–   /

2009 2008   /

140 120)

( )   (1- . 180 160

1- . 180   ..( )

.   1- . 7.0 7.4

.   2- . 680.9 697.3

%7.6   1- . 7.2 7.5

.   %5.1

.

1- . 180   .

.   1- . 8.4 8.3

*

RESPONSE Of RICE TO SEEDING RATES AND HERBICIDES

Reasan K. Shati   Saddam H. Abdulraheem .Aziaadee

Dept of Field Crop Sci;Coll. of Agric; Univ of Baghdad

ABSTRACT

A field trial was carried out at Mishkab Rice Research Station, Al-Najaf governorate during the summer seasons of 2008 and 2009 to investigate the effects of seeding rates (120,140,160 and 180 kg.ha^{-1}) and herbicides (control, oxadiazon, propanil and weed-free) on some growth charactristics, yield and its components of Yasamin rice cultivar. The design used was split plot RCBD with arrangement by four replicates. The results indicated that the seeding rate 180 kg . ha^{-1} was superior in giving the highest values of grain yield, 7.4 and 7.0 ton.h^{-1} in both seasons, respectively, These increases were due to the highest number of tillers.m^{-2} (697.3 and 680.9 tillers.m^{-2}), respectively. Also, this seeding rate gave the highest average of plant height (87.9 and 83.5 cm). For herbicide treatment oxadiazon gave highest grain yield, 7.5 and 7.2 ton.h^{-1} in both seasons, respectively,as compared with propanil. It also gave lowest percentage (7.6% and 7.8%) of fertility. It can be concluded that seeding rate of 180 kg.ha^{-1} and using oxadiazon was the that best combination effective control of weeds, and the highest grain yield in both –seasons.

(*Oryza sativa* L.)

(9)

2007 658

162

(16) 1- ‏.‏ 4.08

%90 (21)

%40

(1).

(11).

(5). Johnson (20)

2- ‏.‏ 11.0 %25.0

%49.0

79.0% ‏.‏ 2- 54.0

269.00 ‏.‏ 2-‏.‏

(29) Norman Slaton

(26).

%70

‏.‏

‏.‏

(19).

/

2008 2009

1- ‏.‏ 180‹160‹140‹120 2007

2.664 123.363

( ) ‏.‏ 328.509 1- ‏.‏

(2).

30   35

.(3)   .

(5× 3)

8 -5   .   30   10

.   25

1-   .   10   .

3

17   1-   .   2008/6/23

2008/11/13

1-   .   180 160 140 120   2009/11/10   2009/6/17

1   1-   .   72

.   (18 -18)N P

130

(N%46)   1-   .

.   **.1**

Oxadiazon	Ronstar	[2-tert-butyl-4-(2,4-dichloro-5-isoproxphenyl)]
Propanil	Stam- F-34	N-(3,4-dichlorophenyl) propanamide

10

( )

.

2 2   :

) =

100×(/

%14   :2- .(   )

.1-   .   2- 0.3

:(28)

/   ) =   .

100× (10

.(+   )

%5

.(31)

.2   **2009   2008.**

الاسم العلمي	الاسم الانكليزي	الاسم العربي
Echinochloa crus-galli L.	Barnyard grass	الدنان
Echinochloa colonum (L) Link.	Panic grass	الدهنان
Cyperus spp L.	Nut grass	السعد
Paspalum distichum L.	Paspalum	السلهو
Cyperus odoratus L.	Calingale	التخيتة
Diplanche fusca (L) Beaur.	Sabat	السبط
Scirpus littoris L.	Coast clubrush	السجل

)

.(2   2

%7.6

%6.2 %5.1 %7.8   .

%12.2   %12.0   [1-]   .   180

.   %8.7   %10.1

120   .

[1-]   .

.   %5.5   6.3

.

(15)   Chin (1)

(4)

.

(7 6)   .

(13)   Bond

[1-]   .   120

%4.3   %5.9   Zeng

(32) Shannon

[1-]   .   180

.

%15.8 15.5   .

3.   %   .2009 2008.

	(. -1)				
12.0 **12.2**	**15.5** **15.8**	**14.1** **13.7**	**9.5** **11.3**	**8.7** **7.9**	
7.6 **5.1**	**9.1** **5.8**	**7.8** **5.7**	**7.6** **4.5**	**5.9** **4.3**	**Oxadiazon**
7.8 **6.2**	**9.3** **6.8**	**7.8** **6.7**	**7.4** **6.0**	**6.6** **5.2**	**Propanil**
5.4 **5.2**	**6.3** **6.3**	**6.0** **5.0**	**5.3** **4.9**	**3.9** **4.8**	
0.4 **1.3**				**0.7** **1.8**	**%5. . .**
	10.1 **8.7**	**8.9** **7.8**	**7.5** **6.7**	**6.3** **5.5**	
				0.3 **0.8**	**%5. . .**

.

Bond (12)   Bond (13)

3

.   .

180   . -1

.   697.3 680.9 . -2

120   .

649.5 636.4

-1 .

659.7 673.7 . -2   537.7 586.7 . -2

180   . -1

489.2 480.8   %26.6 %18.8

. -2 .   .

%32.7 %30.0 %37.2 %40.1

706.2 705.4 . -2

.

Awan (7)   (10)

685.5 .-2

Mann 120 .-1

Chin (23) (15)

(4) 411.0 .-2

180 .-1

724.5 .-2

3 120 .-1

451.3 .-2

180 .-1

2008 .-2 **.4**

.2009

معدل المبيدات	معدلات البذار (كغم .هـ ⁻¹)				معــــــاملات المبيدات
	180	160	140	120	
489.2	538.2	541.2	466.3	411.0	المدغلة
480.8	558.5	458.0	455.5	451.3	
649.5	685.5	665.0	645.0	602.5	Oxadiazon
659.7	714.0	677.7	633.2	613.7	
636.4	683.2	679.7	625.0	557.5	Propanil
673.7	724.5	705.7	638.5	631.5	
706.2	816.5	795.0	633.5	580.0	
705.4	792.2	405.7	673.5	650.0	
22.1				50.53	%5. . .
18.2				35.31	
	680.9	670.2	592.4	537.7	
	697.3	635.4	600.2	586.7	
				27.0	%5. . .
				18.2	

.

1-   .   116.6

4

113.6   120   .
1-   .   107.2   1-   .   1-   .
                                                        1-   .   118.6 131.0
109.2   1-   .   180
      .   1-   .

                                                        1-   .   106.1 119.9

                        %8.2 %7.9
                        %5.9   .   %11.8   9.2

                              .

            (8   )

Awan)   .
Chin 23   Mann 10   Compensation
        (4   15   (Relationship)

                  .   Zeng   .
                                (1)   (32) Shannon
120)   (10)   Awan (7)
                              (1-   .
.   1-   .   130.5   Keisling   .
120   (6)   (22)
                              1-   .
-    .   120.4   .
-    .   180   1
                                          1

1-   .   100.4 110.9   .

.   %20.3 17.6   1-   .   126.2 125.7

.2009 2008   . 5

معدل المبيدات	معدلات البذار (كغم .هـ [1])				معـــــــــاملات المبيدات
	180	160	140	120	
116.6	110.9	112.3	116.0	127.3	المدغلة
107.2	100.4	106.2	107.0	115.5	
125.7	122.1	125.7	125.7	129.2	Oxadiazon
113.6	108.6	110.4	115.0	120.4	
126.2	120.7	124.0	129.6	130.5	Propanil
109.2	112.1	103.5	114.6	115.1	
130.3	125.7	128.5	130.0	137.0	
118.2	112.1	117.9	119.9	123.5	
4.7				8.8	%5 . . .
5.8				9.7	
	119.9	122.6	125.3	131.0	
	106.1	109.5	113.9	118.6	
				4.4	%5 . . .
				4.7	

.

               (8)   (19) Helms   **1000**

                                       5

                         1000   1000

                         120   .

                         20.3   [1] .

      (10)   Awan   (7)   20.5

(13)   Bond (12)   Bond   [1] .   180

                       20.2 19.9   1000

         1000

                             1000

                      %0.5 2.1

                           1000

.

(24)   Miller

            (6)

.

                1000   Gravois

.

1000

20.2 20.2

120 . 1000 19.7

[1] . %2.4

20.4 1000 . %2.1

[1] . 180 (8)

19.5 1000

120 .

[1] . Sinpes . 1000

20.5 1000 Chin (10) Awan (30)Street

[1] . 180 (15)

19.9 1000

. (4) . 1000

.

.6 .2009 2008

معدل المبيدات	معدلات البذار (كغم .هـ ⁻¹)				معـــــــاملات المبيدات
	180	160	140	120	
19.7 20.1	19.5 19.9	19.6 19.9	19.7 20.3	20.0 20.4	المدغلة
20.2 20.4	20.1 20.3	20.1 20.4	20.2 20.3	20.4 20.4	Oxadiazon
20.2 20.4	20.1 20.2	20.3 20.4	20.3 20.5	20.3 20.5	Propanil
20.2 20.4	20.0 20.2	20.1 20.2	20.1 20.4	20.6 20.8	
0.1 0.3				0.3 0.4	%5 . . .
	19.9 20.2	20.0 20.2	20.1 20.4	20.3 20.5	
				0.1 0.2	%5 . . .

.

1-   .   8.0   8.1

.   .(6   )   1-   .

160   140   120

6.7   1-   .   180

1-   .   7.4   7.2   7.0

)   (3   )   .1-   .   7.0   6.9   6.8   6.6

(5   )   1000   (4

Ottis   .   %6.6   %10.5

(15)   Chin   (27) Talbert

Mussavi   (4)

(26)

Gravois   .

(1)   (18) Helms

(13)   Bond   (7)

(17)   Gibson

.   (27) Talbert   Ottis   (14)Caton

.   .

1-   .   120

6.9   7.3   .

1-   .

1-   .   120   6.9   7.2   7.3   7.5

1-   .   4.9   1-   .

1-   .   180

1-   .   7.6   7.8   1-   .   5.2   5.4

1-   .   5.8

^{1 -} .   5.6   ¹⁻ .   120

(Weed-Free)   ¹⁻ .   6.7 7.1

¹⁻ .   120

.   ¹⁻ .   4.8

¹⁻ .   180

.   ¹⁻ .   7.0 7.3

¹⁻ .   180

.2009 2008   ¹⁻ .   **.7**

معدل المبيدات	معدلات البذار (كغم .هـ ⁻¹)				معـــــــاملات المبيدات
	180	160	140	120	
5.4	5.8	5.6	5.3	4.9	المدغلة
5.2	5.6	5.3	5.3	4.8	
7.5	7.8	7.5	7.5	7.3	Oxadiazon
7.2	7.3	7.2	7.1	7.1	
7.3	7.6	7.4	7.3	6.9	Propanil
6.9	7.0	6.9	6.9	6.7	
8.1	8.4	8.4	8.0	7.7	
8.0	8.3	8.0	7.9	7.8	
0.1				0.2	%5. . .
				0.3	
	7.4	7.2	7.0	6.7	
	7.0	6.9	6.8	6.6	
				0.1	%5. . .
				0.1	

.

.

Talbert Ottis (32) Shannon Zeng   7

(27)

.   120   .

(8)   %43.9   ¹⁻ .

%42.6

(7)   ¹⁻ . 180

200   %40.1 %41.3

¹⁻ .   .

.

.

%45.4

‎1-‎ . 120   .

‎1-‎ . 120   %43.9

%44.1 %43.1 %42.0

.   %44.4

‎1-‎ . 140   37.3

%33.7 %37.0   .   %34.4

.

‎1-‎ . 120   45.3

%45.2.

(6   )

.

.   (25) Singh   Mukherjee

(4)

.

.

.8   **%**   **2008 2009.**

معدل المبيدات	معدلات البذار (كغم .هـ$^{-1}$)				معاملات المبيدات
	180	160	140	120	
37.3	37.2	37.4	37.0	37.6	المدغلة
34.4	34.2	34.0	33.7	35.7	
43.9	42.0	43.7	45.1	45.0	Oxadiazon
43.1	42.5	42.5	43.2	44.4	
44.1	42.6	43.9	44.1	45.4	Propanil
42.0	41.0	42.0	41.5	43.5	
45.3	43.5	44.0	46.1	47.6	
45.2	43.0	44.0	47.5	46.7	
0.5				1.3	%5. . .
0.8				1.7	
	41.3	42.3	43.1	43.9	
	40.1	40.6	41.4	42.6	
				0.7	%5. . .
				0.9	

.

(2004)

8

.   Gibson   (2001)

180   . $^{-1}$

58.17 61.11 . $^{-2}$.

120   . $^{-1}$

90.20 68.28

. $^{-2}$.   33.90 47.40 31.16

35.98 . $^{-2}$

212.30 194.96 . $^{-2}$

.

%83.71 %78.11 %84.03 %81.60

.   Mukherjee

Singh(2005)   Mann   (2007)

Singh   (2007)

.

Awan   (2002)

2-   25.00   23.59

120

1-   . 140   1-   .   .

.

1-   . 180

.   2-   244.20   200.94

.9   **2008   2009.**

معدل المبيدات		معدلات البذار (كغم .هـ ¹⁻)				معاملات المبيدات
	180	160	140	120	
194.9	190.42	194.0	200.9	224.2	المدغلة
194.9	190.4	194.0	200.9	194.4	
33.9	25.0	26.6	34.1	49.8	**Oxadiazon**
31.1	23.6	30.3	34.3	36.4	
47.4	31.3	34.6	56.8	66.8	**Propanil**
35.9	30.4	31.6	39.6	42.2	
0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	
6.2				11.5	%5. . .
5.9				9.4	
	58.1	66.2	79.0	90.2	
	61.1	64.0	68.7	68.2	
				6.6	%5. . .
				5.4	

.

.
.26-18 :(4) 40 .

5-   . 2000 .

%

.   .
.   /   -
.89
6-   . 1998 .
(Oryza
(8   )
.(sativa L.   .
/   -
.98   .
7-   . 2004 .
.(Oryza sativa L.)   %

-              .
.175   .   /
1-   .1998 .
.2002 .   8-
(Oryza sativa L.)

.

-              .   .(Oryza sativa L.)
.125   .   /   .113 -103 (7) :7 .
9-   . 1993 .   2-   .2007.

-      .

.   .3 .

.469   .   -   3-   .1997 .
10-Awan,I. U, K. Hayat, G. Hassan,   (2)
M. Kazmi and N. Hussain. 2004.
Effect of seeding rates and   -
herbicides on weed dynamics a   .4 .   /   .
yield of direct wet-seeded rice. Pak.
J. Weed Sci. Res. 10(3-4):119-128.   -4
11-BaltazaL, A. M and R. J. Smith.   . 2009 .
1994.Propanil-   resistance

edu/cancelado/Spchapters/ Johnson Sp. htm

21-Julaino,B.O.1993.Rice in human nutrition. FAO Food and Nutrition Series. No.26.Rome.Italy.

22-Keisling,T. C. 1995. Emergence date mediation of rice yield responses to equidistant spacing. Field Crop Search. 41(3): 167-171.

23-Mann, R. A, S.Ahmad, G.Hassan and M.S .Baloch. 2007. Weed management in direct seeded rice crop.Pak.J. Weed Sci.13(3-4):219-226.

24-Miller,B.C; J.E. Hill and S.R. Roberts. 1991. Plant population effects on growth and yield in water-seeded rice. Agron. J. 83:291–297.

25-Mukherjee, D. and R. P. Singh. 2005. Evaluation of herbicides to control weeds in trans planted rice. Pest Science & Management. www.irri.org/publication /irrn/pdfs/vol 130 no2/pest.pdf

26-Mussavi,S.H, K.Alamisaeid, G.Fathi, M.H. Gharineh,M.R. Moradi -Telavat and A.Siahpoosh.2009.Optimum rice density and herbicide application in direct seeding in Ahwas region. Asian.J.1(1):58-62.

27-Ottis, B. V. and R. E. Talbert. 2005. Rice yield components as affected by cultivar and seeding rate. Agron. J. 97:1622–1625.

28-Singh, I. and N.C.Stoskopf. 1970.Harvest index in cereals. Agron. J. 63 : 224-226.

29-Slaton, N. and R. Norman. 2006. DD50 Computerized Rice Management Program. Rice Production Handbook- MP. USA. 192.

30-Snipes,C.E. and J.E.Street. 1987. Rice(*Oryza sativa* L.) tolerance to fenoxaprop. Weed Sci. 35:401-406.

barnyard grass(*Echinochloa crus-galli* L.) control in rice (*Oryza sativa* L.) . Weed Tech. 8: 576-581.

12.Bond,A.J,T.Walker,P.Bollich,C. Koger and P. Gerard.2005.Seeding rates for stale seedbed rice production in the midsouthern United States. Agron.J.97:1560–1563.

13-Bond, A. J,T. Walker, B. Ottis and D. Harrell. 2008. Rice and nitrogen rate effecte on yield and yield components of two rice cultivars. Agron. J.100: 393-397.

14-Caton,B.P.2002.Simulating seed reseve mobilization and seeding growth of rice in DS rice. Field Crops Research. 76:55-69.

15- Chin, D. V, T. C. Thien, H. H. Bi and N. T. Nhiem. 2007. Study on weed and weedy rice control by imiazolinone herbicides in clearfield paddy grown by imi-tolerance indica rice variety. Omonrice 15: 63-67.

16-FAO.2008.Rice Markets Moniter. Roma.Italy.11(2):1-32.

17-Gibson,K.D,J.E. Hill,T.C. Foin,B.P. Caton and A.J. Fischer. 2001. Water-seeded rice cultivars differ in ability to interfere with watergrass. Agron. J. 93:326–332.

18-Gravois,K.A and R.S. Helms.1992.Path analysis of rice yield and yield components as affected by seeding rate. Agron. J. 84: 1–4.

19-Hill,J.E, R.J. Smith and D.E. Bayer. 2008. Rice weed control: current technology and emerging issues in temperate rice. Aust. J.34(7): 1021 – 1029.

20- Johnson. D. E. 1996. Weed management in small holder rice production in the tropics. www. ipmworld. umn.

32-Zeng, L. and M.C. Shannon. 2000. Effects of salinity on grain yield and yield components of rice at different seeding densities. Agron.J.   92:418-   423

.

31-Steel, R.G. and J.H. Torrie. 1980. Principles and Procedures of Statistics. Mc Graw Hill Book Company Inc, USA.pp . 485.