

(2)

(1)

(×) (×) (× 1) : (F4) (*Hordium vulgare* L.)
.(×)
2007

1000

1000

1000

1000

:

Genetic Analysis of (F4) Generation From Four Crosses in Six Row Barley

R. S.Al-Saffar⁽¹⁾ and N.K. Yousif⁽²⁾

ABSTRACT

The fourth filial generation with their parents p1 and p2 for four crosses in six row barley (*Hordium vulgare* L.): Jezera1 x Badya, Tadmer x Arivat, Rehan x Benedict and Rum x Forest. The seeds were planted in 2007 using R.C.B.D. with four replications. The data were recorded for the traits; maturity time, number of spikes, spike length, grain yield, weight of 1000 grains and number of grains per spike, to estimate average degree of dominance, heritability and expected genetic advance from selection.. The results showed that over dominance were presence for the studied traits. The values of broad sense heritability were high for the studied traits in the all crosses. The values of narrow sense heritability were (1) high for number of spikes in the all crosses, maturity time, grain yield and spike length in the second and fourth crosses and weight of 1000 grains in the second cross(2) low for the weight of 1000 grains and number of grains per spike in the fourth cross.(3) moderately for the other traits. The results of this study indicated that selection will be effective to obtain superior strains in the four crosses for the studied traits except spike length and weight of 1000 grains in the second cross. Therefore recurrent selection will be suggested to increase the desirable genes.

Key words: Six row barley, Fourth filial generation, Average degree of dominance, Heritability, Grain yield.

^{(1),(2)} Biology Dep., College of Science, University of Mosul, Iraq.

60 30
(Eshghi, 2009)

Hayman, 1960 Comstok and Robinson, 1948 Fisher, 1918)
Martinez and Kasim and Yousif,1990 Mather and jinks, 1982
2004 2002 1999 Fostur.1998
(2006 2005

1000

(P2) (P1) (F4)
: (*Hordeum vulgare L.*)
() × () 1- (1)
() × () (2)
() × () (3)
() × () (4)

(F3) (2005)

F4 P2 P1 :
Diathane M45

)

.(

30

15

:

()

() 1000 ()

.(2006)

:

(1)

V2F4

V1F4

E1

V3F4

Mather and Jinks .2006

E2

-

(1982)

D

Ew

H

Weighted least squares

Eb

:

$$\hat{B} = (X W^{-1} X)^{-1} \cdot X W^{-1} V$$

X W⁻¹ X

(X' W⁻¹ X)⁻¹ X

X :

.2006

W⁻¹

:

$$\hat{B} = \begin{bmatrix} D \\ H \\ Ew \\ Wb \end{bmatrix}, X = \begin{bmatrix} 0.5275 & 0.0200 & 0.1200 & 0.1000 \\ 0.2750 & 0.0438 & 0.2000 & 1.0000 \\ 0.1250 & 0.0625 & 1.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.2000 & 1.0000 \end{bmatrix}, V = \begin{bmatrix} V1F4 \\ V2F4 \\ V3F4 \\ E1 \\ E2 \end{bmatrix}$$

Mather and Jinks (1982)
 $h^2_{(ns)}$ $X^2_{(1)}$ $h^2_{(bs)}$ ()
H D EGA
(Allard, 1960)

.(Kempthorne,1969) %EGA

F

%1

.(1)

(D)

(2)

%5

%1

(H)

(E_w)

%1

(E_b)

%5

%5

(4) (2)

.(4)

%1

1000

1000

(X²₍₁₎)

(3) (2) (1)

- (4)

%5 %1 (X²₍₁₎)

(3) (2) (1) (4) (4)

-

(3)

(a⁻)

(%60) h²_(bs)

.(2)

) h²_(ns)

) (%50

) (2) 1000 (4) (2)

(4) 1000 (%30

(%50-30)

.

(4) (2)

(2) 1000

Esparza and Foster, Kasim and Yousif, 1990

1999 100 1998

2004 Sharma *et al.*, 2002

2005 100

100 2006

REFERENCES

- .(2004) .
.94-89 :(4) 5
.(2006) .
.178-189 :(9) 17
.(2005) .
.72-78 :(2) 33
.(1999) .
.89-84 :(4) 31
.(2002) .
.95-91:(3) 3
Allard, R. W. (1960). Principles of plant breeding. John Wiley and Sons, Inc, New York.:216.
Comstok, R. E. and Robinson, H. F. (1948). The components of genetic variance in population of biparental progenies and their use in estimating the degree of dominance. 4:245-266.
Eshghi, R. and Akhundova, E. (2009). Genetic analysis of grain yield and some agronomic traits in hulless barley. African Journal of Agricul. Rese. 4: 1464-1474.
Esparza, J. H. and Faster, A. E. (1998). Genetic analysis of heading data and other agronomic characters in barley (*Hordeum vulgare* E.). Euphytica, 99: pp. 145-153.
Fisher, R. A. (1918). The correlations between relatives on the assumption of Mendelian inheritance. Trans. R. Soc. Edinb., 52:339-433.
Hayman, B. I. (1960). Maximum likelihood estimation of genetic components of variation Biometrics. 16 : 369-381.
Kasim, M H. and Yousif, N. K. (1990). Genetic advance for grain yield and its components in segregation generations of barley (*Hordum vulgare* L.). Mesopotamia J. of Agric. 22 (3): 9-14.
Kempthorne, B. (1969). An Introduction to genetic statistics. Ames, Iowa State Univ. Press. : 244.
Mather, K. and Jinks, J. L. (1982). Biometrical genetics. Chapman and Hall, London:132p.
Sharma, Y. Sharma, S. N., Joshi, P. and Sain, R. S. (2002). Combining ability analysis for yield and yield contributing characters in six- rowed barley. Sabro Journal of breeding and genetics. 34 (2): 55-63.

Received	2010/06/10	
Accepted for Publ.	2010/09/11	