

تقرير حول تقييم اصناف بلدية نى الحصن
الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

Agrobiodiversity Project - LEBANON

Chickpeas Landraces Evaluation

Tel Amara 2000-2001

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

Progress Report

Prepared by

Hassan Machlab

Dept. of Plant Breeding and Improvement

Lebanese Agricultural Research Institute

August 7, 2001

Background

The evaluated 3 populations of chickpea landraces were collected from 3 farmers locations in Nabha and Kalileh:

50 plants from each of the 3 population were collected and planted each in one row at Tel Amara.

Twenty rows were evaluated from each population thus representing 20 different plants. From each row, 3 plants were harvested and evaluated for grain yield per plant, number of seeds per plant, number of full pods per plant and 100 kernek weight.

Results of these data are presented in Tables 1-4.

Pop. Name	Source
15-42	Nabha
15-41	Kalileh
15-35	Nabha

Results

There was significant variability within each collected population of landraces, some rows gave good average seed number and yield per plant basis and were significantly better than the total mean in each population. These rows which originated from individual plants, are identified in Tables 1-4.

In particular, the entries 15-42-2, 15-41-15, 15-35-9, 15-35-13 and 15-35-17 were significantly superior.

As for grain size, only the means of the population 15-41 were significantly different from each other. Six rows had significantly better grain size than the total mean of that particular population (Table 4).

If we compare the 3 populations total means, 15-42 had better grain yield (8.4 gr./plt) and higher seed (36) and pod number (34) than 14-41 and 15-35, while 15-41 had better total average 100 grain weight (27.6 gr/plant).

Table 1. Chickpeas Average grain yield per plant (grs.)

Population No.	Row No.	Av. GY/PLT (grs.) ± SD	Population No.	Row No.	Av. GY/PLT (grs.) ± SD	Population No.	Row No.	Av. GY/PLT (grs.) ± SD
15 - 42	1	7.8 ± 1.8	15 - 41	1	8.5 ± 2.2	15 - 35	1	-
	2	14.8 ± 6.8 <		2	5.3 ± 2.5		2	6.3 ± 4.5
	3	10.0 ± 4.4		3	2.8 ± 0.3		3	3.3 ± 2.1
	4	5.8 ± 1.4		4	3.2 ± 1.0		4	4.0 ± 2.2
	5	8.2 ± 2.0		5	8.0 ± 3.6		5	3.5 ± 2.3
	6	7.0 ± 1.3		6	9.2 ± 2.3		6	3.7 ± 1.3
	7	10.3 ± 3.1		7	5.7 ± 1.2		7	4.0 ± 2.7
	8	6.3 ± 2.5		8	7.7 ± 2.6		8	4.5 ± 1.8
	9	8.3 ± 2.9		9	6.7 ± 3.1		9	10.2 ± 3.1 <
	10	5.7 ± 4.3		10	7.7 ± 5.0		10	4.8 ± 2.0
	11	3.2 ± 2.1		11	3.7 ± 2.5		11	7.0 ± 3.8
	12	11.0 ± 5.4		12	9.5 ± 7.1		12	5.3 ± 3.0
	13	8.7 ± 2.9		13	5.5 ± 1.3		13	10.7 ± 2.5 <
	14	8.0 ± 5.0		14	8.9 ± 3.0		14	6.8 ± 1.0
	15	8.2 ± 3.6		15	13.5 ± 8.3 <		15	7.8 ± 1.9
	16	7.0 ± 2.0		16	10.5 ± 3.5		16	-
	17	6.2 ± 1.5		17	6.0 ± 0.0		17	17.3 ± 6.5 <
	18	9.8 ± 1.7		18	10.8 ± 1.0		18	-
	19	11.3 ± 1.8		19	10.5 ± 3.9		19	-
	20	9.5 ± 1.7		20	10.3 ± 2.6		20	-
Total Mean	8.4	Total Mean	7.7	Total Mean	6.6			
LSD	3.3	LSD	3.5	LSD	3.0			
CV	39 %	CV	45 %	CV	45 %			
F-Value	1.78 *	F-Value	1.98 *	F-Value	4.7 **			

* Significant

** Highly Significant

< Significantly better than the total mean.

Table 2. Chickpeas Average No. of Seeds per plant .

Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD
15 - 42	1	36 ± 17	15 - 41	1	29 ± 8	15 - 35	1	-
	2	57 ± 22 <		2	24 ± 11		2	25 ± 21
	3	50 ± 25		3	13 ± 1		3	17 ± 15
	4	30 ± 8		4	15 ± 6		4	13 ± 8
	5	42 ± 8		5	25 ± 10		5	13 ± 7
	6	37 ± 13		6	35 ± 8		6	16 ± 6
	7	38 ± 6		7	17 ± 3		7	16 ± 12
	8	24 ± 9		8	27 ± 6		8	16 ± 7
	9	40 ± 20		9	21 ± 8		9	48 ± 9 <
	10	26 ± 16		10	31 ± 22		10	22 ± 9
	11	10 ± 5		11	14 ± 9		11	29 ± 14
	12	47 ± 21		12	29 ± 23		12	24 ± 13
	13	32 ± 15		13	21 ± 6		13	43 ± 15 <
	14	27 ± 16		14	23 ± 7		14	27 ± 7
	15	36 ± 24		15	49 ± 30 <		15	40 ± 8 <
	16	28 ± 7		16	33 ± 13		16	-
	17	25 ± 6		17	27 ± 2		17	56 ± 12 <
	18	44 ± 8		18	47 ± 5 <		18	-
	19	46 ± 13		19	46 ± 17 <		19	-
	20	41 ± 9		20	38 ± 8		20	-
Total Mean	36	Total Mean	28	Total Mean	27			
LSD	15	LSD	13	LSD	12			
CV	41 %	CV	45 %	CV	43 %			
F-Value	1.6 *	F-Value	2.1 *	F-Value	4.2 **			

* Significant

** Highly Significant

< Significantly better than the total mean.

Table 3. Chickpeas Average No. of Full pods per plant .

Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD
15 - 42	1	31 ± 14	15 - 41	1	29 ± 8	15 - 35	1	-
	2	55 ± 21 <		2	24 ± 11		2	24 ± 20
	3	47 ± 24		3	13 ± 1		3	15 ± 12
	4	27 ± 5		4	13 ± 7		4	11 ± 6
	5	41 ± 8		5	24 ± 10		5	13 ± 7
	6	32 ± 9		6	34 ± 9		6	15 ± 6
	7	37 ± 5		7	17 ± 3		7	15 ± 11
	8	23 ± 8		8	24 ± 7		8	15 ± 7
	9	38 ± 17		9	20 ± 8		9	48 ± 9 <
	10	26 ± 17		10	30 ± 22		10	21 ± 9
	11	9 ± 4		11	14 ± 9		11	28 ± 13
	12	45 ± 21		12	25 ± 18		12	21 ± 12
	13	31 ± 14		13	21 ± 6		13	37 ± 11 <
	14	27 ± 16		14	22 ± 6		14	25 ± 5
	15	36 ± 24		15	49 ± 31 <		15	38 ± 9 <
	16	28 ± 8		16	32 ± 11		16	-
	17	25 ± 5		17	26 ± 3		17	55 ± 11 <
	18	42 ± 7		18	45 ± 4 <		18	-
	19	45 ± 12		19	44 ± 17 <		19	-
	20	41 ± 9		20	35 ± 8		20	-
Total Mean	34		Total Mean	27		Total Mean	25	
LSD	14		LSD	12		LSD	11	
CV	41 %		CV	45 %		CV	42 %	
F-Value	1.7 *		F-Value	2.2 *		F-Value	4.8 **	

* Significant

** Highly Significant

< Significantly better than the total mean.

Table 4. Chickpeas Average 100-kernel weight per plant (grs.).

Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD	Population No.	Row No.	Av. Seeds/Plt ±SD
15 - 42	1	24.6 ± 10.3	15 - 41	1	29.1 ± 1.1	15 - 35	1	-
	2	25.8 ± 4.0		2	22.6 ± 3.0		2	26.7 ± 3.3
	3	20.2 ± 1.5		3	22.4 ± 3.0		3	22.7 ± 9.6
	4	19.2 ± 0.8		4	22.2 ± 2.4		4	32.5 ± 4.9
	5	19.4 ± 3.3		5	31.5 ± 2.0 <		5	27.7 ± 5.5
	6	20.1 ± 6.3		6	25.8 ± 0.9		6	22.2 ± 0.9
	7	26.9 ± 5.0		7	33.9 ± 1.0 <		7	28.8 ± 9.5
	8	26.2 ± 1.4		8	28.3 ± 3.4		8	29.2 ± 3.5
	9	21.8 ± 4.5		9	30.9 ± 3.6 <		9	20.9 ± 2.8
	10	20.4 ± 2.7		10	25.0 ± 1.9		10	21.8 ± 1.2
	11	33.2 ± 9.1		11	26.9 ± 7.2		11	23.8 ± 6.2
	12	23.1 ± 5.0		12	33.8 ± 1.1 <		12	22.2 ± 1.2
	13	28.6 ± 6.5		13	26.5 ± 1.9		13	25.5 ± 3.6
	14	28.3 ± 2.8		14	37.8 ± 3.5 <		14	26.7 ± 9.0
	15	25.6 ± 8.1		15	27.9 ± 3.8		15	19.4 ± 2.0
	16	24.8 ± 3.5		16	31.8 ± 1.6 <		16	-
	17	24.3 ± 1.4		17	22.3 ± 1.7		17	30.2 ± 5.2
	18	22.4 ± 1.2		18	23.3 ± 1.3		18	-
	19	25.3 ± 3.4		19	23.0 ± 0.6		19	-
	20	23.3 ± 0.8		20	27.3 ± 1.3		20	-
Total Mean	24.2	Total Mean	27.6	Total Mean	25.4			
LSD	4.9	LSD	2.7	LSD	5.4			
CV	20.4 %	CV	9.9 %	CV	21.2 %			
F-Value	1.56 NS	F-Value	8.2 **	F-Value	1.55 NS			

NS= Non Significant

** Highly Significant

< Significantly better than the total mean

Finally, if we consider preparing a new mixture of a new landrace which would potentially be a better yielding one than those of the farmers, one should combine seeds coming from superior rows as shown in the Table below. However, we don't know about the nutritional advantage of such a combination unless all the entries are evaluated for their grain quality and composition.

Population / Row number	Advantage characteristics
15-42-2	High grain yield, high number of seeds/plant.
15-41-5	Good grain size
15-41-7	Good grain size
15-41-9	Good grain size
15-41-12	Good grain size
15-41-14	Good grain size
15-41-15	High grain yield, high number of seeds/plant.
15-41-16	Good grain size
15-41-18	High number of seeds/plant
15-41-19	High number of seeds/plant
15-35-9	High grain yield, high number of seeds/plant.
15-35-13	High grain yield, high number of seeds/plant.
15-35-15	High number of seeds/plant.
15-35-17	High grain yield, high number of seeds/plant.

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)