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PERFORMENCE OF TWO HYBRID RICE AND SAKHA 101 RICE CULTIVARS TO THREE NITROGEN LEVELS AND THREE SOWING DATES

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ABSTRACT

This experiment was conducted in 2004 and 2005 seasons to study response of two hybrid rice varieties H1 (SK 2034), H2 (SK 2046) and the pure line cultivars Sakha 101 to three levels of nitrogen fertilizer and three sowing dates. Three nitrogen levels used were (55, 110 and 165 kg N/ha). Three sowing dates were (15th April, 1st May and 15th May). Results showed that H2 surpassed other varieties under study in number of days from sowing to (maximum tillering and panicle initiation),leaf area index at complete heading, LAI and CGR at 74 days after sowing, amylose content, and grain yield (t/ha). In the other hand H1 gave the highest value of no of days from sowing up to heading date, LAI and CGR at period 60 and 67 days after sowing. While Sakha 101, outperform in protein content and light penetration. H2 with 165 KgN/ha, gave the highest value of LAI at 1st may date of sowing. However H1 with 165 KgN/ha) gave the highest value in chlorophyll content. All attributes studied were increased form 165 (kg N/ha. 1st May gave the highest value of number of days from sowing up to maximum tillering, panicle initiation, leaf area index at complete heading, LAI, C.G.R.at three dates after sowing (60,67 and 74), Amylose content, and grain yield except light penetration were decreased.

Key words: *Hybrid rice, Sowing date, N-level.*

ITRODUCTION

Rice crop is a main cereal crops in Egypt allover the world. Rice hybrids have a mean yield advantage of 10-15 % over inbred varieties (Li 1981, Yang and Sun 1988).Growth and development processes associated with higher grain yields of rice hybrids include a more vigorous and extensive root system (Li 1981, Yang and Sun 1988),increased growth rate during vegetative growth (Yamauchi 1994), more efficient sink formation and greater sink size (Kabaki 1993) , greater carbohydrate translocation from vegetative plant parts to the spikelets (Song *et al* 1990), and larger leaf area index (LAI) during the grain-filling period, but the physiological basis for heterosis remains unknown (Peng 1998). Specific characteristics of the uptake and physiology of N in hybrid rice appear to play a key role in this. Sowing dates is one of the most factors affecting the yield of rice. Whereas, it had a pronounced effect on physiological process and development and (duration) and yield of rice. El-Hity *et al* (1987) found that the number of days from sowing up to panicle initiation (P.I), maximum tillering (M.T.), heading dates (H.D.) and grain yield (T/ha) were drastically reduced with delay of sowing time. Kabai (1991), in Japan reported that delaying sowing date of rice from May 10th to May 30th reduced the spikelet

number/panicle and grain yield while sterility percentage was increased. Abou Khalifa (1996) found that plant height, number of tillers/m^2, and crop growth rate at 75-90 and 90-105 days from sowing were significant decreased by the delay in sowing dates from May 25th to June 15th . Dewedar (2004) found that sowing rice on May 15 gave the highest value of grain yield and straw yield. El-Khoby (2004) showed that delaying sowing date sharply decreased the leaf area index, dry matter production and chlorophyll content. In addition, delaying sowing date up to June 15th significantly reduced the period from sowing to heading. Abou Khalifa (2005) found that number of days from sowing up to maximum tillering, panicle initiation and heading date were significant affected by different sowing dates. The number of days from sowing up to maximum is tillering, panicle initiation and heading dates were increased under early sowing (April 20th) and gradually decreased with delayed sowing up to May 20th . El-Refaee *et al* (2005) showed that some inbred rice cultivars produced more dry matter production at booting stage, while, the highest dry matter at complete heading stage was obtained by Sakha 101, 104 and Giza 178. However, Sakha 101 and Giza 178 gave the highest crop growth rate (CGR) at the first and second stage, respectively.

Hiremath and Patel (1998) and Sharief *et. al.* (1998) stated that the rice growth in terms of leaf area index, dry matter production, flag leaf area, yield and yield components significantly responded to raising nitrogen level up to 165 kg N/ha. Interestingly, Kamla *et al* (2002), Omina El-Shayieb (2003), Shivay and Singh (2003), El-Sherief *et al* (2004), Singh *et al* (2004) reported that increasing nitrogen levels significantly increased rice growth, yield and its components.

MATERIALS AND METHODS

A field experiment was conducted at Rice Research and Training Center (Sakha-Kafr El Sheikh, Egypt). In 2004 and 2005 rice growth season the performance of the investigation was to study the performance of hybrids and pure line variety to different sowing dates and nitrogen levels.Three rice varieties ;hybrids H1 (SK 2034), H2 (SK. 2046) and the pure line variety Sakha 101 were tested.

Three nitrogen levels were used were 55, 110 and 165 kg N/ ha in the urea form (46.5%N) for two splits (2/3 dose was applied mixed in the dry soil before flooding, 1/3 dose was added at panicle initiation stage of each rice variety).

Soil sample from the experimental sites were collected from 0-30 cm depth. Sub sample were taken to the laboratory for chemical analysis according to Black *et al* (1965). The soil analysis is presented in Table (1).

Table 1. Soil chemical analysis of the experimental sites

Soil characters	2004	2005
PH	7.8	7.7
EC	1.6	1.7
Organic matter %	2.2	2.6
Total N%	0.32	0.39
Available P ppm	17.95	20.20
Available K ppm	685.0	598.0
Available Zn ppm	1.4	1.9
Total soluble salts (mg/L)	10	14.0

Three sowing dates were used at 15th April, 1st May and 15th May with seedling age 28 days were transplanted in hills spaced 20X20 cm for all rice varieties in 3X5 meters plots. All cultural practices were applied as recommended for all rice varieties the same. As split-split plot design with four replications was used. Sowing dates were allocated to the main plots, nitrogen levels in the sup-plot while rice varieties in the sup-sup plots. Crop growth rate (CGR) (cm/stem/ week)was determined as the increases of plant materials in unit of ground area (m2)/ unit of time as the following equation: CGR=(W2-W1)/(T2-T1)g/m2/week where: W1 and W2 refer to dry weight at time T1 and T2 weeks, respectively according to Watson (1952).Leaf area index (LAI) is the ratio between the leaf area (cm)Leaf area (dm2).Leaf area (dm2)= 0.75 X length X width. Amylose content was estimated according to Juliano (1971). Protean content in grains was calculated by multiplying the total nitrogen value in rice grains by 5.95 as acternined by (Block *et al*1965). Heading dates was recorded for each single variety considering the number of days from sowing up to 50% heading. After complete heading, leaf area index and total chlorophyll content in the leaves of plants were recorded using chlorophyll meter 5 SPAD-502 Minolta Camera Co. Ltd., Japan. (Futuhara *et al* 1979).Light penetration was determined by Lux/meter Pu 150 K-Pu), Number of tillers /hill was counted average number of tillers for five hills collocated. Grain yield was measured from 12 M2 (3 X 4 m) in the center of sub-plot. Grain yield was adjusted to 14 % moisture content determined according to Yoshida (1981) Milling percentage was measured according to the method described by Julino (1971) and khush *et al* (1979). Data collected were subjected to statistical analysis of variance according to Gomez and Gomez (1984) using IRRISTAT computer program.

RESULTS AND DISCUSSION

The effect of sowing dates, nitrogen levels, hybrid and inbred rice on maximum tillering, panicle initiation, heading date and leaf area index were showed in table (2).

Table 2. Maximum tillering, Panicle initiation, Heading dates and leaf area index as affected by nitrogen levels and same rice varieties under different date of sowing.

Characters / Treatments	Maximum Tillering		Panicle initiation		Heading dates		Leaf area index(cm)at complete heading	
	2004	2005	2004	2005	2004	2005	2004	2005
Sowing dates								
15th April	65	63	71	67	105	103	5.31	5.08
1st May	68	66	72	69	107	105	5.63	5.41
15th May	67	65	70	71	105	102	5.18	4.90
LSD at 5%	1.53	1.72	1.00	1.70	1.02	1.67	0.23	0.26
Nitrogen levels								
N1 55 kg/ha	64	63	70	67	103	100	4.73	4.56
N2 110 kg/ha	68	65	72	70	106	103	5.38	5.16
N3 165 kg/ha	69	67	73	68	108	107	6.01	5.67
LSD at 5 %	2.29	2.24	1.60	1.39	2.40	3.23	0.64	0.55
Rice varieties								
H1	67	65	74	72	108	103	5.36	5.14
H2	70	68	75	72	106	104	5.77	5.54
Sakha 101	62	61	65	63	102	103	4.99	4.71
LSD at 5 %	4.17	4.01	5.5	5.18	3.02	0.76	0.39	0.42

Data in Table (2) showed that sowing date at 1st May gave the highest value for number of days from sowing up to maximum tillering, heading date and leaf area index. While sowing date at 15th April gave the lowest value for all the precedent attributes except for leaf area index when the lowest value was recorded at 15th May. These results were for both seasons. Maximum tillering, panicle initiation, heading dates and leaf area index were increased by increasing nitrogen levels up to 165 kg/ha for both seasons and the maximum value was obtained with the Nitrogen level 165kg/ha and the lowest value was obtained with 55 kg/ha. H2 hybrid rice gave the highest value for number of days from sowing to maximum tillering, panicle initiation and leaf area index without significant effect between H1 and H2 hybrid rice varieties these data are in agreement with those reported by Kabai (1991), Hiremath and Patel (1998) and Sharief *et al* (1998), Khoby (2004), Abou Khalifa (2005) and El-Refaee *et al* (2005).

Data in Table (3) recorded that leaf area index at three stage(60, 67 and 74 DAS) and chlorophyll content were increased under 1st May date of sowing while 15th May gave the lowest value for all attributes under study. Leaf area index and chlorophyll content were significant increase by increase nitrogen levels up to 165 kg /ha. Leaf area index at two growth

stage (60, 67 DAS) and chlorophyll content were increased for H1 hybrid rice variety while H2 surpassed the other varieties in leaf area index at third growth stage (74 DAS). These results are in agreement with those reported by (Song *et al* 1990), (kabaki 1993), Hiremath and Patel (1998) and Sharief *et al* (1998) Peng (1998). El-Khoby (2004) and El-Refaee *et al* (2005).

Figure (1-A): showed the effect of the interaction between nitrogen levels and rice varieties on LAI. H2 hybrid rice with 165 (KgN/ha) gave the highest value of leaf area index. While Sakha 101 with 55 (kg N/ha) gave the lowest value in leaf area index. Fig (1- B) sowed that H2 under 1st May date of sowing gave the highest value for L.A.I. previous. The brews data are in a good harmony with those reported by Dewedar (2004) Kamla *et al.* (2002), Omina El-Shayieb (2003), Shivay and Singh (2003), El-Sherief *et al* (2004), and Singh *et al* (2004).

Table 3. Effect of sowing dates, nitrogen levels and same rice varieties on leaf area index and chlorophyll content.

Characters / Treatments	Leaf area index						Chlorophyll content	
	after 60 DAS		after 67 DAS		after 74 DAS			
	2004	2005	2004	2005	2004	2005	2004	2005
Sowing dates								
15th April	2.78	2.63	3.56	3.43	5.51	5.49	36.28	33.89
1st May	3.01	2.83	3.91	3.76	5.79	5.79	40.11	36.00
15th May	2.63	2.51	3.46	3.26	5.36	5.36	34.42	31.92
LSD at 5%	0.19	0.16	0.24	0.25	0.22	0.22	2.90	2.04
Nitrogen levels								
N1 55 kg/ha	2.55	2.42	3.37	3.23	5.19	5.16	34.00	30.92
N2 110 kg/ha	2.79	2.63	3.63	3.46	5.55	5.55	37.97	34.17
N3 165 kg/ha	3.08	2.91	3.93	3.74	5.93	5.93	39.69	36.72
LSD at 5 %	0.26	0.24	0.28	0.24	0.37	0.38	2.92	2.91
Rice varieties								
H1	2.97	2.81	3.75	3.58	5.48	5.46	37.78	37.33
H2	2.89	2.74	3.74	3.56	5.96	5.96	34.89	33.86
Sakha 101	2.56	2.42	3.44	3.29	5.22	5.22	36.94	30.61
LSD at 5 %	0.21	0.21	0.17	0.16	0.38	0.38	1.49	3.36

F=days after sowing

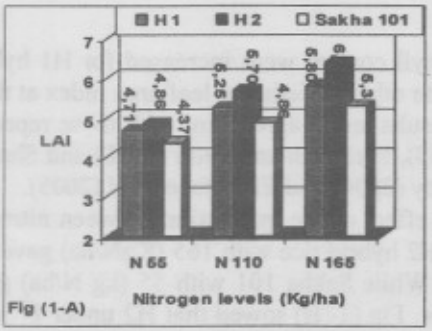
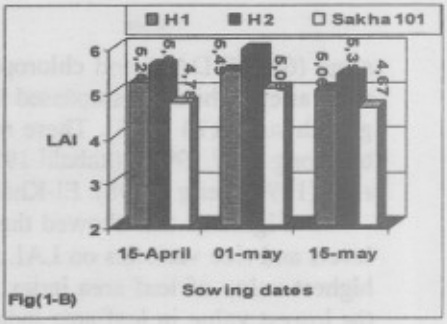


Fig (1-A)

Fig (1-A) Effect of the interaction between Nitrogen levels and some rice varieties on LAI



Fig(1-B)

Fig (1-B) Effect of the interaction between sowing dates and some rice varieties on LAI

Data in Table (4) indicated that 1st May gave the highest value of CGR at three growth stage (60, 67 and 74) and light penetration in both seasons. While 15th May gave the highest value at two stage 60 DAS in 2004 season and 74 DAS in 2005 season. So no significant affect was found between 1st May and 15th May sowing dates for CGR in both seasons. CGR at three stages were increased by increasing nitrogen levels up to 165 kg/ha .Light penetration was decreased by increasing nitrogen levels up to 165 kg/ha. H1 hybrid rice variety surpassed the other varieties for CGR at first growth stage. but H2 hybrid rice gave the highest value for CGR at second and third growth stage (67 DAS, 74 DAS) while Sakha 101 gave the lowest value for CGR at three growth date, but light penetration was increased with Sakha 101 cultivar. These data are in complete conformity with those obtained by Yang and Sun 1988), Abou Khalifa (1996), Kamla *et al* (2002), Omina El-Shayieb (2003), Shivay and Singh (2003), El-Sherief *et al* (2004), Singh *et al* (2004), and El-Refaee *et al* (2005).

Figure (2-A). showed the effect of nitrogen levels and some rice varieties on crop growth rate (CGR). The interaction between 165 (kg/ha) with H2 hybrid rice gave highest value in (CGR) while Sakha rice cultivar with 55 kg/ha gave the lowest value of CGR. On the other hand Fig (2-B) showed the effect of the interaction between sowing dates and rice varieties. H 2 hybrid rice with 1st May date of sowing surpassed other varieties of CGR. However H 1 with 15-May date of sowing gave the lowest value of CGR. Kamla *et. al.* (2002), Omina El-Shayieb (2003), Shivay and Singh (2003), El-Sherief *et al* (2004), Singh *et al* (2004) Khoby (2004), Abou Khalifa (2005). El-Refaee *et al* (2005).represented similar results.

Table 4. Effect of Sowing dates, nitrogen levels and same rice varieties on crop growth rate (CGR) at different growth stages and light penetration.

Characters / Treatments	CGR at three growth stage						Light penetration	
	after 60 (DAS)		after 67 (DAS)		after 74 (DAS)			
	2004	2005	2004	2005	2004	2005	2004	2005
Sowing dates								
15th April	5.92	3.56	44.31	42.11	6.11	6.25	4111	4183
1st May	6.73	5.42	52.48	49.25	6.99	5.87	3936	3806
15th May	10.81	5.27	37.09	34.35	4.77	9.90	4177	4219
LSD at 5%	2.62	1.04	7.70	7.45	1.26	2.23	125	229
Nitrogen levels								
N1 55 kg/ha	7.58	4.21	23.97	31.69	4.48	3.66	4472	4481
N2 110 kg/ha	8.02	4.63	44.87	42.57	5.93	4.86	4067	4236
N3 165 kg/ha	7.87	5.41	56.03	51.45	7.47	13.49	3631	3492
LSD at 5 %	0.22	0.61	11.53	9.90	1.50	5.36	421	515
Rice varieties								
H1	7.81	4.78	41.48	39.48	5.48	7.34	3895	3972
H2	6.52	3.99	55.49	50.05	7.38	7.98	4058	4097
Sakha 101	9.13	5.47	36.91	36.17	5.01	6.69	4658	4139
LSD at 5 %	1.31	0.74	9.68	7.25	1.26	0.64	402	86.74

DAS= days after sowing
CGR=Crop growth rate

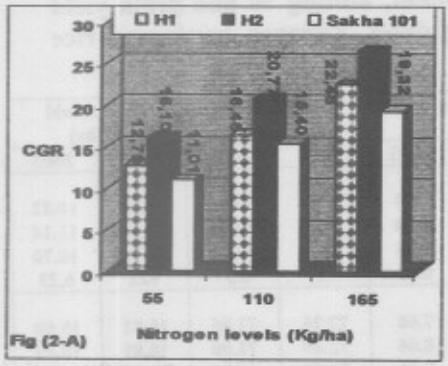


Fig (2-A) Effect of the interaction between nitrogen level and some rice varieties on CGR

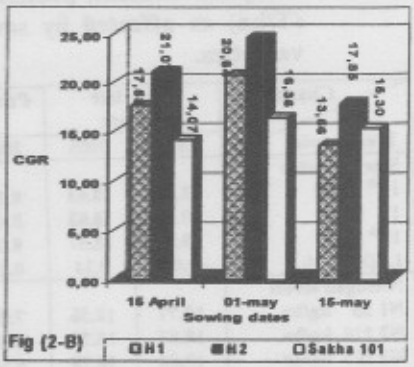


Fig (2-B) Effect of the interaction between sowing dates and some rice varieties on CGR

Figure (3): showed the effect of three growth stage on crop growth rate (CGR) and leaf area index (L.A.I). CGR gave the highest value at second stage (67 DAS) while L.A.I was increased by increasing number of days from sowing up to 74 day.

Data in Table (5) showed amylose content, protein content, milling % as affected by nitrogen levels and rice varieties under different dates of sowing. First May date of sowing gave the highest value of amylose content, protein

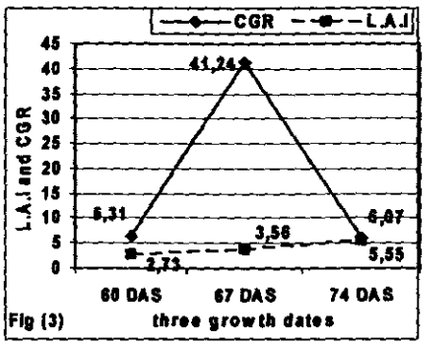


Fig (3): Effect of three growth dates on leaf area index and crop growth rate.

(2004) Kamla *et al* (2002), Omina El-Shayieb (2003), Shivay and Singh (2003), El-Sherief *et al* (2004) and Singh *et al* (2004).

Table 5. Amylose content, protein content, milling % and grain yield (T/ha) as affected by sowing dates, nitrogen levels and rice varieties.

Characters / Treatments	Amylose content		Protein content		Milling %		Grain yield (T/ha)	
	2004	2005	2004	2005	2004	2005	2004	2005
Sowing dates								
15th April	18.84	18.63	8.17	7.99	72.69	72.26	10.84	10.82
1st May	19.00	18.83	8.42	8.23	73.01	72.89	11.14	11.14
15th May	18.84	18.57	8.04	7.85	72.76	72.23	10.70	10.70
LSD at 5%	0.09	0.14	0.19	0.19	0.17	0.37	022	0.23
Nitrogen levels								
N1 55 kg/ha	18.77	18.56	7.88	7.68	72.26	71.86	10.52	10.50
N2 110 kg/ha	18.87	18.70	8.26	8.08	72.69	71.90	10.89	10.89
N3 165 kg/ha	19.04	18.78	8.50	8.31	73.40	73.31	11.27	11.27
LSD at 5 %	0.14	0.11	0.31	0.32	0.58	0.82	0.37	0.38
Rice varieties								
H1	18.62	18.41	7.94	7.73	72.42	71.98	11.48	11.46
H2	19.26	19.01	8.23	8.05	72.64	72.56	11.97	11.97
Sakha 101	18.79	18.61	8.46	8.28	72.82	72.46	9.22	9.22
LSD at 5 %	0.33	0.31	0.26	0.28	0.20	0.31	1.47	1.46

content, milling % and grain yield. While no significant effect a cured between 15th April and 15th May sowing dates. Amylose content, protein content, milling % and grain yield (T/ha) were increased by increasing

nitrogen levels up to 165 (kg/ha). H2 hybrid rice surpassed other varieties for Amylase content and grain yield (T/ha).while Sakha 101 gave the highest value of Protein content and milling %. But no significant difference occurred between Sakha 101 and H2 in milling % second season 2005. The obtained data are in a good harmony with those reported by Dewedar

Figure (4-A) showed the interaction between nitrogen levels and sowing dates on chlorophyll content. Fig (4-B) indicated effect of interaction between nitrogen levels and rice varieties on chlorophyll content. Sowing on 15th April with 110 N (kg /ha) gave the highest value of chlorophyll content while 165 kg/ha nitrogen level and 15th May sowing date gave the lowest value. H1 hybrid rice variety with 165 kg/ha nitrogen levels gave the highest value of chlorophyll content. The obtained data are in a good harmony with those reported by Khoby (2004), Abou Khalifa (2005), and El-Refaee *et al* (2005).

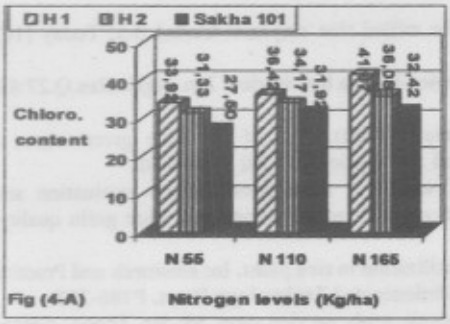


Fig (4-A)

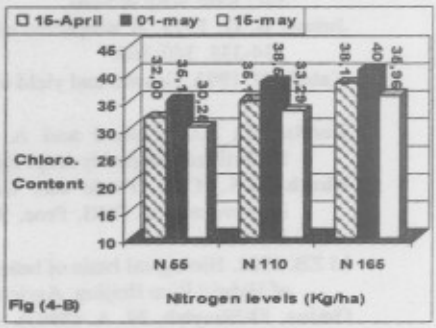


Fig (4-B)

Fig (4-A): Effect of the interaction between Nitrogen levels and some rice varieties on chlorophyll content.

Fig (4-B): Effect of the interaction between Nitrogen levels and sowing dates on chlorophyll content.

In conclusion H1 hybrid rice was the best of variety than other varieties under study, while sowing date 1st May and nitrogen level 165 (kg/ha) gave the highest values165 (kg/ha).

REFERENCES

Abou-khalifa A.A., 2005. Physiological behavior of same rice cultivars under different sowing dates and seedling ages. The 11th con. Argon. Dept., Fac., Agric., Assiut Univ., Nov., 15-16.237-244.

Abou-khalifa A.A., (1996). Effect of some cultural treatment on rice. Ms. Thesis, Fac. Agric. Moshtohor, Zagazig Univ.

BLACK, C. A., D. D. EVANS, L. ENSMINGER AND F.E. CLARK, 1965. Methods of Soil Analysis (Chemical and microbiological properties part 2) American Society of Agronomy, Inc. Publisher, Modison, Wisconson, U.S.A.

El-Hity, M. A., M. S. El-Keredy and A. G. Abdel Hafez. (1987).yield response of some rice varieties to different planting time. J.Agric. Res. Tanta Univ., 13(14):1006-1014.

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

El-Refaee, I.S., R.N.Gergy; S.El-Gewaily and W. H. El-Kallawy. (2005). Physiological aspects of grain yield variation in short and medium duration cultivars of rice growth under water stress conditions. The 11th con. Argon., Fac., Agric., Assiut Univ., Nov., 15-16.

El-Sherief, E. I.; M. El-Hity, A. A. Galel and A. Abd El-Hameed (2004). Effect of nitrogen levels, hill spacings and rice cultivars mixtures on some rice characters. J. of Agric. Sci. Mansoura Univ., 29(2):535-552.

Futuhara, Y., E. Kondo, H. Kitano and M. Mii 1979. Genetical studies on dense and lax panicles in rice. I- Character expression and mode of inheritance of lax panicle rice. Jap. J. Breed.28: 151-158.

Gomez, K.A. and A.A. Gomez 1984. Statistical Procedures for Agricultural research . 2nd Ed., John Wily & Sons.

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

Kabaki N. 1993. Growth and yield of japonica-indicia hybrid rice. Jpn. Agric.Res.Q.27:88-94.

Kamla, K.; S.C. Paliyal and A. Kanwar. (2002). Use of the blue green algae, a biofertilizer for paddy crop. Himachal J. of Agric Res., 28(1-2):96-98.

Khush, G.S., C.M. Paule and Dela Cruz 1979. Rice grain quality evaluation and improvement at IRRI. Proc. Workshop on chemical Aspects of Rice grain quality, 16(5): 28.

Li ZB. 1981. Biological basis of heterosis utilization in rice plant. In: Research and Practice of Hybrid Rice Beijing, Agricultural Science and Technology Press. P186-287.

Omina, El-Shayieb, M. A. (2003). Agronomic study on rice crop. M. Sc. Thesis, Agron. Dept., Fac. of Agric., Mansoura Univ., Egypt.

Peng S. 1998. Physiology-based crop management for yield maximization of hybrid rice. In: Virmani SS, Siddiq EA. Muralidharan k, editors. Advances in hybrid rice technology. Proceedings of the 3rd International Symposium.

Song X, Agata W, kawamitsu Y. 1990.Studies on dry matter and grain production of F1 hybrid rice in China. II. Characteristics of grain production Jpn. J. Crop Sci. 59:29-33.

Shivay, Y.S. and S. Singh. (2003). Effect of planting geometry and nitrogen levels on growth, yield and nitrogen use efficiency of scented hybrid rice (Oryza sativa). Indian J. of Agronomy, 48(1):42-44.

Singh, R. K.; V. P. Singh and C. V. Singh. (2004). Controlled release nitrogen use in rainfed shallow lowland rice (Oryza sativa) production. Indian J. of Agric Sci., 74(7):355-358.

Watson, D. I. (1952). The physiological of variation in yield. Adv. In Agron. 4:101-144.

Yamauchi M. 1994. Physiological bases of higher yield potential in F_1 hybrids In: Virmani SS, editor. Hybrid rice technology: new developments and future prospects. Manila (Philippines): International Rice Research Institute. P 71-80.

Yang X, Sun X. 1989. Characteristics of f1 hybrid rice roots. In: Hybrid rice. Manila (Philippines): International Rice Research Institute. P 159-164.

Yoshida, S, 1981. Fundamental of rice crop science. IRRI, Los Banos, Lagura, Philippines, pp, 61-225.

أداء صنفين من الأرز الهجين والصنف سخا 101 تحت ثلاث مستويات من التسميد الأزوتى وثلاث مواعيد زراعة

على عبدالله بسيونى أبو خليفة

مركز البحوث والتدريب فى الأرز- معهد بحوث المحاصيل الحقلية - مركز البحوث الزراعية.

أقيمت تجربتان حقليتان بمزرعة مركزالبحوث والتدريب فى الأرز سخا- كفرالشيخ-جمهورية مصر العربية خلال موسمى2004و2005 م بهدف دراسة أستجابة بعض أصناف الأرز الهجين و القديمه لمستويات النيتروجين المختلفةتحت مواعيد مختلفة للزراعة أستخدم لتنفيذ التجارب تصميم القطع المنشقة مرتين فى أربع مكررات بحيث احتوت القطع الرئيسية على مواعيد الزراعة وهى الزراعة عند 15أبريل و1مايو و15مايو-وأحتوت القطع المنشقة علىمستويات النيتروجين وهى (55و110و165كيلوجرام للهكتار كما وقعت الأصناف فى القطع المنشقة مرتين على ثلاث أصناف وهى الهجين 1(SK2046)والصنف هجين 2 (SK2034)والصنف سخا101.

ويمكن تلخيص أهم النتائج كما يلى:

1- أظهرت النتائج وجود فروق معنوية بين مواعيد الزراعة المختلفة حيث أعطى ميعاد الزراعة 1 مايو أعلى متوسط لعدد أيام من الزراعة حتى أعلى تفريع وتكوين سنابل و 50 % تزهير .كما أعطى أعلى نسبه لمتوسطات دليل مساحة الأوراق عند 50 % تزهير وعند ثلاثة مراحل نمو مختلفه وفى معدل النمو اليومى عند ثلاثة مراحل مختلفه ومحتوى النبات للكروفيل كما تفوق ايضا فى محتوى الامبلوز والبروتين وكذلك النسبه المئويه لتبيض الحبوب.

2- أظهرت النتائج ان عدد الايام من الزراعه حتى أعلى تفريع وتكوين السنابل و 50% تزهير و معدل النمو اليومى عند ثلاثة مراحل مختلفه ومحتوى النبات للكروفيل و محتوى الامبلوز والبروتين وكذلك النسبه المئويه لتبيض الحبوب ومحصول الحبوب للهكتار كانت تزيد بزيادة مستويات النيتروجين حتى 165 كيلوجرام للهكتار.

3- أعطى الصنف الهجين 2 أعلى القيم لجميع الصفات المدروسه السابقه عدا النفاذيه الضوئيه التى قلت مع الهجين 2 بينما الصنف سخا 101 كان يعطى أقل النتائج لجميع الصفات السابقه.

مجلد المؤتمر الخامس لتربيه النبات - الجيزه٢٧مايو ٢٠٠٧

المجله المصريه لتربية النبات ١١(٢): ٦٨١-٦٩١عدد خاص)