Characterization of agro morphological variability for tree Moroccan cactus pears cultivars (*Opuntia ficus indica Mill*) : Moussa, Aïssa and Achefri.

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Introduction

Opuntia ficus-indica Mill is a species of cactus and is a typical crop for dry environments and unfavourable areas with a highest economic importance and is one of the alternative crop, in particular for marginal lands. It is cultivated for its fruits, cladodes used as fodder, or as host of the cochineal insect.

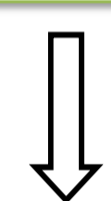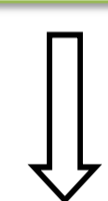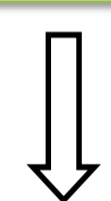In Aferket, Opuntia ficus-indica is represented essentially by three cultivars : Aissa, Moussa and Achefri.

The objectives of this study were to evaluate the variation of agro morphological traits in three cultivars of cactus (Moussa, Aïssa and Achefri) grown in the localities of Aferket which located 60 Km from Guelmin.

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Province of guelmim
Provincial Department of Water Affairs and Forestry of guelmim

Localization of Aferket in the Province of Guelmim

2

Cultivar of Aissa in Aferket

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Material and methods

20 agro-morphological characters were measured on 10 randomly selected plants for each cultivar
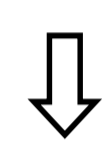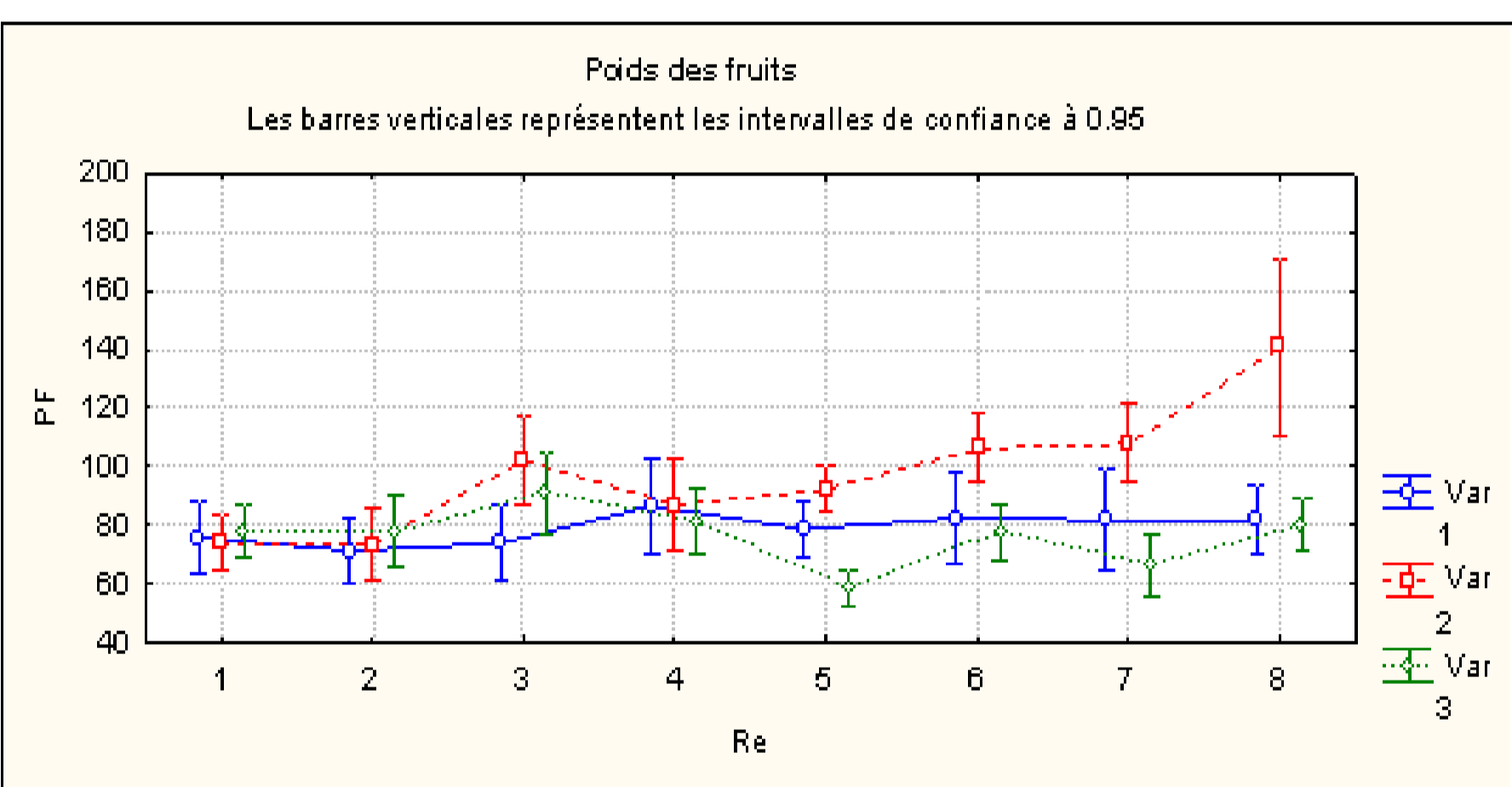
Every 15 day during two months we count
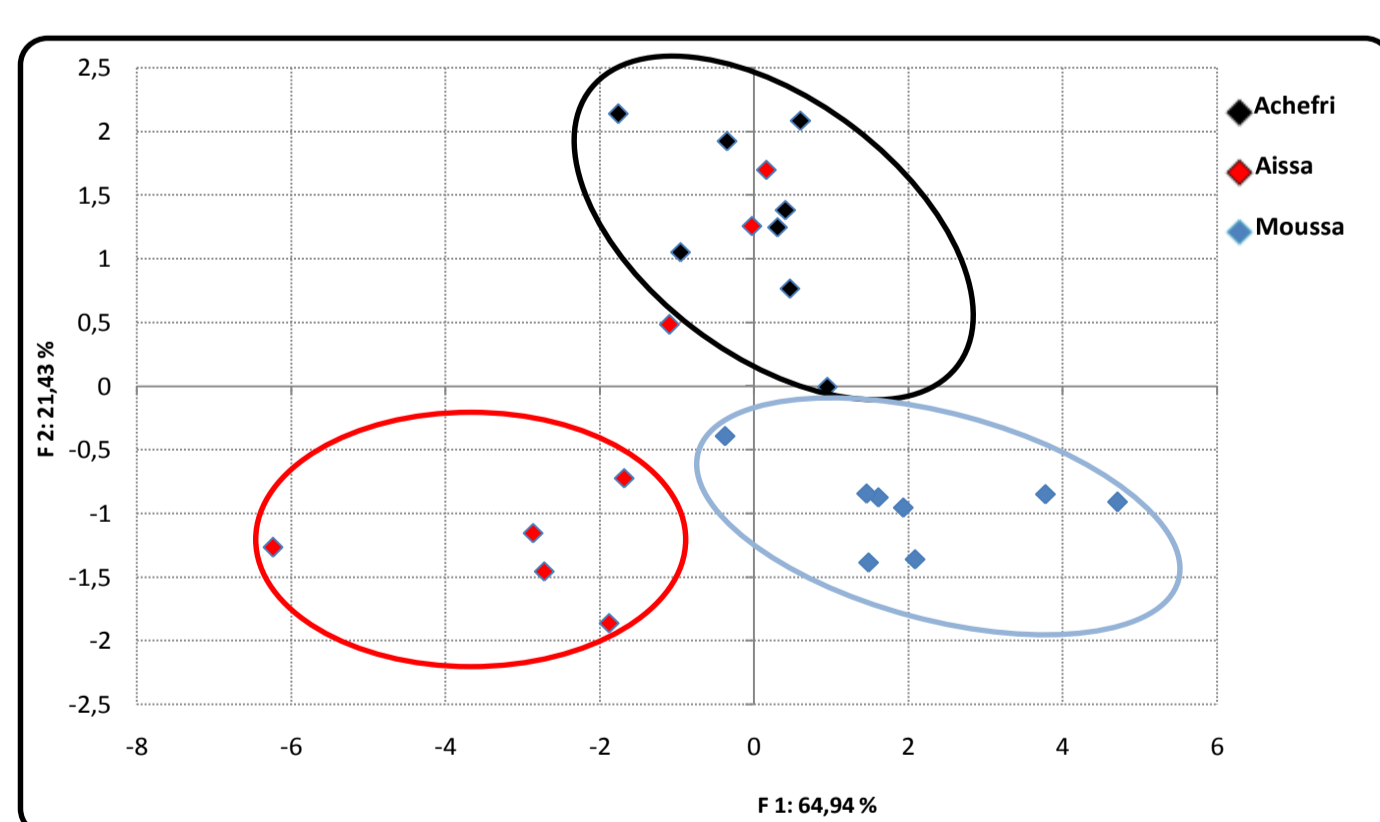
Number of flowers per plant

Number of fruits per plant

Number of newly formed cladodes

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Characters measured

Plant height	Fruit lenght
Plant lenght	Fruit width
Plant width	Fruit weight
Number of cladode per plant	Fruit thickness
Lenght of cladodes	Number of seeds per fruit
Width of cladodes	Weight of seeds per fruit
Thickness of cladodes	Peel thickness
Number of fruits per plant	Peel weight
	Brix

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results

Number of flowers.
Number of fruits.
Number of newly formed cladodes.

Evolution of number of fruits, number of flowers and newly formed cladodes every 15days during two months

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Poids des fruits
Les barres verticales représentent les intervalles de confiance à 0.95

Variability of fruits Weight for the three cultivars

Var1: Achefri   Var2: Aissa   Var3: Moussa

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Analysis of variation: number of Seed and Seed weight

NS: Number of Seed

	Min	Mean	Max	CV_p(%)
Moussa	130	243	434	22.27
Aïssa	196	333	506	18.60
Achefri	139	270	425	22.91

SW: Seed weight

	Min	Mean	Max	CV_p(%)
Moussa	1.65	3.03	4.84	24.26
Aïssa	2.61	4.15	6.78	20.20
Achefri	1.65	3.44	5.4	23.82

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Principal Components Analysis (PCA)

Eigenvalues, Percent of variation and cumulative percent.

	Val pro	% total var	Cumul val.pro	Cumul %
1	5,195574	64,94467	5,195574	64,9447
2	1,714395	21,42994	6,909969	86,3746
3	0,510718	6,38398	7,420688	92,7586
4	0,251761	3,14701	7,672449	95,9056

the first two principal componements accounted 86.37 % (64,94 % for axe1 and 21,43 % for axe2)

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PCA

Plotted values of the first two components (F1 F2)

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Discriminant Fonction Analysis: DFA

AFD

Lambda Wilk = 0,0332683

p < 0,0000
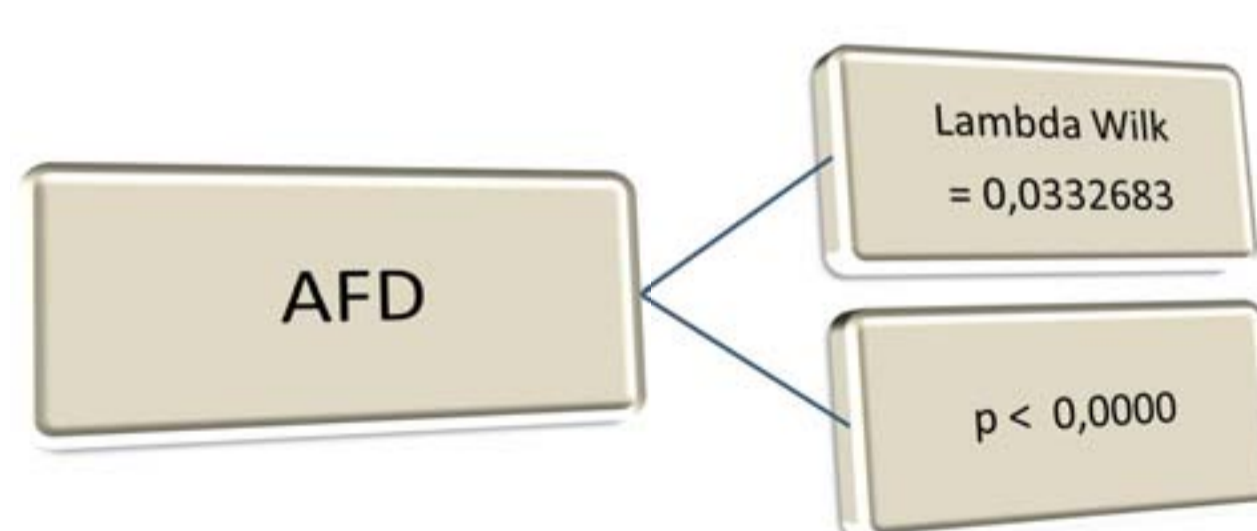
P < 0.001 there is a high significant differences between the three cultivars

wilk's lambda near 0 , the three cultivars are well separated.

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Percentage of well classified

%	Achefri	Aissa	Moussa
Achefri	87.5000	7	1	0
Aissa	100.0000	0	8	0
Moussa	100.0000	0	0	8
Total	95.8333	7	9	8

The Percentage of well classified : 100 % for Aïssa and Moussa and 87.50 % for Achefri

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Mahalanobis distance

	Achefri	Aissa	Moussa
Achefri	0.000000	14.90800 4.96934 0.004509	31.18892 10.39631 0.000103
Aissa	14.9080 4.96934 0.004509	0.000000	30.07088 10.02363 0.000127
Moussa	31.1889 10.39631 0.000103	30.07088 10.02363 0.000127	0.000000

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conclusion

The results show that Moussa cultivars is characterized by late production compared to the two other cultivars.
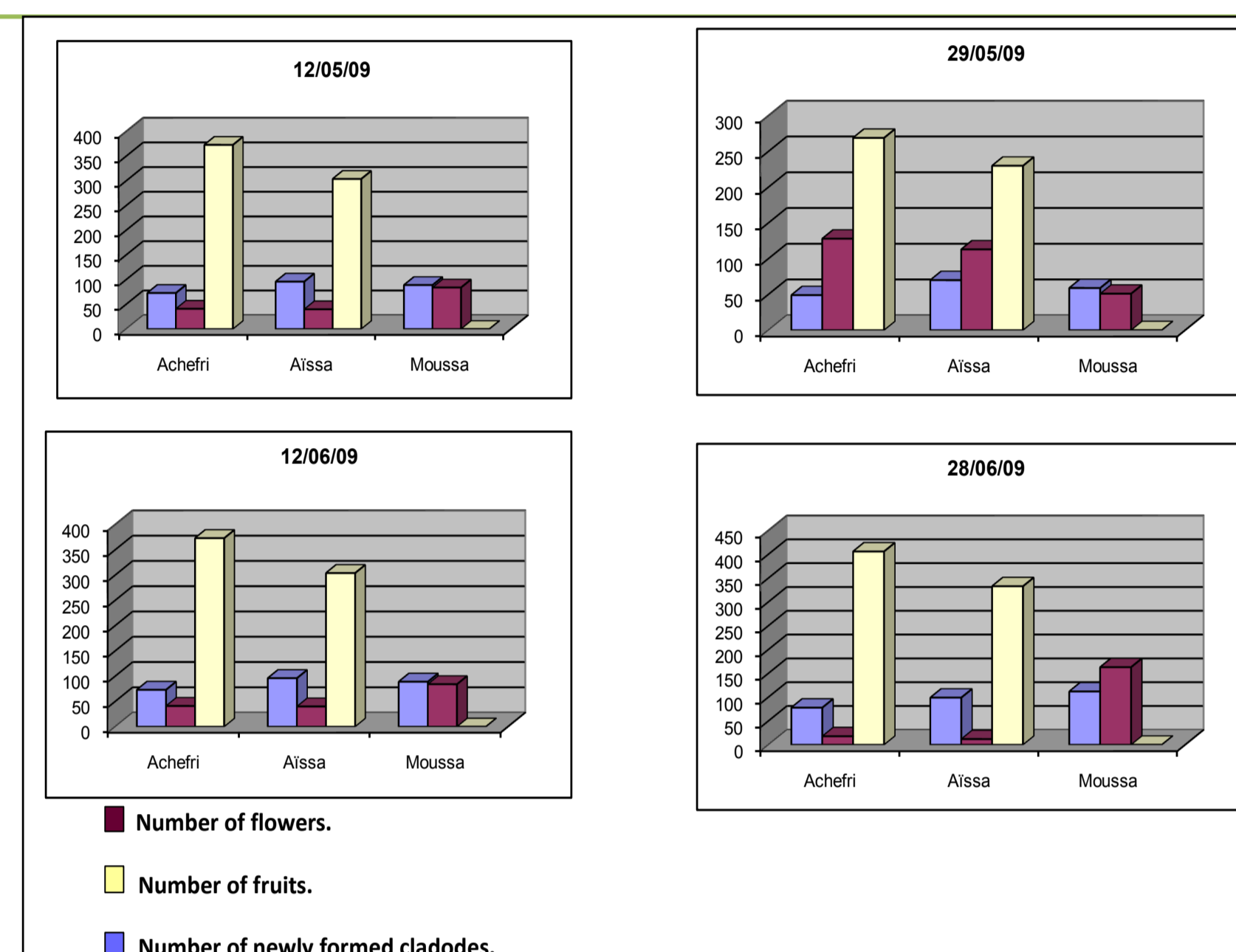
The maximum of flowers and cladodes production was occurs in the month of July and the maximum of fruit production takes place in October.

Statistical analysis of data performed using analysis of variances, principal components analysis (ACP) and discriminant function analysis (AFD) showed that the tree cultivars are well separated and distinguishable from each other and there is a large amount of variability within cultivars.

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The greater squared Mahalanobis distance is observed between Moussa and Achefi (31.18) while the lowest distance is recorded between Aïssa and Achefri (14.90).

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