EFFECT OF SOME CULTURAL PRACTICES ON THE PRODUCTIVITY OF SAKHA 104 RICE CULTIVAR PLANTED WITH BROADCAST METHOD

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ABSTRACT

Two field experiments were conducted at the Rice Research and Training Center, Sakha, Egypt, in 2003 and 2004 summer seasons to study the effect of some cultural practices on some growth characters, grain yield and its components and some grain quality characters of the newly released rice cultivar, Sakha 104, grown after Egyptian clover with the broadcast seeding method.

Each experiment involved ten treatments as follows: All recommended practices (T_1), without Zinc (T_2), without herbicide (T_3), high seeding rate (T_4), no soaking (T_5), irrigation every six days (T_6), irrigation every nine days (T_7), one dose of nitrogen (T_8), very late sowing on June 19th (T_9) and none of the recommended practices (T_{10}).

The most important findings of this study could be summarized as follows:-

1. Significant differences were detected among the different treatments on growth, grain yield and its components and some grain quality characters.
2. All recommended practices (T_1) gave the highest values of chlorophyll content, LAI and dry matter content, while none of the recommended practices (T_{10}), irrigation every nine days (T_7), very late sowing (T_9) and one dose of nitrogen (T_8) treatments were the lowest.

3. Grain yield and its components were significantly increased as all recommended treatments (T1) was applied. Consequently, the grain yield components, especially number of panicles/m2, panicle weight, number of filled grains/panicle and 1000-grain weight could be considered as important components of grain yield in this study.
4. Hulling, milling and head rice traits recorded highly significant differences among treatments. All recommended practices (T1) gave the highest hulling, milling and head rice percentages while none of the recommended (T10), irrigation every nine days (T7) and late sowing (T9) practices significantly reduced these three traits.
5. The study indicated that missing any or all recommended cultural practices lead to decrease in grain yield of the new released rice cultivar (Sakha 104) by about 17-50 % and from 16 –52 % in the two successive seasons. The most important factor and limiting yield is the irrigation intervals and sowing date. Prolonged irrigation interval to nine days reduced grain yield by 47.42 and 50.73 % the first and second seasons, respectivests. Late sowing date to June 19th lead to reduction in grain yield by 43.77 and 45.46 % in the first and second seasons. However, the reduction due to other practices was ranged 16.62 to 28.37 % in the first season and from 16.24 to 27.0 % in the second season.

INTRODUCTION

Rice (*Oryza sativa, L.*) is one of the major cereal crops in Egypt. Rice productivity is a function of the proper cultural practices through the life period of the rice plant. A good rice grain yield depends on several ecological factors, especially cultural practices, during its growth in field.

There are many cultural practices that are performed and have always between under the agronomist consideration. Rice production in Egypt can still be increased through several means, such as modernization its culture, replacement of old cultivars with new improved high yielding ones Aly *et al.*, (1980) and the

efficient use of nitrogen fertilization and plant population Mahrous *et al.*, (1986) and El-Kalla *et al.*, (1988).

The second half of May for broadcast seeding method of rice is the optimum time for sowing and produces the highest values of dry matter content, LAI, grain yield, hulling %, milling % and head rice % Rao, (1986), Dewedar, (2004) and El-Khoby, (2004).

Optimum seeding rate of the Egyptian varieties ranges from 120 to 144 kg/ha. Using 60 kg grains/fed is economical and optimum for reasonable grain yield, also, El-Kallawy (2002) and El-Khoby (2004) found that 50 kg seeding rate/fed gave the highest values of dry matter production, LAI, harvest index and grain yield.

Soaking seeds in water from 24-48h.then, incubating for 48h.help to enhance germination.

The amount and time of application of nitrogen applied significantly affected the plant characters and grain yield under normal soil, Badawi *et al.*,(1990) stated that splitting the nitrogen dose into three splits (1/3 incorporation into dry soil, 1/3 at maximum tillering stage and the rest at panicle initiation), was more efficient to rice.

Zinc is one of the most limiting factors affecting rice production. Rice growth; namely, plant height, number of tillers/m^2, LAI and dry matter content, and grain yield and its components; i.e., number of panicles/m^2, number of filled grains/panicle, panicle weight and 1000-grain weight, were significantly increased when rice was fertilized with Zinc Gorgy, (1988,1995),and Ghanem *et al.*, (1992), S laton *et al.*, (2003) and Mettwali, (2002).

Rice plants show a marked sensitivity to water stress at early growth stages and during panicle formation and flowering. Subjecting rice plants to any water stress during these stages will considerably reduce grain yields, Cruz *et al.*, (1986). Also, Mahrous *et al.*, (1986), Westcott and Vines (1986) and Nour (1989) reported that dry matter production, grain yield and its component

tended to decrease as irrigation interval was prolonged from six to eight days.

Weeds reduce rice yields through competition for light, water and nutrients. Most Egyptian rice farmers do not depend only on herbicides to control rice weeds. They use a management system, consisting of direct weed removal and / or chemical and cultural methods. Potential grain yield loss, caused by uncontrolled weeds in Egyptian rice, ranged from 4.42 to 7.60 t/ha, with an average grain yield loss of 6.67 t/ha Hassan and Rao, (1993 and 1994).

The main objective of the present investigation is to study the effect of some cultural practices on the productivity of the new released rice cultivar, Sakha 104 planted with broadcast method.

MATERIALS AND METHODS

Two separate experiments were conducted (each in a randomized complete block design with four replications and the plot size was 24 m^2), at farm of Rice Research and Training Center (RRTC) in Kafr El-Sheikh during 2003 and 2004 summer seasons, to study the productivity of Sakha 104 rice cultivar under the following treatments:-

1. **All recommended practices (T_1) :**

Field was well prepared, i.e., plowed twice followed by good wet leveling and nitrogen was added in the from of Urea (46% N) as recommended (144 kg/ha or 60 kg N/fed) at three split applications i.e., one third incorporated with soil immediately before flooding, one-third at maximum tillering stage and the last third at panicle initiation (P.I.).

Seeding rate was determined for each plot (the area of each plot was 4 x 6 m), as recommended (60 kg/fed). Seeds were soaked in fresh water for about 48 hours, then, incubated for 24 hours till germination. Manual broadcasting was done on May 16th and 18th of the two successive seasons.

Zinc fertilizer, in the form of Zinc sulphate (Zn So_4), was added at the end of puddling and at the rate of 10 kg/fed. as recommended, then, pregerminated and sprouted seeds of rice were broadcasted, after raising floodwater to 3-5cm, then, held for five days and drained for three days. During later stages, the field was irrigated at 5-6days interval for 35 days, then, permanent flood was introduced.

The weeds were chemically controlled, using Saturan 50% dissolved with sand and broadcasted seven days after direct sowing. In addition, hand weeding was practiced once thirty days after sowing.

2. **Without Zinc (T_2).**
3. **Without herbicide [hand weeding only] (T_3):**
   Two hand weedings were made (at two week intervals), starting from 20 days after sowing.
4. **High seeding rate (T_4): 90 kg/fed. was applied.**
5. **No soaking (T_5): dry seeds.**
6. **Irrigation every six days (T_6):**
   This treatment was applied after 35 days after seeding.
7. **Irrigation every nine days (T_7):**
   Also, this treatment was applied 35 days seeding.
8. **One dose of nitrogen (T_8):**
   Nitrogen was applied 35 days after seeding, followed by permanent flooding.
9. **Very late sowing (T_9): June 19th.**
10. **None of the recommended (T_{10}):**

The result of the chemical properties of the experimental field area is presented in Table (1).

Table (1): Soil chemical properties of the experimental site.

Prop. / Season	pH	O.M %	Total N %	P ppm	K ppm	Zn ppm
2003	8.03	2.18	0.07	12.0	389	0.74
2004	7.8	2.37	0.08	10.0	430	0.91

Studied Characters:

A- Some growth characters:

Plant samples were randomly collected from each plot at heading date (from sowing up to 75% flowering were estimated for each treatment) from an area of 0.2 m^2 to estimate; chlorophyll content (ppm), using chlorophyll meter (Model – SPAD – 5 02).; leaf area index (IAI) , the area was estimated by using leaf area meter (Model L_1 3000L), and LAI was calculated and dry matter content was estimated.

B- Grain yield and yield attributes:

Number of panicles/m^2, panicle weight (g), number of filled grains/panicle and 1000-grain weight (g) were measured.

An area of six square meters was harvested from each plot and threshed. Grain yield was estimated and adjusted to 14% moisture content.

C- Grain quality :

Grain samples (150 g) from each plot were randomly taken to determine hulling, milling and heat rice percentages at (RRTC) Technology Laboratory, according to the methods described by Juliano (1971) and Khush *et al.*, (1979).

All collected data were subjected to the standard statistical analysis following the procedures described by Gomez and Gomez (1984).

RESULTS AND DISCUSSION

A-Some growth characters:

Chlorophyll content, leaf area index (LAI) and dry matter content :

Data in Table (2) showed that chlorophyll content, leaf area index (LAI) and dry matter content for Sakha 104 cultivar were significantly increased by applying all recommended practices (T_1) Broadcasting rice seeds on second half of May was the optimum time for sowing. The optimum seeding rate (60 kg/fed.), increased

rice population and tillering and reduced the competition among rice plants and weeds. Soaking seeds for 24h, then, incubating for 48h helped to enhance germination. Similar results were reported by Inamura (1989), Kim *et al.*,(1996), El-Kallawy (2002) and El-Khoby (2004).They found that the optimum sowing date and seeding rate gave the largest LAI, dry matter production and chlorophyll content. In the same time none recommended (T_{10}) and very late sowing (T_9) treatments gave the lowest values of all above mentioned traits. Applying 10 kg $ZnSo_4$/fed after water leveling was enough to produce strong rice seedlings. The optimum nitrogen fertilizer (144 kg/ha.), applied 1/3 before flooding, 1/3 after 35 days from sowing and the last third after 65 days from sowing. Caused a stimulating effect of nitrogen on cell elongation, which increased plant height, LAI and dry matter content and, hence, the photosynthetic efficiency of rice plants, compared with its application in one dose (35 days after sowing,T_8.). Similar findings were reported by Badwi *et al.*, (1990) and El-Kady *et al.*, (1999).

Prolonging irrigation interval had a negative effect on LAI and dry matter content. This is true in (T_7) treatment. Similar results were reported by Westcott *et al.*, (1986) and Nour (1989). No application of herbicides (T_3) and non recommended (T_{10}) treatments significantly decreased all growth characters, because hand weeding only was much more difficult and less efficient in broadcast-seeded rice and a high weed density and similarity between rice and grass weed seedlings. These results are in accordance with those reported by Hassan (1996) who reported that maximum reduction in LAI and dry weight of rice plants were caused by weed competition.

B- Grain yield and its attributes:

1-Number of filled grains/panicle, panicle weight (g) and 1000-grain weight (g) :

Number of filled grains/panicle, panicle weight and 1000-grain weight, as affected by different cultural practices, are presented in Table (3). Data indicated that applying all recommendation treatments (T_1) significantly increased number of

Table (2): Growth attributes of Sakha 104 rice cultivar as influenced by different cultural practices in 2003 and 2004 summer seasons.

Treatments		Chlorophyll content		LAI		Dry matter content (g/m^2)	
		2003	2004	2003	2004	2003	2004
All recommended practices	(T_1)	40.35a	39.16a	5.15a	4.98a	1165.30a	1128.3a
Without Zinc	(T_2)	39.48b	38.04bc	4.96ab	4.75a	1105.0ab	1052.8ab
No herbicides	(T_3)	38.78c	37.93c	3.94c	3.91d	983.0bcd	951.3ad
High seed rate	(T_4)	38.23d	37.18d	4.82ab	4.70ab	1068.0ab	1038abc
No seed soaking	(T_5)	39.83b	38.74ab	4.71b	4.44bc	1107.8ab	1068.3ab
Irrigation every six days	(T_6)	39.56b	38.51b	4.07c	4.73ab	1026.8abc	971.5ad
Irrigation every nine days	(T_7)	36.66f	35.65f	3.27d	3.45ef	875.5cde	810.3d
One dose of nitrogen	(T_8)	37.55e	36.65de	4.05c	4.20c	892.8cde	871.8d
Very late sowing	(T_9)	37.08ef	36.53e	3.76c	3.71de	842.3de	849.3cd
Non recommended	(T_{10})	35.32g	34.72g	3.34d	3.24f	803.3e	787.5d

Means of each column followed by common letters are not significantly different at the 5% level according to DMRT.

filled grains per panicle, panicle weight and 1000-grain weight and ranked first, followed by no seed soaking (T_5), whereas, non recommended (T_{10}), irrigation every nine days (T_7) and delaying sowing date (T_9) significantly reduced such traits. The obtained results are in a good agreement with those reported by El-Kallawy (2002) and Dewedar, (2004).

2-Grain yield (t/ha),number of panicles /m^2 and grain yield reduction (%) :

Grain yield, number of panicles/m^2 and grain yield reduction percentage in 2003 and 2004 summer seasons are presented in Table (4). Data showed that applying all recommended (T1) practice significantly increased all of these characters. The mean values of grain yield were 9.87 and 9.48 tons/ha in both seasons respectively. This could be attributed to the increase in LAI, and dry matter content Abd El-Wahab (1998). It can, also be observed that all recommended treatments (T_1) produced the highest number of panicles/m^2 compared to the other tested treatments Sharief *et al.*,(2000), El-Kallawy(2002) and El-Khoby(2004) reported that early sowing date and optimum seeding rate gave the highest number of panicles/m^2. Also, Badaw *et al.*,(1990) stated that splitting the nitrogen dose into three splits gave the highest number of panicles/m^2 and grain yield.

Moreover, it is evident from Table (4) that any defect in applying the recommended practices caused a significant reduction in grain yield and number of panicles/m^2 for Sakha 104 rice cultivar. The highest reduction in grain yield was found with none recommended treatment (50.76% and 52.53% in 2003 and 2004 respectively.), followed by prolonged irrigation interval treatment (T_7) (47.42% and 50.73% in both respectively seasons). Similar data were obtained by Rao (1986), Westcott *et al.*, (1986), Nour (1989) and Nour *et al.*, (1994), reported that rice grain yield as well as its components, listed were decreased as irrigation interval increased. Also, it is evident from Table (4) that non-recommended (T_{10}), irrigation every nine days (T_9), one dose of nitrogen (T_8), very late sowing (T_9), no herbicides (T_3) and without Zinc (T_2) treatments had a negative effect on grain yield and almost its

Table (3): Some of the grain yield components as affected by different cultural practices in 2003 and 2004 summer seasons.

Treatments	No. of filled grains/panicle		Panicle weight (g)		1000-grain weight (g)	
	2003	2004	2003	2004	2003	2004
All recommended practices (T_1)	116.15a	121.75a	3.57a	3.69a	26.34a	25.78a
Without Zinc (T_2)	109.56ab	114.63ab	3.10bc	3.34ab	24.87bc	24.10b
No herbicides (T_3)	106.8ab	104.70bc	2.95bcd	3.09ab	23.86d	23.31c
High seed rate (T_4)	100.35bc	101.38cd	2.80cde	3.02ab	23.79d	23.87bc
No seed soaking (T_5)	109.16ab	117.83a	3.26b	3.61a	25.57b	25.26a
Irrigation every six days (T_6)	100.6bc	104.71bc	2.62e	2.72bc	24.45cd	24.15b
Irrigation every nine days (T_7)	88.75d	90.82de	1.98f	2.20cd	22.58e	22.21d
One dose of nitrogen (T_8)	92.41cd	96.0cd	3.10bc	3.39ab	23.92d	22.35d
Very late sowing (T_9)	89.86cd	96.68cd	2.69de	2.83be	22.91e	22.47d
Non recommended (T_{10})	85.21d	85.0e	1.89f	1.98d	22.54e	21.55e

Means of each column followed by common letters are not significantly different at the 5% level according to DMRT.

Table (4): Grain yield, number of panicles/m^2 and yield reduction percentage as affected by different cultural practices in 2003 and 2004 summer seasons.

Treatments		No. panicles/ m^2		Grain yield t/ha		Grain yield reduction (%)	
		2003	2004	2003	2004	2003	2004
All recommended practices	(T_1)	662.0a	643.78a	9.87a	9.48a	-	-
Without Zinc	(T_2)	595.58ab	583.13ab	8.23b	7.81b	16.62	17.61
No herbicides	(T_3)	540.25b	535.47b	7.07e	6.92cd	28.37	27.0
High seed rate	(T_4)	647.25a	642.13a	8.10b	7.64b	17.93	19.4
No seed soaking	(T_5)	621.05a	614.33a	8.16b	7.96bc	17.32	16.24
Irrigation every six days	(T_6)	548.4 b	542.88b	7.79c	7.58bc	21.07	20.04
Irrigation every nine days	(T_7)	443.98cd	439.3cd	5.19g	4.67e	47.42	50.73
One dose of nitrogen	(T_8)	438.5cd	428.03cd	7.36d	6.85d	25.43	27.74
Very late sowing	(T_9)	464.5c	456.58c	5.55f	5.17e	43.77	45.46
Non recommended	(T_{10})	390.2d	380.38d	4.86h	4.50e	50.76	52.53

Means of each column followed by common letters are not significantly different at the 5% level according to DMRT.

components. These results agreed with those of Cruz (1986), Nour (1989), Gorgy (1988), Ghanem *et al.*, (1992), Sherief *et al.*,(2000), Mettwal (2002), Slaton *et al.*,(2003) and El-Khoby (2004).

C-Grain quality:

Hulling, milling and head rice percentages:

Hulling, milling and head rice percentages as affected by different cultural practices, are presented in Table (5).

Data indicated that all recommended practices (T_1) gave the highest significant hulling, milling and head rice percentages and ranked the first, while no seed soaking (T_5) ranked the second. On the other hand, non-recommended (T_{10}) and very late sowing (T_9) practices gave the lowest significant values of such characters. As it was mentioned, delaying sowing date had a deleterious on grain filling which produced thick hulls consequently, less hulling, milling and head rice percentages. These results are in agreement with those obtained by Kim *et al.* (1996), Dewedar (2004) and El-Khoby (2004).

Table (5): Grain quality characteristics of Sakha 104 rice cultivar as influenced by different cultural practices in 2003 and 2004 summer seasons.

Treatments		Hulling recovery(%)		Milling recovery (%)		Head rice (%)	
		2003	2004	2003	2004	2003	2004
All recommended practices	(T_1)	81.32a	80.57a	71.8a	71.22a	66.82a	67.26a
Without Zinc	(T_2)	79.60b	79.09a	70.44bc	70.30b	65.67b	65.42b
No herbicides	(T_3)	75.67d	74.717c	69.08d	68.70d	62.40cd	62.58c
High seed rate	(T_4)	74.40d	73.72c	68.51de	68.58d	62.78c	62.16cd
No seed soaking	(T_5)	81.01a	79.84a	71.58ab	70.74ab	66.58a	66.90a
Irrigation every six days	(T_6)	80.35ab	79.87a	70.18c	69.37cd	65.6b	65.36b
Irrigation every nine days	(T_7)	71.90ef	71.23de	67.62e	67.43e	61.53de	61.23e
One dose of nitrogen	(T_8)	77.73 c	76.57b	70.67abc	69.95bc	62.78c	62.33cd
Very late sowing	(T_9)	72.07 e	71.76d	68.07de	67.65e	61.73de	61.68de
Non recommended	(T_{10})	70.63f	69.86e	67.53e	66.23f	61.31e	60.23f

Means of each column followed by common letters are not significantly different at the 5% level according to DMRT.

REFERENCES

Abd El-Wahab, A.E.(1998). Physiological behavior of some rice cultivars under different nitrogen levels. Egypt J. .Appl.Sci:13(4)119-129.

Aly, A.E.; M.A.Shaaln and M.I.Shaalan; (1980). Effect of nitrogen levels on performance of rice cultivars of plant types.Alex.J.Agric.Res.28:469-476.

Badawi,A.T.,Ghanem,S.A.and A.M.El-Serafy.(1990). Effect of nitrogen levels and methods of application of nitrogen status of broadcast seeded rice.Proc.4th Conf.Agron.Cairo,15-16Sep,(1990).Vol.1:331-342.

Cruz,R.T.,J.C.O.Toole;M.DingKuhn,E.B.Yambao,M.Thangari j, and S.K.De Datta (1986). Shoot and root responses to water deficits in rainfed lowland rice. Austj-Plant Physicl.13:567-577.

Dewedar G.A.A. (2004). Effects of some agricultural practices on yield, yield components and some technological characters of rice. M.S.Thesis. Agron. Dept-Fac. of Agron. Al-Azhar Univ., Egypt.

El-Kalla, S.E.; A.T.El-Kassaby; A.A. Kandil; A.N. Attia and F.O.El-Sayed (1988). Response of rice cultivar (IR28) to nitrogen levels, hill spacing and their interactions.J. Agric.Sci.13:635-641.Mansoura Univ.

El-Kallawy W.H.M. (2002). Effect of some agronomic practices on growth and yield of rice.M.S.Thesis.Agron.Dep.Fac. of Agric.Kafr El- Sheikh Tanta Univ.,Egypt.

El-Khoby W.M.H. (2004). Study of the effect of some cultural practices on rice crop.Ph.D. Thesis,Fac.Agric.,Kafr El-Sheikh,Tanta Univ.

Ghanem,S.A.; A.E. Abd El-Wahab and A.O. Bastawisi (1992). Performance of transplanted rice under different sources and methods of Zinc application. Egyptian Journal of applied science 7(7):27-36.

Gomez, K.A. and Gomez, (1984). Statistical Producers for Agricultural.Research . 2nd ,Ed. John Willey and Sons USA.

Gorgy,R.N.(1988). Effects of some agricultural treatments on rice yield and its components.M.S.Thesis,Fac.Agric.,Kafr El-Sheikh,Tanta Univ. Egypt.

Gorgy,R.N.(1995). Effects of some agricultural treatments on rice yield and quality.Ph.D. Thesis,Fac.Agric.,Kafr El-Sheikh,Tanta Univ. Egypt.

Hassan, S .M. (1996). Interference duration of *Cyperus difformis* L.in transplanted and broadcast-seeded rice (*Oryza Sativa L.*) Pages 155-161 in Proceedings of the 7th Conference of Agronomy, Mansoura Univ.Egypt.

Hassan, S.M. and A.N. Rao (1993). Integrated Weed Management for Sustainable rice production in Egypt.Int.Proc.Integrated weed management for sustainable Agri.Indian Society of weed science, Hisar. 18-20 November.Vol. 1:359-363.

Hassan, S.M. and A.N. Rao (1994). Weed species in seedling nurseries in Kafr El-Sheikh Governorate, Egypt.Int-Rice Res. Notes 19(1):24-25

Inamura, T. (1989). Estimation of heading and maturing data and potential production of rice sown directly into paddled and leveled soil. Bull of the Nara Agric.Exp.Sta.No.20:1-11.[field crop Abst.Vol.43:2475,1990].

Juliano, B.O. (1971). A simplified assay for milled rice amylose. Cereal Sci. Today (16):334-338.(340-360).

Khush, G. S.;C.M.Paule and N.M. Dela Cruze. (1979). Rice grain quality evaluation and improvement at IRRI Proc. Workshop on chemical aspects of rice grain quality.

Kim, C. J. Lee, J. Shin and M. Lee (1996). Effect of seed regimes and seed rates on growth and yield of rice in direct seeding on dry paddy.RDA J. of Agric. Sci, Rico 38(1): 79-84.

Mahrous, F.N.;A.T. Badawi and M.S.Balal (1986). IR 1626 long grain rice variety as influenced by sowing dates, seedling spacing and nitrogen levels. Proc.2nd conf. Agron. Alex.Egypt. Vol.(1):115-127.

Mettwali, T. F. (2002). Methods of Zinc, Iron and manganese application to rice grown under submerged condition. M.S. Thesis, Fac.Agric.,Kafr El-Sheikh,Tanta Univ.

Nour, M.A.M. (1989). Studies on fertilization and irrigation on rice . Ph.D. Thesis, Fac.Agric.,Kafr El-Sheikh,Tanta Univ.

Nour, M.A; A.E. Abd El-Wahab and S.A. Ghanem (1994). Broadcast seeded rice as affected by different irrigation intervals. Egypt J.Appl. Sci., 9 (8): 671-683.

Rao, S. P. (1986). Studies on planting time on productivity of BPH resistance rice varieties. Modras Agric. J. Vol. 73(7): 384-388.

Sharief, A. E., M.H. El-Hindi, A.A. Abd El-Rahman and G.M. Abdo (2000). Productivity as influenced by planting dates and seedling ages.J.Agric.Sci3:1511-1521. Mansoura Univ.,.

Slaton, N.A.S. D.Linscombe, J.R. Norman and E.E.,Jr.Cbur (2003). Seeding dat effect on rice grain yields in Arkansas Louisiana,Agron.J.218-223.

Westcott, M.P., D.M. Brandon, C.W. Lindau and W.H. Patrick, Jr. (1986). Effects of seeding method and time of fertilization on Urea –nitrogen –15 recovery in rice. Agron.J. 78:474-478.

الملخص العربي

تأثير بعض المعاملات الزراعية على إنتاجية صنف الأرز سخا١٠٤ المنزرع بطريقة البدار

رفعت نصيف جورجى ، إبراهيم محمد الرويني ، علي أبوخليفة ، إسماعيل الرفاعي

مركز البحوث والتدريب في الأرز سخا- كفر الشيخ

أقيمت تجربتان بمركز البحوث والتدريب في الأرز بسخا - كفرالشيخ في موسمي صيف ٢٠٠٣، ٢٠٠٤ لدراسة تأثير بعض المعاملات الزراعية على بعض صفات النمو ومحصول الحبوب ومكوناته وبعض صفات جودة الحبوب لصنف الأرز الحديث "سخا ١٠٤" والمنزرع بطريقة البدار . وقد

شملت كل تجربة عشرة معاملات زراعية وهي: تطبيق جميع المعاملات الموصى بها T_1 ، عدم إضافة عنصر الزنك T_2 ، عدم إضافة مبيد حشائش T_3، معدل عالي من التقاوي T_4 ، عدم نقع التقاوي T_5، إطالة فترة الري كل ستة أيام T_6، إطالة فترة الري كل تسعة أيام T_7،إضافة جرعة واحدة من التسميد النيتروجيني T_8 ، تأخير ميعاد الزراعة T_9 ، عدم تطبيق أي من التوصيات الموصى بها في الزراعة البدار T_{10} .

يمكن تلخيص أهم النتائج كمـــا يلـــي:-

١.وجود اختلافات معنوية في صفات النمو وكذلك محصول الحبوب ومكوناته وأيضاً بعض الصفات التكنولوجية للحبوب.

٢.أعطت المعاملة (T_1) والتي تم فيها تطبيق جميع المعاملات الموصى بها أعلى القيم بالنسبة لمحتوى الكلوروفيل ودليل مساحة الورقة والمادة الجافة بينما كانت أقل القيم هي المعاملة (T_{10}) وهي غياب جميع هذه المعاملات ، تبعها المعاملة (T_7) وهي زيادة فترات الري إلى تسعة أيام وكذلك المعاملة (T_9) والخاصة بتأخير ميعاد الزراعة حتى التاسع عشر من شهر يونيو.

٣.تطبيق جميع المعاملات الموصى بها في زراعة الصنف "سخا ١٠٤" أعطى أعلى القيم في كل من محصول الحبوب ، عدد الداليات بالمتر المربع ، وزن الدالية وعدد الحبوب الممتلئة بالدالية ووزن الألف حبة بالمقارنة بباقي المعاملات وسجلت أقل القيم عند عدم تطبيق جميع المعاملات الموصى بها وأيضاً زيادة فترات الري إلى تسعة أيام وتأخير ميعاد الزراعة .

٤.تأثرت معنويا بعض صفات الجودة للحبوب (تصافي التقشير والتبييض و نسبة الحبوب السليمة) نتيجة غياب بعض المعاملات وكانت أقل القيم نتيجة عدم إضافة أي من تلك المعاملات الموصى بها (T_{10}) تليها زيادة فترات الري الموصى بها إلى تسعة أيام (T_7) وتأخير ميعاد الزراعة (T_9).

٥.أظهرت الدراسة أن أي تقصير في تطبيق أي من المعاملات الزراعية الموصى بها في زراعة الأرز البدار أو عدم تطبيقها جميعاً يؤدي إلى نقص في محصول الحبوب للصنف الحديث "سخا١٠٤" وهذا النقص في المحصول تراوح بين حوالي ١٧-٥٠% و١٦-٥٢% خلال موسمي الزراعة على التوالي.