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Response of some Varieties of Rice to Growth and yeild for Magnetic Technology

WAFAA HADI HASSOON[1]
NAEEM SAEED DHEYAB
Ministry of Science and Technology, Agriculture Research
LAYTH ABDALRAHMANMOHAMMED
Ministry of Agriculture
Agriculture Department of Baghdad AL- Karkh
ABDUL AL-KAREM H. KADIM
Ministry of Science and Technology, Agriculture Research
JASAB A. ELAWE
Ministry of Agriculture
AgricultureDepartment of Baghdad AL- Karkh

Abstract:

The experiment was conducted at the experimental farm. The experiment was in rice research station in Mishkhab / Najav, Iraq. in seasons 2014. The experiment design was split-split plot with three replicates, irrigation water treatments (magnetized and ordinary) were arranged in the main plots, pre-sowing seed treatments (magnetized and untreated) were distributed in the sup-plots and three varieties were assigned in the sub-sub plots.in order to study the technical impact of magnetic seed and water treatment, irrigation and magnetization in magnetic grain some characteristics of growth and yield of three varieties of rice. The first factor three local varieties of rice are Mishkhab 1 and Anber 33 and AL-Braka, the second magnetic seeds in three dynamic magnetic field (0, 1200, 1700) gauss. while magnetic water with same strength of magnetic seed. The results showed that superior cultivar Anber 33 on high plant, Number of

[1] Corresponding author:wafaahasoon@yahoo.com

filled grains per ten panicle and weight 1000 grain (132.11cm, 1378.8 Number of filled grains per ten panicle, 26.27 g) respectively. While gave Mishkhab highest average of Tiller Number carry forPanicle.m^{-2} and lowest Sterility ratio (248.4 Tiller Number carry for Panicle.m^{-2} ,4.59%) respectively, was found the treatment of magnetized grains with 1200 gauss and magnetized irrigation water are significant effect of on many studied characteristics. The third interaction of experiment factors cultivars, magnetized grains and magnetized irrigation water with 1200 gauss gave significant highest effect in Studied indicators compared to plants not treated grains Magnetic Technology.

Key words: magnetic Seed, magnetic water, Rice cultivars

INTRODUCTION

Physical phenomena used in some different life areas such as agriculture, industry, medicine, environment and water problems are the Magnetic Field (Mohgoob, 2004). Studies had shown interested in magnetic technology that this phenomenon is a positive effect on growth, grain germination and growth of grainings of various vegetable crops (Reina et al, 2001, Podlesny et al, 2004). As well as being eco-friendly techniques and harmless (Aguilar and others, 2009 and Nimmi and Madhu, 2009). If rice grains when exposing to extreme 1500 and 2500 gauss for 20 minutes resulted in higher spirits 18 and 12% for 48 hours in the percentage and germination speed relay compared with non-seeds exposed to the magnetic field, giving grain treatment water magnetically doses (1500 and 2500 gauss) increased 16% in rate germination for 48 hours (Carbonell, 2000). Study on wheat seeds than plants irrigated with water treatment magnetically doses 1500 gauss in most qualities point is green while the intensity indices outperformed 750 gauss (Al-Ebrahemi and Thamer, 2014). Best results were obtained by using four types of irrigation water is untreated irrigation water fresh and salty treated water magnetically

doses 2000 gauss to refilling sunflower plants *Helianthus annuus* L. increase in plant height amounted to 132 and 149 cm of magnetically treated water is saline and fresh compared to 110 and 135 cm for the untreated water salt and freshwater magnetically respectively, Area leaf was 2.67 and 3.18 m^{2}·$plant^{-1}$ compared to 2.21 and 2.85 m^{2}·$plant^{-1}$ of saline and fresh water treatment Hypnotized and marine and freshwater untreated magnetically respectively (Erhim ,2009). So the search target to improve the characteristics of vegetative growth to some local rice varieties by magnetic technology.

MATERIALS AND METHODS

Experiment conducted in the fields of rice research station in AlMishkhab of public authority for agricultural research during the season 2014 (1/6-1/11/2014) designed according to The experiment design was split-split plot with three replicates, to study the effect of three factors represent the first factors was three local varieties of rice were AlMishkhab 1, Anber 33 and Albraka exposing grains before planting to magnetic grain to three doses (0, 1200, 1700) gauss , their code were MS0 ,MS1 and MS respectively. third factor is irrigation water magnetically with three doses (0, 1200, 1700) gauss their code were MW0, MW1 and MW2 respectively. The fields area is divided into three plates, Each plate 27 treatment isolate each other on board a minimum of one meter's distance to avoid interference that might happen when irrigation water types magnetically. Each plate contain three replicates in each replicates nine rows of plants the long row one meter distributed random varieties and grain magnetization. Irrigation water frachin the first plate (River) (0) and second plate magnetically treated water doses 1200 gauss and third plate magnetically treated water doses 1700 gauss. Varities treatment were included nine grains magnetization coefficients.

Magnetic devices Magnetrons manufactured locally in the size 2ang to the tube that the water enters the magnetic intensity were measured for each piece with your gauss meter of green allwahah equipped in Baghdad. Sample analysis of river in the Ministry of science and Technology/Department of environment and water treatment to see viability to water the plants before conducting an experiment as shown in table 1.

Table 1: Some electroanalysis qualities and physical and chemical properties of irrigation water before and after treatment of magnetism.

Unit	After magnetic treatment		before magnetic treatment	Qualities	
	gauss*1600*	gauss1200			
–	7.8	*8.1*	*8.11*	Ph	Alkhrothalilih
Ds.M^{-1}	*1.00*	*1.43*	*1.37*	EC	
Mg.L^{-1}	567	575	579	TDS*	
	21	*25*	30	TSS**	
N.M^{-1}	54.1	57.2	61.5	Surface tension	Physical properties
G.Ml^{-1}	0.2699	0.6699	0.9968	Density	
G.10ml^{-1}	3.*15*	3.*05*	3.04	Solubility	
S.st	0.791	0.821	0.834	The viscosity	
Mg.L^{-1}	*9.7*	10.2	10.3	N	Dissolved ions
	0.17	0.18	0.19	P	
	0.87	0.87	1.00	K^{+}	
	128.2	124.2	*127.21*	Ca^{++}	
	0.371	0.3211	1*45*.0	Mg^{++}	
	13.16	*2.24*	*8.4*	NO_3^-	

TDS* = Total Dissolved Solids TSS** =Total suspended solids

Plant height: Ten randomly-selected plants were sampled from each field at maturity. estimated Science leave for ten random science leaves at start of Physiological maturity according to equation (area flag leaf = leaf length x width x 0.74) and calculated the number of branches bearing -1 harvest area of 1 m ^{2} at random and calculated lldaliat-bearing branches per square meter and calculated the number full ten

cereal spikes that took a dozen ears of random plants at maturity. According to the weight of 1000 grain took a random sample of grain harvested area unit of product or 2 and count 1000 grain and then weigh the balance of sensitive electrical and amended results based on moisture content of 14%. Data were analyzed by statistical software GenStat and compared using test less moral difference L.S.D. 0.05 probability level (, Wahib, 1990)

RESULTS AND DISCUSSION

Plant height

Table 2 results refer to the moral superiority of 33 Anber (132.11 cm) item pool (82.59 cm) in plant height. Magnetization coefficients showed grain moral differences. It was characterized by plants which offered their grains for MS1 treatment with plant high reached 103.29 cm vs 100.81 cm MS0 treatment. There was no moral difference between magnetic water treatment parameters. And overlap between categories and magnetization grains and magnetically water treatment outweigh the moral category dormitory with MS1 and MW1 (725.15 and 134.77) cm with alMishkhab item with the given measurement transaction MS0 and MW0 lower plant height reached (79.56 and 81.22) cm respectively. And showed overlap between magnetization and magnetic water treatment than grain treatment MS1MW1 (104.00) with MS0MW0 treatment gave lower total plant height (98.67) cm. The results indicated that trilateral study factors overlap moral superiority for an item with MS1MW1 treatment Anber by giving it the highest plant height reached (138.33) cm bamaamelh MS0MW0 alMishkhab item comparison which recorded lower total plant height (76.33) cm.

Tiller Number carry for Panicle.m^{-2}

Table 3 indicates that the AlMishkhab was superiority in Tiller Number carry for Panicle.m^{-1} (248.4.) meanwhile, the albaraka was 234.8 Tiller Number carry for Panicle.m^{-2}. While conditions in MW1and MS1 were giving the highest average 266.6 and 254.7 then less average were in MS0 and MW0(212.2, 220.6 Tiller Number holder for Panicle.m^{-2}).for the assemblage interaction among varieties, grain treatment and water treatment, the highest values was found in AlMishkhab with MS1 and MW1(291.3 and 268.3 Tiller Number carry for Panicle.m^{-2} cv 198.0 and 193.3 Tiller Number carry for Panicle.m^{-2} in Anber × MSO AND AlMishkhab × MWO respectively. Table results showed that the best values was in treatment albaraka x MS1 x MW2(297) compared with less than average Tiller Number carry for Panicle.m^{-2} was in alMishkhab × MS0 × MW0(147).

Sterility ratio:

Considering this parameter affecting crop yield , the sterility percentage in alMishkhab, MS1 and MW1 were lower (4.59,8.37,8.93) % respectively compared with in Albraka,MS0 and MW0 (14.59,12.41,12.41)% respectively (Table 4).

Lowest **Sterility ratio** overlap duo were in treatment AlMishkhab × MW1 and AlMishkhab × MS1 (2.67% and 2.89%) compared with the highest percentage was Albraka x MS0 and Albraka × MW0 (17.8% and 15.89%) respectively. MS1 × MW1 lowest ratio was 6.33% and highest ratio in MS0 x MW0 at 16.78%. Intersect treatment made triple Mishkhab × MS1 × MW1 less by 1.67 compared to highest ratio in Albraka × MS0 × MW0 (21.00%).

Number of filled grains per ten panicle

Number of filled grains per ten panicle was greater in anber 33, MW1 and MW1 (1378.8 and 1015 and 1026) grain

compared with less number of grains were filled in the albaraka, MS0 and MW0 (484.8 and 897.0 and 942.1) grain (Table 5). While the best binary nesting transactions were among Anber 33 x MS2 (144.3 grain) and Anber 33 x MW1 (1417 grain) and MS1 treatment × MW1 (1068 grain) compared to MS0 treatment x MW0 (836.7 grain) and better treatment of overlapping trio was in Anber 33 x MS1 × MW1 (1472 grain) than triple interaction was in Albraka × MS0 × MW0 (380 grain).

Weight 1000 grain

Table 6 results the significant differences between varieties and magnetism between them, As Anber 33 was top weight 26.37 g while AlMishkhab has been made less weight reached 23.25 gm who was not different from albrakaa (23.37 g). The greatest weigh of 1000 grain was obtained for treatment MS2 (25.22 g) comparable for treatment MS0 (23.07 g). MW1 treatment was significantly more gave 25.37g compared to less than weight 1000 grain was in MW0 (23.70 g). Results showed overlap duo than category Anber 33 × MS2 and MW2 (27.66, 28.00 g) versus less weight to AlMishkhab × MS0 and MW0 (21.77 and 22.33 g). MS1MW2 treatment was overtook (26.88 g) in weight 1000 grain for less weight in MS0MW0 (22.55 g) The best treatment of third interaction was Aner33 × MS2MW1 (29.33g) amounted to for less weight was in the AlMishkhab × MS0MW0 (21.00 g).

Consistent with the above results were reported by Azarpoureet al (2011), Rochalska el al (2008) on sugar beet, Aksyonov et al.(2000), Pietruszewski and Kania (2010) on wheat , Radhakrishnan and Kumari (2012) on soybean plants.

DISCUSSION

Differences in response of rice varieties of magnetic technology on qualities of growth, whether using seed or water treatment magnetically may return every installation of legacy has certain affected by magnetic force (Aguilar et al, 2009). Plant species may vary in vulnerability to magnetic technology in different magnetic material content my parents disorders (Penuelas et al, 2004). Or may be due to differences between varieties in the length and duration of the flag leaf growth and expansion due to the variation in genetic composition, with some traits may be inherited under control of l (Azarpour, 2011). The results show an item than Anber 33 in plant height and number of grains filled for 10 pincal, 1000 grain weight, but as the number of tiller by AlMishkhab lldaliat-bearing than the disparity between the increases and decreases in the varieties under study is probably due to the magnetic energy is working on a change in the characteristics of waste water for irrigation and highlighted here to reduce the number of water molecules cluster of 12 – 8 totals (Toledo et al 2008, Zhou and others, 2000) which resulted in increased liquidity.

Grewal and Maheshwari (2011) reported that there are some changes occurred in the physical and chemical properties of water according to magnetic treatment, mainly hydrogen bonding, polarity, surface tension, conductivity, pH and solubility of salts, and these changes in water properties may be capable of affecting the growth of plants. They deduced that the reduction in water pH and increase in Ec in magnetic treated water may be due to changes in hydrogen bonding and increased mobility of ions.

It could be concluded that treated three cultivar of rice with magnetic field by 1200 gauss with magnetically treated irrigated water improved vegetative growth, increased weight 1000 grain.

Table 2 Effect Varieties and technical magnetism in plant height (cm)

V*MW	(gauss)MS			(gauss)MW	Varieties
	MS2	MS1	MS0		
81.22	78.67	83.67	76.33	MW0	AlMishkhab
84.00	84.33	84.00	81.67	MW1	
82.66	85.00	85.67	84.00	MW2	
128.00	135.67	138.33	131.67	MW0	Anber 33
134.77	131.66	138.33	132.00	MW1	
133.55	133.00	133.33	123.00	MW2	
89.22	90.33	94.67	89.67	MW0	Albraka
89.77	89.67	96.33	88.00	MW1	
93.44	90.00	93.67	85.00	MW2	
4.13	7.15				L.S.D. 0.05
V	MS2	MS1	MS0		V
90.81	83.33	84.89	79.56		AlMishkhab
132.11	129.78	135.22	131.33		Anber 33
82.59	89.56	91.33	91.56		Albraka
2.38	4.13				L.S.D. 0.05
MS	MW2	MW1	MW0		
100.81	101.78	102.00	98.67		MS0
103.29	103.22	104.00	102.67		MS1
101.40	101.00	102.44	100.78		MS2
2.39	4.14				L.S.D. 0.05
	101.81	102.81	100.88		MW
	2.4				L.S.D. 0.05

Table 3 Effect Varieties and technical magnetism in Tiller Number carry for Panicle.m^{-2}

V*MW	(gauss)MS			(gauss)MW	Varieties
	MS2	MS1	MS0		
81.22	78.67	83.67	76.33	MW0	AlMishkhab
84.00	84.33	84.00	81.67	MW1	
82.66	85.00	85.67	84.00	MW2	
128.00	135.67	138.33	131.67	MW0	Anber 33
134.77	131.66	138.33	132.00	MW1	
133.55	133.00	133.33	123.00	MW2	
89.22	90.33	94.67	89.67	MW0	Albraka
89.77	89.67	96.33	88.00	MW1	
93.44	90.00	93.67	85.00	MW2	
4.13	7.15				L.S.D. 0.05
V	MS2	MS1	MS0		V

90.81	83.33	84.89	79.56	**AlMishkhab**
132.11	129.78	135.22	131.33	**Anber 33**
82.59	89.56	91.33	91.56	**Albraka**
2.38	4.13			**L.S.D. 0.05**
MS	**MW2**	**MW1**	**MW0**	
100.81	101.78	102.00	98.67	MS0
103.29	103.22	104.00	102.67	MS1
101.40	101.00	102.44	100.78	MS2
2.39	4.14			**L.S.D. 0.05**
	101.81	102.81	100.88	**MW**
	2.4			**L.S.D. 0.05**

Table 4 Effect Varieties and technical magnetism in Sterility ratio

V*MW	**(gauss)MS**			**(gauss)MW**	**Varieties**
	MS2	**MS1**	**MS0**		
6.89	6.67	3.33	10.67	**MW0**	**AlMishkhab**
2.89	3.67	1.67	3.33	**MW1**	
4.00	4.67	3.00	4.33	**MW2**	
14.44	14.33	13.33	19.33	**MW0**	**Anber 33**
9.56	12.33	7.33	9.00	**MW1**	
13.00	11.33	12.67	11.33	**MW2**	
15.89	17.33	14.00	21.00	**MW0**	**Albraka**
14.33	12.00	10.00	12.33	**MW1**	
13.33	13.67	10.00	20.33	**MW2**	
1.757	2.971				**L.S.D. 0.05**
V	**MS2**	**MS1**	**MS0**		**V**
4.59	5.00	2.67	6.11		**AlMishkhab**
12.33	12.67	11.11	13.22		**Anber 33**
14.52	14.33	11.33	17.89		**Albraka**
1.395	1.874				**L.S.D. 0.05**
MS	**MW2**	**MW1**	**MW0**		
10.67	11.78	8.67	16.78		MS0
8.37	9.33	6.33	11.11		MS1
12.41	10.11	9.33	10.89		MS2
1.116	1.725				**L.S.D. 0.05**
	10.11	8.93	12.41		**MW**
	0.984				**L.S.D. 0.05**

Table 5 Effect Varieties and technical magnetism in Number of filled grains per ten panicle

V*MW	(gauss)MS			(gauss)MW	Varieties
	MS2	MS1	MS0		
970.1	1043.3	1126.7	1025.0	MW0	AlMishkhab
1120.2	1011.7	1188.3	1053.3	MW1	
1022.6	873.7	1045.7	971.0	MW2	
1332.9	1300.0	1340.0	1158.3	MW0	Anber 33
1417.7	1460.7	1472.3	1347.7	MW1	
1385.8	1396.7	1492.7	1440.7	MW2	
442.0	432.0	571.7	380.7	MW0	Albraka
471.0	608.7	605.0	452.3	MW1	
541.4	441.7	447.7	423.7	MW2	
34.67	104.57				L.S.D. 0.05
V	MS2	MS1	MS0		V
1037.6	1084.4	1065.0	963.4		AlMishkhab
1378.8	1443.3	1426.9	1266.1		Anber 33
484.8	437.7	555.3	461.4		Albraka
34.67	60.05				L.S.D. 0.05
MS	MW2	MW1	MW0		
1015.7	985.8	868.6	836.7		MS0
988.5	999.9	1068.0	979.3		MS1
897.0	989.9	1025.6	950.0		MS2
34.67	60.05				L.S.D. 0.05
	942.1	932.6	1026.4		MW
	34.67				L.S.D. 0.05

Table 6 Effect Varieties and Technical Magnetism in Weight 1000 grain

V*MW	(gauss)MS			(gauss)MW	Varieties
	MS2	MS1	MS0		
21.778	21.333	23.000	21.000	MW0	AlMishkhab
24.556	24.333	24.333	22.667	MW1	
23.778	24.000	26.333	23.333	MW2	
24.889	24.667	26.333	23.667	MW0	Anber 33
27.222	27.000	28.333	26.333	MW1	
27.667	27.333	29.333	26.333	MW2	
22.556	22.667	25.000	22.667	MW0	Albraka
23.444	24.333	23.667	23.333	MW1	
23.778	22.667	23.000	22.000	MW2	
0.84	1.32				L.S.D. 0.05
V	MS2	MS1	MS0		V

23.259	23.22	24.556	22.333	**AlMishkhab**
26.593	26.00	28.000	25.778	**Anber 33**
23.370	23.22	23.556	23.000	**Albraka**
0.658	0.7985			**L.S.D. 0.05**
MS	**MW2**	**MW1**	**MW0**	
23.074	22.889	23.778	22.556	MS0
24.926	25.222	25.444	24.111	MS1
25.222	24.667	26.889	24.111	MS2
	0.7594			**L.S.D. 0.05**
0.50	24.148	25.370	23.704	**MW**
	0.4909			**L.S.D. 0.05**

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