

"Mles" and "Draibina" wild populations of cactus pear in Khouribga area

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INTRODUCTION

Cactus pear is appreciated since centuries in several regions of the world (Barbera, 1995), it's a part of the natural landscape and the agricultural system of these regions (Wessels, 1988). The genus *Opuntia* includes 11 subgenus and approximately 300 species, and a large number of varieties and hybrids are obtained by polyploidy which exists in a large number of species (Scheinvar, 1995). Cactus pear occupies currently an important area of more than 120 000ha in Morocco; it's mainly distributed in the zones of cactus pear in the country, like as Sidi Ifni area with 45% of the acreage, El Kelaâ des Sraghnas with 25% and Khouribga with 10% (Anonymous, 2009). Plantations of cactus pear in the late zone are presented as wild orchards which are surrounded by stone walls. Its culture is practiced in the region because it constitutes a source of food for human and animal of this region (Sharoua, 2001).

MATERIALS AND METHODS

In order to determine the populations of cactus pear which exist in the region, a fast diagnosis of plants was carried out in the sites of cactus pear in the region. Once the groups of plants are known, and in order to describe plants and their organs, a sample of plants and organs was made as follow: -3 to 12 adult and healthy plants/site (48 for all the sites); -4 pads/plant (one by orientation) (192 for the sample of plants); -10 flowers and 10 fruits/plant (at least 3 per orientation) (480 flowers and 480 fruits in total). Descriptions were inspired from the works of Arba (1983), Britton and Rose (1963), Chessa and Nieddu (1997), Fouquet (1972), Fournier (1954), Scheinvar (1995) and Valdes and Fernandez (1987). Statistical analysis of data was done by ANOVA.

RESULTS AND DISCUSSION

The fast diagnosis of plants allowed us to distinguish between 2 groups of plants: a spineless one which is called "Mles" and a thorny one which is named "Draibina". Plants of both populations are almost identical and according to Chessa and Nieddu (1997), they have a large sized and a flat shape. Pads dimensions of both populations are almost identical, but their color is different: it's green to light green in "Mles" and bleu green in "Draibina" (photos 1). Flowers of both populations are yellow at full bloom and yellow orange at late bloom (photos 2). Characters of pads and flowers are described in table 1. Fruits of both populations have an egg-shaped form, their dimensions are not very different and their color is yellow to yellow orange, but some individuals of "Mles" are purple (photos 3), they are called "El Akri" and they are similar to those of cv "El Akria" in Sidi Ifni area (Arba et al., 2002; Arba, 2006). Average fresh weight of fruits of "Draibina" is higher than that of "Mles", and according to Chessa and Nieddu (1997), the caliber of fruits of the thorny group is small and that of the spineless one is very small. Pomological and physicochemical characters of fruits of both populations are described in table 2.

CONCLUSION

Morphological characters of plants and physicochemical parameters of fruits are important in the botanical description of cactus pear. The color of pads and the presence or absence of spines enabled us to distinguish easily between the two groups of plants and the color of fruits made it possible to distinguish another group of plants within the population "Mles", whereas other characters like as those of flowers, pads dimensions, etc. do not make it possible to distinguish between the groups of plants. Botanical descriptions made by several authors (Arba, 1983; Britton and Rose 1963; Fouquet, 1972; Fournier, 1954, Scheinvar, 1995) showed that characters of "Draibina" correspond to those of *O. megacantha* Salm-Dyck and those of "Mles" correspond to the characters of *O. ficus indica* (L.) Mill.

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(a)



(b)

Photos 1: Plants of "Draibina" (a) and "Mles" (b) populations of cactus pear in Khouribga area



(a)

(a)

(b)

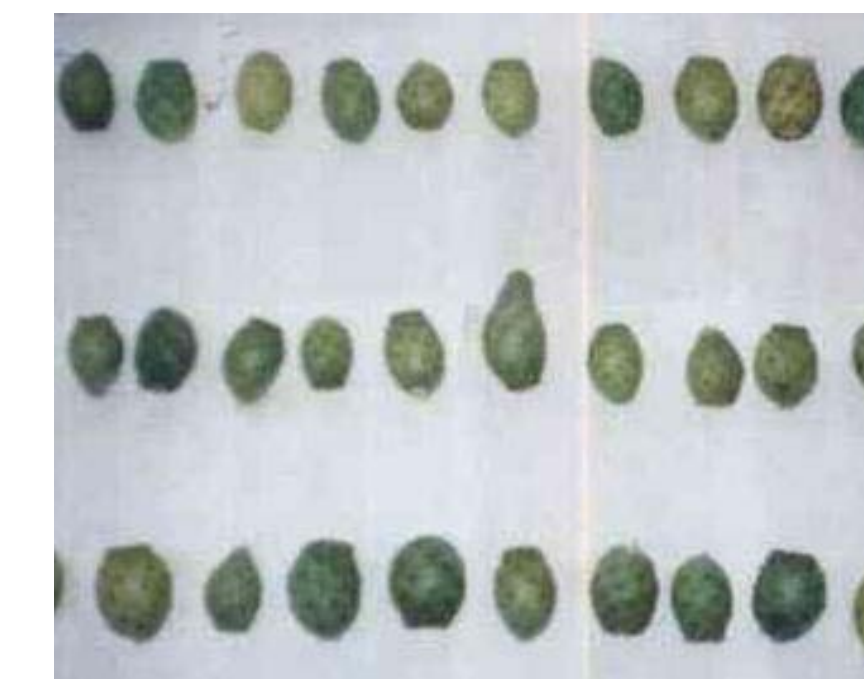


(b)

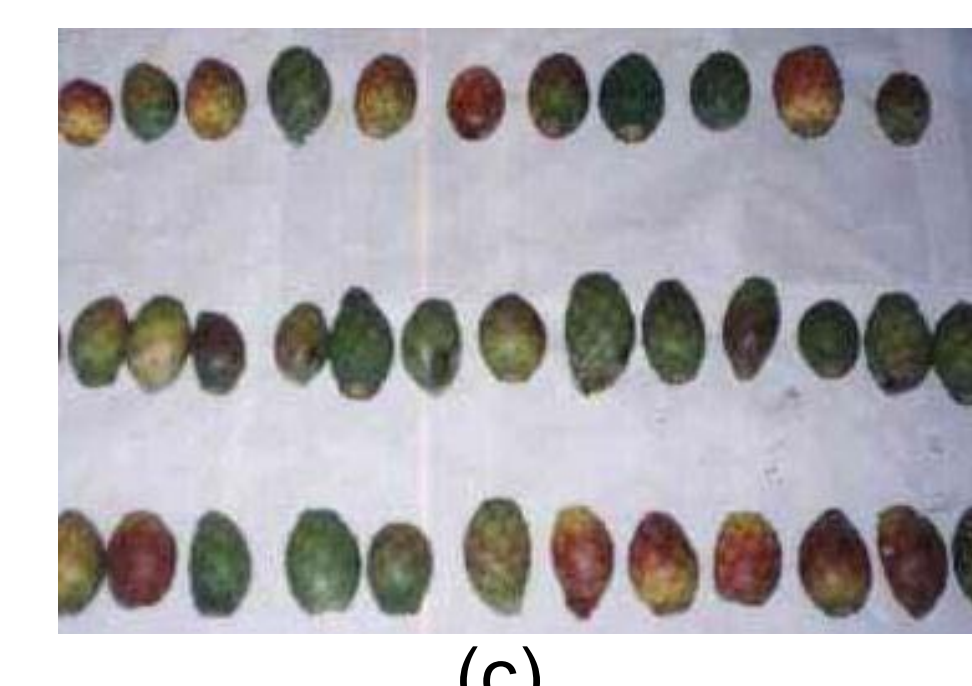
Photos 2: Flowers of "Draibina" (a) and "Mles" (b) populations of cactus pear in Khouribga area



(a)



(b)



(c)

Photos 3: Fruits of "Draibina"(a), "Mles" (b) and "Akri" (c)

Table 1: Characters of pads and flowers of "Mles" and "Draibina" populations of cactus pear in Khouribga area.

Population of opuntia Statistical parameters	'Mles'			'Draibina'		
	Average	Standard deviation	Coefficient of variation (cv) (%)	Average	Standard Deviation	cv (%)
Characters of pads	Green to light green			Glaucous-green or blue-green		
Length (cm)	34,67	4,57	13,17	34,00	4,79	14,09
Width (cm)	19,12	3,95	20,68	18,91	2,47	13,04
Ratio length/width	1,81	0,22	12,34	1,80	0,16	8,86
Thickness (mm)	18,39	4,46	24,27	17,94	2,23	12,42
Distance between areoles (cm)	3,13	0,86	30,10	3,22	0,61	19,44
Presence or absence of spines	absence of spines			presence of spines		
Form and color of spines	-			Divergent; white with black point		
Number of spines per areole	0			1,94	0,92	59
Length of spines (cm)	0			1,66	?	37,34
Color of glochids and their abundance on the areoles	yellow, not very abundant			yellow, not very abundant		
Color of flowers at bloom	yellow			yellow		
Length of flower (cm)	8,06	0,72	8,93	8,04	0,46	5,73
Length of anthers (cm)	1,50	0,05	3,31	1,53	0,12	7,78

Table 2 : Pomological and physicochemical characters of fruits of "Mles" and "Draibina" populations of cactus pear in Khouribga area.

Population of Opuntia Statistical parameters	'Mles'			'Draibina'		
	Average	Standard deviation	Coefficient of variation (cv) (%)	Average	Standard deviation	cv (%)
Characters of fruits	yellowish and purple green			yellowish		
Length (cm)	7,11	0,52	7,25	7,33	0,44	5,97
diameter (cm)	4,74	0,25	5,32	4,82	0,13	2,61
Ratio length/diameter	1,50	0,08	5,27	1,52	0,09	5,64
Fruit fresh weight (g)	77,57	12,49	16,10	83,84	7,24	8,64
Peel fresh weight (g)	30,63	6,41	20,92	34,30	5,87	17,11
Pulp fresh weight (g)	46,93	7,27	15,50	49,54	2,89	5,83
Peel thickness (cm)	0,35	0,03	8,50	0,36	0,06	15,42
Diameter of the cicatrice of the receptacle (cm)	2,1	0,2	7,9	1,9	0,1	4,6
Number of seeds/fruit	300,55	31,04	10,33	277,51	61,07	22,01
% of fertile seeds	66,58	7,90	11,86	58,87	5,51	9,36
% of aborted seeds	33,42	7,90	23,63	41,13	5,51	13,40
Fresh weight of 100 seeds (g)	2,14	0,31	14,64	2,16	0,38	17,75
Number of fruits per pad	6,13	2,88	47,01	9,13	7,81	87,56
Peel Color	yellowish and purple green			yellowish		
Pulp color	orange yellow and purple			orange yellow		
The rate of juice (%)	52,4	4,2	7,9	52,5	4,2	8,0
The rate of sugar (°Brix)	13,0	0,7	5,51	13,2	0,8	6,3
The rate of titrable acidity (%)	0,064	0,012	19,48	0,052	0,016	31,07
The rate of vitamin C (mg/100g juice)	19,1	2,4	12,3	19,4	1,5	7,6
pH	5,9	0,1	2,1	6,1	0,1	1,6