

## Assessment of agromorphological diversity of chickling-vetch (*Lathyrus cicera* L.) landraces in the traditional agroecosystems of Morocco

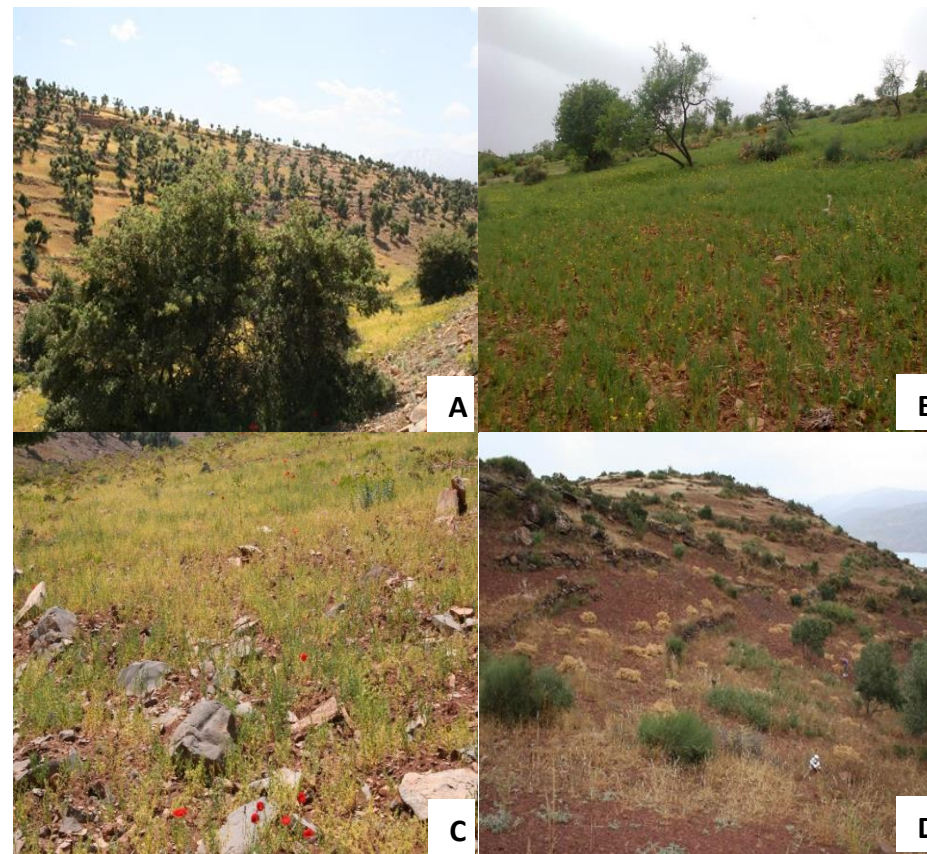
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**Supplementary Table 1.** The measured morphological parameters of 13 ecotypes of *Lathyrus cicera*. Multiple comparisons of means were performed by Duncan at the threshold of 5%.

Ecotype	PLH (mm)	SD (mm)	LFI (mm)	NLPL	LL (mm)	LW (mm)	POL (mm)	POW (mm)
	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV
Tissa	617±12.66 2.06 a	1.18±0.4 33.9 a	22.79±5.98 24.24 c	13.8±3.04 22.03 c	47.3±8.02 16.96 c	12.13±2.97 24.49 b	15.79±2.93 18.56 b	6.33±1.27 20.06 b
	Souk nouzdir	611±18.24 2.99 a	1.26±0.42 33.33 a	21.5±4.43 20.60 c	13.4±4.52 33.73 c	39.93±11.49 28.78 b	14.03±4.54 32.36 c	20.11±5.52 27.45 c
Bernat 1		601±6.11 1.02 a	1.62±0.66 40.74 a	29.9±11.14 37.26 f	13.3±1.82 13.68 c	42.64±6.23 14.61 b	13.66±4.01 29.36 c	22.32±5.26 23.57 c
	Bernat 2	572±11.64 2.03 a	1.26±0.35 27.78 a	19.62±6.54 33.33 a	14.8±2.69 18.18 c	38.56±3.91 10.14 a	17.75±7.86 44.28 e	12.01±0 0 a
Tamarzoukat		583±7.55 1.3 a	1.68±1.01 60.12 a	20.35±8.37 41.13 b	11.9±2.02 16.98 a	39.63±7.75 19.56 b	20.35±8.37 41.13 f	26.36±4.68 17.75 c
	Bernat 3	594±7.12 1.2 a	1.61±0.26 16.15 a	21.02±4.62 21.98 b	13.1±2.02 15.42 b	36.98±4.79 12.95 a	15.97±6.19 38.76 d	18.85±5.86 31.09 c
Ouaoura		613±9.88 1.61 a	1.53±0.4 26.14 a	22.54±4.35 19.30 c	15.2±3.76 24.74 d	39.34±8.42 21.40 b	12.25±3.02 24.65 b	23.03±5.09 22.1 d
	Ait aarfa	649±5.06 0.78 b	1.73±0.43 24.86 a	26.18±9.92 37.89 d	12.8±2.2 17.19 b	42.09±5.75 13.66 b	14.7±3.95 26.87 c	24.77±9.29 37.51 d
Ikharkhoud		631±9.55 1.51 b	1.66±0.39 23.50 a	23.54±6.02 25.57 d	13.4±2.75 20.52 c	41.69±5.75 13.79 b	10.33±1.37 13.26 a	23.85±7.34 30.78 c
	Arbalou-n bouali	649±5.54 0.85 b	1.42±0.49 34.51 a	28.76±4.51 15.68 e	13.5±2.54 18.82 c	41.43±8.28 19.98 b	13.81±2.9 21 c	20.95±3.68 17.57 c
Ait ali-o-mhand		730±4.54 0.65 c	1.27±0.22 17.32 a	27.22±6.52 23.95 d	15.3±2.58 16.86 d	44.71±10.35 23.15 b	11.76±2.4 20.41 b	27.38±5.49 20.05 d
	Ait halwan	679±17.58 2.59 b	1.7±0.66 38.82 a	31.31±12.62 40.31 g	16.3±3.97 24.36 e	43.82±9.67 22.07 b	13.08±2.67 20.41 b	29.99±5.81 19.37 e
laamouman		607±15.95 2.63 a	1.43±0.54 37.76 a	28.8±12.66 43.96 e	13.1±3.6 27.48 b	43.46±8.76 20.17 b	10.22±1.77 17.32 a	21.19±1.57 7.41 c

<b>Mean ± SD</b>	625.8±4.28	1.49±0.2	24.8±3.98	13.84±1.21	41.66±2.80	13.85±2.87	22.05±4.81	7.51±1.20
<b>Min.</b>	572	1.18	19.62	11.9	36.98	10.22	12.01	4.21
<b>Max.</b>	730	1.73	31.31	16.3	47.3	20.35	29.99	8.92
<b>CV</b>	7	13	16	9	7	21	22	16
<b>F</b>	1.48 NS	1.395 NS	2.42 **	1.63 NS	1.25 NS	4.006***	1.59 NS	1.35 NS
<b>P</b>	0.140	0.178	0.008	0.093	0.258	<0.0001	0.104	0.200

SD: Standard deviation. Min: Observed minimal value. Max: Observed maximal value. CV: Coefficient of variation. F: Report of variance of the ecotype effect. df (12). NS: Not Significant. \*\* Significant at  $P < 0.01$ . \*\*\* Significant at  $P < 0.001$ . PLH : Plant height (mm) ; SD :Stem diameter (mm); LFI : Length of the first internode (mm) ; NLPL : Number of leaf per plant ; LL : Leaf Length (mm) ; LW : Leaf width (mm) ; POL : Pod Length (mm) ; POW : Pod width (mm).



**Fig 1.** Supplementary: A, landscape showing terraced plots with natural *Pistacia atlantica* formations; B, detail of a plot during the vegetative period; C, detail showing the rocky ground; D, appearance of a field after harvest, during drying, and before threshing.

**Supplementary Table 2.** The measured productivity parameters of 13 ecotypes of *Lathyrus cicera*. Multiple comparisons of means were performed by Duncan at the threshold of 5%. SD: Standard deviation. Min: Observed minimal value. Max: Observed maximal value. CV: Coefficient of variation. F: Report of variance of the ecotype effect. df (12). NS: Not Significant.

Ecotype	BY (g/plant)	SY (g/plant)	HI (%)	NSPL	NPOPL	POY (g)	NSPO	HSW (g)
	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV	Mean ± SD CV
<b>Tissa</b>	4.33±0.3 6.93 a	0.04±0.04 100 a	0.95±1.07 112.63 a	3.4±0.84 24.71 b	1.66±0.57 34.33 a	0.05±0.03 60 a	1.5±0.7 46.67 a	6.37
<b>Souk nouzdir</b>	4±0.83 20.75 a	0.12±0.1 83.33 b	2.77±2.26 81.59 a	3.1±1.1 35.4 b	2±1.15 57.5 a	0.06±0.06 100 a	2.5±0.7 28 b	6.83
<b>Bernat 1</b>	4.3±0.58 13.49 a	0.17±0.11 64.71 b	3.75±2.51 66.93 b	3.5±0.84 24 b	2.4±1.15 47.92 a	0.09±0.06 66.69 a	1.6±0.89 55.63 b	6.59
<b>Tamarzoukat</b>	4.35±0.6 13.8 a	0.4±0.31 77.5 b	8.27±5.95 71.95 b	2.8±0.42 15 a	2.25±1.52 88.85 a	0.12±0.09 75 b	2.25±0.5 22.22 b	6.47
<b>Bernat 3</b>	4.28±0.39 9.11 a	0.08±0.07 87.5 b	1.86±1.42 76.34 a	3.1±0.87 28.06 b	1.8±1.09 60.56 a	0.04±0.02 50 a	1.8±0.83 46.11 b	5.61
<b>Ouaoura</b>	4.63±0.58 12.53 a	0.19±0.18 94.74 b	2.64±3.17 120 b	3.8±0.63 16.58 c	2.28±1.38 60.53 b	0.1±0.02 20 b	2.14±0.69 32.24 d	6.93
<b>Ait aarfa</b>	4.33±0.58 13.39 a	0.2±0.23 11.5 b	3.77±3.18 84.35 b	3.3±0.82 24.85 b	1.83±0.75 40.98 a	0.15±0.11 73.33 c	2.5±1.04 41.6 d	7.67
<b>Ikharkhoud</b>	4.3±0.86 0.2 a	0.37±0.35 94.6 d	5.79±5.05 87.22 b	3.4±0.69 20.29 b	3±1.73 57.67 a	0.16±0.1 62.5 b	1.8±0.83 46.11 b	8.22
<b>Arbalou-n bouali</b>	4.41±0.3 6.80 a	0.12±0.08 66.67 b	7.34±5.88 80.11 a	3.5±0.7 20 b	1.25±0.5 40 a	0.1±0.05 50 a	2±0.81 40.5 b	7.99
<b>Ait ali-o- mhand</b>	4.57±0.46 10.07 a	0.21±0.11 53.38 b	2.78±2.00 71.94 b	3±0.66 22 b	1.83±0.75 40.98 a	0.14±0.07 50 b	1.66±0.81 48.8 b	6.76
<b>Ait halwan</b>	4.01±2.07 51.62 a	0.29±0.13 44.83 c	8.23±6.34 77.03 c	3.7±0.82 22.16 c	2±1.09 54.5 a	0.22±0.14 63.64 d	2.16±1.16 53.7 c	8.45
<b>laamouman</b>	4.18±0.68 16.27 a	0.11±0.07 63.64 b	2.44±1.27 52.05 a	3.4±1.17 34.41 b	1±0 0 a	0.11±0.07 63.64 a	1.5±0.57 38 b	6.35
<b>Mean ± SD</b>	<b>4.29±0.19</b>	<b>0.18±0.12</b>	<b>3.45±2.81</b>	<b>3.33±0.28</b>	<b>1.87±0.57</b>	<b>0.10±0.06</b>	<b>1.80±0.64</b>	<b>7±0.88</b>
<b>Min.</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2.8</b>	<b>1</b>	<b>0.04</b>	<b>0</b>	<b>5.61</b>
<b>Max.</b>	<b>4.63</b>	<b>0.4</b>	<b>8.27</b>	<b>3.8</b>	<b>3</b>	<b>0.22</b>	<b>2.5</b>	<b>8.45</b>
<b>CV</b>	<b>4</b>	<b>68</b>	<b>_81</b>	<b>8</b>	<b>30</b>	<b>53</b>	<b>36</b>	<b>13</b>
<b>F</b>	<b>0.53 NS</b>	<b>1.61 NS</b>	<b>1.78 NS</b>	<b>1.17 NS</b>	<b>1.26 NS</b>	<b>2.04*</b>	<b>1.62NS</b>	
<b>P</b>	<b>0.891</b>	<b>0.098</b>	<b>0.059</b>	<b>0.314</b>	<b>0.248</b>	<b>0.026</b>	<b>0.095</b>	

\*Significant at P < 0.05. BY : Total biomass (g/plant); SY : Seed yield (g/plant) ; HI : Harvest index (%) ; NTPL : Number of thallus per plant ; NPOPL : Number of pods per plant ; POY : Pod yield (g) ; NSPO : Number of seeds per pod ; HSW : Hundred seeds weight (g) .

**Supplementary Table 3.** Localization of the sampled populations.

Locality name/villages	Communities	Longitude West	Latitude North	Altitude (m)
Tissa	Agoud N'lkhair	6.54777778	32.0502778	1400
Souk nouzdir	Azilal	6.56472222	31.9688889	889
Bernat (1)	Ait Mhamed	6.56305556	32.0344444	1051
Bernat (2)		6.54083333	31.8575000	1653
Bernat (3)		6.61833333	31.8822222	1407
Tamarzoukat	Tabia	6.75333333	32.0588889	789
Ouaoula	Ouaoula	6.75944444	31.8947222	1075
Ait aarfa	Taounza	6.65222222	32.0241667	1354
Ikharkhoud	My Aissa Ben Driss	6.68833333	32.0644444	848
Arbalou-n bouali	Bin el Ouidane	6.54055556	32.2369444	460
Ait Ali-o- Mhand	Ouaouizert	6.51555556	32.2622222	451
Ait halwan		6.46861111	32.1991667	1019
laamouman		6.46722222	32.2255556	507

**Supplementary Table. 4** List of measured characters.

<i>Characters type</i>	<i>Characters</i>	<i>Code</i>
<b>Germination</b>	Germination time (Days)	GT
	Precocity (Days)	PR
	Percentage of germination (%)	PG
<b>Phenology</b>	First days to flowering (Days)	FDF
	Blooming (Days)	BLO
	First days to pod maturity (Days)	FDPO
	Maturity (Days)	MAT
<b>Morphology</b>	Plant height (mm)	PLH
	Stem diameter (mm)	SD
	Length of the first internode (mm)	LFI
	Number of the leaf per plant	NLPL
	Leaf length (mm)	LL
	Leaf width (mm)	LW
	Pod length (mm)	POL
	Pod width (mm)	POW
<b>Productivity</b>	Biomass yield (g/plant)	BY
	Seed yield (g/plant)	SY
	Harvest index (%)	HI
	Number of the stem per plant	NSPL
	Number of the pod per plant	NPOPL
	Pod yield (g)	POY
	Number of the seed per pod	NSPO
	Hundred seed weight (g)	HSW