}	331.22±1.89^{b}	5.17±0.03^{c}	9.83±0.24^{c}	6.53±0.04^{c}
		150 Kg.ha^{-1}	327.23±2.90^{bc}	5.49±0.01^{b}	10.96±0.14^{b}	6.82±0.05^{b}
		200 Kg.ha^{-1}	320.15±2.70^{c}	5.87±0.04^{a}	12.40±0.26^{a}	7.02±0.04^{a}
		LSD	*9.82*	*0.13*	*0.59*	*0.16*
	250 Kg.ha^{-1}	Control	342.60±4.30^{a}	5.16±0.02^{d}	8.90±0.26^{c}	6.62±0.05^{c}
		100 Kg.ha^{-1}	326.80±3.62^{b}	5.54±0.07^{c}	10.40±0.26^{b}	6.93±0.03^{b}
		150 Kg.ha^{-1}	316.58±2.72^{bc}	5.93±0.03^{b}	11.83±0.37^{a}	7.11±0.02^{b}
		200 Kg.ha^{-1}	314.04±1.74^{c}	6.27±0.03^{a}	12.76±0.37^{a}	7.35±0.06^{a}
		LSD	*12.68*	*0.17*	*1.23*	*0.19*

Means in each column followed by similar letter(s) are not significantly different at 1% probability level by the LSD test.
Mean±STDERR

Table 5. Interaction effects of irrigation regimes ×urea fertilizer on measured traits in Super Sweet Corn (slice in irrigation regimes levels)

Irrigation Regimes	Urea Fertilizer	Number of grain row	Grain yield	Harvest Index	Grain protein
			Ton.ha^{-1}	%	mg.g-1FW
15% FC (Control)	Control	8.23±0.36^{b}	4.91±0.20^{d}	19.35±1.79^{c}	8.43±0.22^{d}
	150 Kg.ha^{-1}	11.68±0.46^{a}	6.40±0.17^{c}	30.30±1.75^{b}	9.40±0.07^{c}
	200 Kg.ha^{-1}	12.37±0.13^{a}	7.05±0.20^{b}	35.73±1.08^{a}	9.81±0.06^{b}
	250 Kg.ha^{-1}	12.45±0.13^{a}	7.82±0.18^{a}	38.71±0.89^{a}	10.36±0.08^{a}
	LSD	*0.89*	*0.56*	*4.17*	*0.37*
30%^{c} FC (Moderate Stress)	Control	6.17±0.38^{b}	4.70±0.13^{c}	24.93±1.09^{c}	7.30±0.05^{b}
	150 Kg.ha^{-1}	11.45±0.37^{a}	6.07±0.12^{b}	28.90±1.36^{b}	7.75±0.06^{ab}
	200 Kg.ha^{-1}	12.15±0.14^{a}	6.66±0.08^{a}	34.01±0.62^{a}	8.21±0.06^{a}
	250 Kg.ha^{-1}	12.25±0.20^{a}	7.05±0.23^{a}	35.31±0.76^{a}	8.13±0.34^{a}
	LSD	*0.87*	*0.44*	*2.92*	*0.51*
45% FC (Severe Stress)	Control	4.33±0.11^{b}	4.12±0.45^{b}	13.88±1.16^{c}	4.57±0.11^{c}
	150 Kg.ha^{-1}	10.82±0.48^{a}	4.54±0.14^{b}	19.41±1.08^{b}	5.17±0.07^{b}
	200 Kg.ha^{-1}	10.60±0.36^{a}	5.32±0.12^{a}	24.40±1.05^{a}	5.59±0.05^{a}
	250 Kg.ha^{-1}	11.48±0.86^{a}	5.72±0.12^{a}	26.64±0.63^{a}	5.81±0.05^{a}
	LSD	*1.51*	*0.73*	*2.92*	*0.22*

Means in each sliced column followed by similar letter(s) are not significantly different at 1% probability level by the LSD test. Mean±STDERR

Table 6. Interaction effects of urea fertilizer ×solopotass fertilizer on measured traits in Super Sweet Corn (slice in urea fertilizer level)

Urea Fertilizer	Solopotass Fertilizer	Number of grain row	Harvest Index
(Control)	Control	5.26±0.39^{b}	14.36±1.76^{c}
	100 Kg.ha^{-1}	5.66±0.55^{b}	16.77±1.79^{bc}
	150 Kg.ha^{-1}	6.42±0.62^{ab}	20.98±1.69^{ab}
	200 Kg.ha^{-1}	7.63±0.73^{a}	25.42±1.62^{a}
	LSD	*1.76*	*5.12*
150 Kg.ha^{-1}	Control	8.88±0.23^{c}	20.61±1.48^{c}
	100 Kg.ha^{-1}	11.78±0.17^{b}	24.42±2.37^{bc}
	150 Kg.ha^{-1}	12.15±0.14^{ab}	28.28±1.75^{ab}
	200 Kg.ha^{-1}	12.45±0.14^{a}	31.51±1.90^{a}
	LSD	*0.53*	*5.62*
200 Kg.ha^{-1}	Control	10.98±0.36^{c}	27.56±1.66^{b}
	100 Kg.ha^{-1}	11.92±0.14^{b}	29.78±2.07^{b}
	150 Kg.ha^{-1}	12.41±0.09^{ab}	32.88±1.89^{ab}
	200 Kg.ha^{-1}	12.68±0.10^{a}	35.30±1.52^{a}
	LSD	*0.61*	*5.37*
250 Kg.ha^{-1}	Control	11.21±0.24^{a}	30.25±1.47^{b}
	100 Kg.ha^{-1}	12.05±0.20^{a}	32.57±1.95^{ab}
	150 Kg.ha^{-1}	12.46±0.17^{a}	34.83±2.04^{ab}
	200 Kg.ha^{-1}	11.34±1.24^{a}	36.56±1.79^{a}
	LSD	*1.87*	*5.43*

Means in each sliced column followed by similar letter(s) are not significantly different at 1% probability level by the LSD test. Mean±STDERR

Table 7. Interaction effects of irrigation regimes×solopotass fertilizer on measured traits in Super Sweet Corn (slice in irrigation regimes level)

Irrigation Regimes	Solopotass Fertilizer	Grain yield	Harvest Index
		Ton.ha^{-1}	%
15% FC (Control)	**Control**	5.72±0.32^{c}	25.47±2.55^{b}
	100 Kg.ha^{-1}	6.27±0.31^{bc}	29.28±2.73^{ab}
	150 Kg.ha^{-1}	6.86±0.35^{ab}	33.31±2.26^{a}
	200 Kg.ha^{-1}	7.36±0.29^{a}	36.03±1.77^{a}
	LSD	*0.94*	*6.87*
30%^{c} FC (Moderate Stress)	**Control**	5.69±0.31^{b}	26.50±1.48^{c}
	100 Kg.ha^{-1}	6.00±0.29^{ab}	29.65±1.50^{bc}
	150 Kg.ha^{-1}	6.10±0.29^{ab}	32.13±1.19^{ab}
	200 Kg.ha^{-1}	6.64±0.26^{a}	34.88±0.94^{a}
	LSD	*0.85*	*3.80*
45% FC (Severe Stress)	**Control**	4.23±0.23^{b}	17.62±1.75^{c}
	100 Kg.ha^{-1}	4.61±0.24^{b}	18.74±1.54^{bc}
	150 Kg.ha^{-1}	5.43±0.38^{a}	22.30±1.42^{ab}
	200 Kg.ha^{-1}	5.42±0.22^{a}	25.68±1.29^{a}
	LSD	*0.80*	*4.41*

Means in each sliced column followed by similar letter(s) are not significantly different at 1% probability level by the LSD test. Mean±STDERR