

(*Pisum sativum* L.)

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*
Shamil1970@yahoo.com

Pisum sativum L.

Jof Green Feast Granger English Early on World Carina) :
 - - - - - (Major Little Marvel
 - 2011/2010 2010/2009
) (

100 /
 Little Marvel
 /
 100
 100 /
 :

(*Pisum sativum* L. 2n=14) Peas

Fabaceae

(2012 Smykal 2011 Schumacher)
 .(2000 Stuelpuage Karpenstein)
 %40
 / 1700 10.4 2011
 (2011 FAOSTAT) 6.5-6
 / 774.3 800 2010 1000
 .(2010)

تاريخ استلام البحث 8 / 1 / 2013 .
 تاريخ قبول النشر 2 / 5 / 2013 .

- (2006)
- (1989)
2010 Dhama 2009 Andrea)
(2012 Kumar Bihari 2011 Singh
- Sharma 2008 Ceyhan)
(2012 Kosev 2009 Borah 2009
(1943) Lush
- (1960 Allard)
- Sureja / (2004) Sharma /
(2005) Avci Ceyhan /
(2005) Gul /
(2005) /
Sofi (2006) Ranjan (2006) /
(2006) Singh Singh
- (2006) Ceyhan Avci (2006) Kalia Sood)
100 /

				(2006)	Gupta
	Patel	.			
			100		(2006)
/				(2007)	Sardana
		100	/		100
Ceyhan	.	100		100	/
	/			(2008)	
				(2008)	Nawab
					/
			100		
		100			
	/				
(2009)	Andrea	.	(2009)	Sharma	/
/					
			(2009)	Borah	.
/			(2010)	Dhama	/
		(2011)			
(2011)	Singh	.	/		
	/				
/					100
/			100	/	
/			(2012)	Kumar Bihari	/
/			(2012)	Kosev	.

Pisum sativum L.

English (England) Early on World (Holland) Carina (Turkey) :
 (U.S.A.) Jof (Holland) Green Feast (Holland) (Austrian) Granger

(Major (U.S.A.) Little Marvel

/ 2011/2010 2010/2009 /
 3 20 15
 25 75 5
 ()
 () 24
) (1989)
 (/³ 0.5)
 .(2002 Anonymous)
 (/N 25)
 .(2004 Anonymous) (/P₂O₅ 60)
 / () :
 () 100 () / ()
 .(/) (/) (/)
 .(1) (1967) Cochran Snedecor

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S.O.V.	d.f.	M.S.	E.M.S.
Years	Y-1 = 1		
Rep / Years	Y(r-1) = 4		
Varieties	(V-1) = 7	M1	$\sigma^2 e + r \sigma^2 ay + ry \sigma^2$
Varieties × Years	(V-1)(Y-1) = 7	M2	$a \sigma^2 e + r \sigma^2 ay$
Error	Y(r-1)(V-1) = 28	M3	$\sigma^2 e$

= V . = r . = Y -:

Varieties Variance . = $\sigma^2 a$
 Interaction Variance . × = $\sigma^2 ay$
 Experimental Error Variance . = $\sigma^2 e$

: ($\sigma^2 g$)
 $\sigma^2 g = (M1 - M2) / ry$

($\sigma^2 p$)
 -: (σ^2_{VE})
 $\sigma^2 p = \sigma^2 g + \sigma^2 e$
 $\sigma^2 e = M3$

$$\begin{aligned}
 &: \quad \text{(PCV)} \quad \text{(GCV)} \\
 \text{GCV}\% &= (\sqrt{\sigma^2_g} / \tilde{Y}) \times 100 . \\
 \text{PCV}\% &= (\sqrt{\sigma^2_p} / \tilde{Y}) \times 100 .
 \end{aligned}$$

$$h^2_{b.s.} = (\sigma^2_g / \sigma^2_p) .$$

(1999) (1997)

$$0.60 < h^2_{b.s.} \quad 0.60 \quad h^2_{b.s.} \quad 0.40 \quad 0.40 > h^2_{b.s.}$$

(\tilde{Y}) (E.G.A.)

$$\text{E.G.A. \%} = [(K h^2_{b.s.} \sqrt{\sigma^2_p}) / \tilde{Y}] \times 100 .$$

(1960 Allard) %10 1.76 = (K)

: (1966) Robinson

(%30) (%30 -10) (%10)

(1955 Duncan) .(1975) Walter

. 0.05

(2)

2011/2010 2010/2009

Gul

() (2005)

Nawab
Dhama
(2011)

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(2009) Borah

100

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.(1985 Chaudhary Singh)

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Mean Squares					
()	()	/	()		
858.520 *	290.083 **	2.083	553.520 **	1	
135.083	166.666 **	0.645	22.333	4	/
910.449 **	283.130 **	5.809 **	311.449 **	7	
711.473 **	87.035 *	5.750 *	164.282 *	7	×
123.988	28.904	1.717	64.571	28	

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.2011/2010 2010/2009

Mean Squares					
100 ()		()	/		
0.053	0.083	0.001	196.020	1	
4.436	1.416 **	0.634	142.833	4	/
176.220 **	8.095 **	6.032 **	1101.616 **	7	
5.045	0.988 *	0.346	87.592	7	×
10.866	0.345	0.575	143.166	28	

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.2011/2010 2010/2009

Mean Squares					
(/)	(/)	(/)	(/)		
776.020	402.520 *	320.333	1788.520	1	
4104.229 *	67.020	36.541	1098.333	4	/
21427.854 **	2790.544 **	4454.047 **	18068.330 **	7	
15168.544 **	394.044 **	880.523 **	2913.282 *	7	×
1347.395	68.044	135.589	1178.476	28	

0.01 0.05

** *

2010/2009

(3)

2011/2010

Major

Sardana

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.2011/2010 2010/2009

()	()	/	()	
142.500 ab	91.500 ab	5.834 a-c	72.667 ab	1- Carina
121.000 d	78.500 c	4.166 c	61.167 cd	2- Early on World
136.000 bc	87.000 b	7.500 a	56.167 d	3- English
144.667 ab	92.667 ab	6.000 ab	72.833 ab	4- Granger
145.333 ab	87.833 b	5.833 a-c	67.500 bc	5- Green Feast
151.667 a	95.000 a	5.334 bc	71.833 ab	6- Jof
125.667 cd	80.333 c	6.833 ab	71.333 ab	7- Little Marvel
157.000 a	98.167 a	5.833 a-c	78.667 a	8- Major

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.2011/2010 2010/2009

100 ()		()	/	
19.233 bc	6.167 bc	7.166 cd	49.167 ab	1- Carina
16.600 cd	4.666 e	7.700 bc	18.167 d	2- Early on World
14.433 d	3.833 f	6.183 e	49.333 ab	3- English
18.167 b-d	5.833 cd	8.166 ab	32.667 c	4- Granger
27.833 a	6.667 b	8.216 ab	33.667 c	5- Green Feast
18.133 b-d	6.166 bc	9.050 a	36.667 bc	6- Jof
29.767 a	7.500 a	6.483 de	62.833 a	7- Little Marvel
21.833 b	5.166 de	6.616 de	36.667 bc	8- Major

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.2011/2010 2010/2009

(/)	(/)	(/)	(/)	
280.330 b	31.167 b	43.500 bc	143.830 b	1- Carina
166.670 d	13.333 c	19.000 d	58.000 d	2- Early on World
219.170 c	25.833 b	34.833 bc	97.500 cd	3- English
275.000 b	23.501 bc	32.333 cd	101.330 bc	4- Granger
272.670 b	33.500 b	48.667 b	132.500 bc	5- Green Feast
319.170 ab	23.500 bc	32.334 cd	116.670 bc	6- Jof
355.330 a	84.333 a	108.833 a	246.170 a	7- Little Marvel
223.170 c	32.667 b	42.500 bc	113.830 bc	8- Major

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	(2009)	Andrea	(2009)	Sharma	(2007)
	English		/		.
			Early on World		
	(2011)			(2005) Avci	Ceyhan
Singh			Major	.	/
				Early on World	
				(2011)	
	Early on World			/	
Carina					Little Marvel
Andrea					English
	English	.	/	(2010)	Dhama (2009)
				Jof	
(2008)	Nawab	(2007)	Sardana		
Little Marvel	.			(2011)	Singh
Sureja					
	(2012)	Kosev	(2006) Kalia	Sood	(2004) Sharma
		100	.		
		Little Marvel		English	
		Green Feast			
Singh	(2008)	Nawab	(2006)	Patel	
	Little Marvel	.	100		(2011)
Early			Jof		
					on World
Kumar	Bihari	(2009)	Andrea	(2009)	Sharma
Kosev	(2006)	Sofi			(2012)
(2010)		Dhama	(2005)	Gul	(2012)
					.
		Little Marvel		(3)	
					(4)
					/
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(2006)	Sofi		(2005)	Gul	
Bihari	/	(2009) Borah	(2006) Singh	Singh	

(2011) Singh (2012) Kumar
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(2011) Singh (2009) Sharma (2008) Nawab
Sardana /
(2011) Singh (2007)
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(1985 Chaudhary Singh 1960 Allard)

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.2011/2010 2010/2009

التحسين الوراثي المتوقع	نسبة التوريث بالمعنى الواسع	معامل الاختلاف المظهري	معامل الاختلاف الوراثي	التباين المظهري	التباين الوراثي	الصفات المدروسة
6.625	27.528	13.675	7.175	89.098	24.527	ارتفاع النبات (سم)
0.203	0.521	0.222	0.016	1.726	0.009	عدد التفرعات / نبات
8.247	53.067	8.830	6.432	61.586	32.682	موعد التزهير (يوم)
3.314	21.102	8.923	4.099	157.150	33.162	موعد النضج (يوم)
42.198	54.138	44.287	32.585	312.170	169.004	عدد القرنات / نبات
18.141	62.220	16.566	13.067	1.522	0.947	طول القرنة (سم)
29.308	77.436	21.504	18.923	1.529	1.184	عدد البذور في القرنة
38.552	72.417	30.248	25.740	39.395	28.529	وزن 100 بذرة (غم)
57.863	68.186	48.216	39.814	3704.317	2525.841	حاصل القرنات الأخضر (غم/نبات)
85.669	81.456	59.757	53.932	731.176	595.587	حاصل القرنات الجاف (غم/نبات)
97.115	85.443	64.580	59.695	467.460	399.416	حاصل البذور (غم/نبات)
14.227	43.638	18.524	12.237	2390.613	1043.218	الحاصل البايولوجي (غم/نبات)

(4)

100

(1999 1997)

Welsh)

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Nawab (2006) Kalia Sood
Sardana(1960 Allard)
(2008)

- Kosev 100 (2011) Singh (2007)
(2012)
- .(1985 Chaudhary Singh)
Robinson
- 100 / (1966)
/
(2006) Gupta
- (2008) Nawab / 100 (2007) Sardana
(2011) Singh /
- .(1981 Welsh)
(5)
- Andrea (2009) Sharma (2005) Avci Ceyhan
(2009)
/
(2011) (2004) Sharma Sureja /
(2011) Singh
/
(2007) Sardana (2006) Ceyhan Avci
(2009) Andrea
- 100
Andrea (2008) Nawab (2007) Sardana
(2009)
(2006) Ceyhan Avci 100
(2011) Singh (2007) Sardana (2006) Patel
- Sureja
(2010) Dhama (2004) Sharma
(5)

جدول 5. معاملات الارتباط المظهري (القيم العليا) والوراثي (القيم السفلى) بين الصفات المدروسة كمدخل لموسمي الزراعة 2010/2009 و 2011/2010.

عدد التفرعات / نبات	موعد التزهير (يوم)	موعد النضج (يوم)	عدد القرنات / نبات	طول القرنة (سم)	عدد البذور في القرنة	وزن بذرة 100 (غم)	حاصل القرنات الأخضر (غم/نبات)	حاصل القرنات الجاف (غم/نبات)	حاصل البذور (غم/نبات)	الحاصل البايولوجي (غم/نبات)	الصفات المدروسة
0.114	-0.019	-0.099	0.191	-0.040	0.292	0.276	0.383 *	0.368	0.308	0.365	ارتفاع النبات
0.190	-0.106	-0.033	0.226	-0.013	0.340	0.331	0.421 *	0.432 *	0.378 *	0.369	(سم)
	-0.013	-0.198	0.601 **	0.135	0.084	0.192	0.498 **	0.336	0.437 *	0.469 *	عدد التفرعات
	-0.012	-0.232	0.587 **	0.259	0.096	0.209	0.519 **	0.346	0.440 *	0.547 **	/ نبات
		0.356	-0.028	0.069	0.046	-0.059	-0.075	-0.118	-0.119	0.049	موعد التزهير
		0.286	-0.036	0.024	0.095	-0.009	-0.050	-0.076	-0.063	0.046	(يوم)
			-0.203	0.195	0.200	0.089	-0.086	-0.042	-0.175	0.022	موعد النضج
			-0.208	0.149	0.274	0.157	-0.071	-0.010	-0.141	0.042	(يوم)
				-0.165	0.190	0.325	0.780 **	0.644 **	0.657 **	0.586 **	عدد القرنات
				-0.081	0.205	0.347	0.805 **	0.671 **	0.670 **	0.621 **	/ نبات
					0.124	-0.025	-0.108	-0.261	-0.221	0.212	طول القرنة
					0.105	-0.002	-0.082	-0.244	-0.178	0.234	(سم)
						0.659 **	0.540 **	0.559 **	0.573 **	0.460 *	عدد البذور في
						0.681 **	0.549 **	0.603 **	0.605 **	0.484 **	القرنة
							0.681 **	0.706 **	0.711 **	0.509 **	وزن 100 بذرة
							0.697 **	0.738 **	0.734 **	0.587 **	(غم)
								0.889 **	0.888 **	0.748 **	حاصل القرنات
								0.899 **	0.897 **	0.766 **	الأخضر (غم/نبات)
									0.940 **	0.666 **	حاصل القرنات
									0.941 **	0.673 **	الجاف (غم/نبات)
										0.662 **	حاصل البذور
										0.678 **	(غم/نبات)

*، ** معنوية عند مستوى احتمال 0.05 و 0.01 على التوالي.

- .2011 .
- .(*Pisum sativum* L.)
.12-1 : (3)1
.2010 .
- .1997 .
- .(*Horoleum Vulgare* L.)
- .2005 .
- .(*Pisum sativum* L.)
.15-1:(2) 27
- .2006 .
- .(*Pisum sativum* L.)
.140-121:(2) 28
- .1999 .
- .(*Zea mays* L.)
- .1989 .
- .()
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**GENETIC VARIABILITY AND TO DETERMINE SOME GENETIC
PARAMETERS FOR YIELD AND ITS COMPONENTS
IN PEAS (*Pisum sativum* L.)**

Shamil Y.Hassan AL-Hamdany*

*Dept. of Hort. & Landscape Design - College of Agric. & Forestry -Univ. of Mosul -
Republic of Iraq. Shamil1970@yahoo.com

ABSTRACT

This study was conducted to evaluate the performance of eight varieties of Peas (*Pisum sativum* L.) viz, (Carina , Early on World , English , Granger , Green Feast , Jof , Little Marvel and Major).The experiment was carried out in the Field Dept. of Hort. & Landscape Design, College of Agric. & Forestry , Mosul University , during growing seasons 2009/2010 and 2010/2011 , were sowing by using Randomized Complete Block Design (R.C.B.D) with three replications. To study genetic , phenotype variations , heritability and expected genetic advance and determine phenotypic and genotypic correlation for studied characters.

Combined analysis results exhibited significant differences that the mean squares varieties between the two growing seasons for all the studied characters. A significant varieties x year interaction effect was found for all the studied characters except the number of pods/plant , pod length and 100 seed weight. The results showed that the mean varieties were differed significantly for all the studied characters , Little Marvel variety was highly superior for green , dry pods yield , seeds yield and biological yield. There was a high genetic variation for number of pods/plant , for green , dry pods yield , seeds yield and biological yield. High heritability for pod length , number of seeds/pod , 100 seed weight , green , dry pods yield and seeds yield , which means that most of the phenotype variation between varieties was due to genetic. High expected genetic advance for number of pods/plant 100 seed weight , green , dry pods yield and seeds yield. The higher phenotypic and genotypic correlations were found between dry pods yield and seeds yield.

Key words: Peas (*Pisum sativum* L.) , Genetic Variability , Genetic Advance , Heritability , Yield.