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Impact of butchers and market trends on the integrity of small ruminant genetic resources

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Abstract

Large urban market changes have been noticed in Tunisia for an animal that produces carcasses with a thin tail in contrast to carcasses of animals with a fat tail. In response to this trend, farmers are crossing the Barbarin (a fat tailed breed) with thin tailed breeds (Algerian Ouled Djellel and Black Thibar). This is happening at the time when the fat tail is known as a criterion of adaptation to harsh conditions and fat tailed animals are preferred for religious practices. The objectives of this study were to identify reasons for these changes and assess the degree of crossing between the Barbarin breed and thin tailed breeds. A total of 912 surveys was conducted in three major sheep regions covering the capital and 5 departments and including 601 sheep owners, 158 butchers and 153 consumers. Main results showed that even though only breeding operations are still practiced, fattening activities (breeding-fattening or fattening) are becoming more and more dominant. While breeders and consumers are still preferring, in their majority, the Barbarin fat tail breed, butchers tend to favour mainly thin tailed breeds because of the difficulty of selling the fat of the tail that represents till 15% of the carcass weight. To meet butchers demand, farmers are shifting to thin tail breeds and crosses. Market changes for thin tailed breeds in the studied areas were dictated by butchers and not consumers preference.

Key words: Barbarin, market, sheep, butchers, carcass

Introduction

Tunisia is endowed with a wealth of genetic resources adapted to a range of dry environments with extreme climate fluctuations during the year. Most of these resources (80%) are owned by small farmers with low income in rural areas. The Barbarin fat-tailed sheep is the most numerous and important breed in the country with a distribution in all production environments. The breed is well adapted to the prevailing agro ecologies with ecotypes that apparently allow farmers to access specific production niches. However, the breed has its preference in the large urban markets apparently under change for an animal that produces carcass with a thin tail in contrast to the fat tail. The Barbarin fat tail represents an important portion (15%) of the carcass.

Of over 4 millions breeding ewes in Tunisia, approximately 60 % are fat tail Barbarin (BB). The remaining are thin tail breeds: 35% are Algerian thin tail, 2.1% are Black Thibar (BT) and 0.7% are Sicilo-Sarde. The Sicilo-sarde is the only specialized dairy sheep breed in Tunisia and in North Africa. The Algerian thin tail breed is known as “Ouled Djellel” in Algeria “Queue Fine de l’Ouest (QFO)” in Tunisia. It is a common breed between the two countries.

Whether the preference for a non fat tail is a real change in the consumption habits or a consequence of the market meat price that favors thin tail live animals or both is not known. In response to these trends, farmers started a massive crossbreeding of Barbarin with thin tailed breeds that, in the long terms, could have an impacting consequence in the integrity of the genetic resources. It is important then to quantify how intense is this process and understand better the nature by which farmers are looking at other alternatives and assess the positive and negative consequences of indiscriminate breeding. This understanding could provide important clues for research and policy makers for devising better management strategies of genetic resources management while helping rural farmers targeting their opportunities for income generation. In addition, it will help to stop the loss of adapted variability. The objectives of this work were to: 1) assess the degree of change in the genetic structure of Barbarin flocks and the degree of crossing between this breed and thin tail breeds and 2) understand the underlying causes that are moving farmers to crossbreed their flocks.

Materials and methods

Surveys

Surveys were conducted in three major regions of small ruminants in Tunisia: The North West (Siliana), the Center East (Sidi Bouzid) and the Capital Tunis with its three neighboring Departments (governorates of Ariana, Ben Arous and Manouba). The last four Departments will be referred to, in this article, as "Big Tunis". Three types of surveys were developed. One survey for livestock owners, a second one for butchers and a third one for consumers. All surveys aimed to identify reasons and trends especially for types of animals preferred by these three categories. Surveys were conducted during three months (November 2004 till January 2005) before Aid El-kebir which is a religious Holliday when a large number of lambs are scarified.

After editing the gathered information, a statistical analysis was made using Chi-squares procedure of SAS (SAS 1999).

Results and discussion

Information from a total of 912 questionnaires were gathered in three main regions of sheep meat breeds (Table 1). One hundred and fifty three consumers were surveyed at random during the butchers survey. Butchers were located in towns and in rural areas. Classes of ages by category shows that the majority of livestock owners (60%) are older than 45 yrs while the majority of butchers are younger than 35 yrs. This might be an indication of the advantageous economical activity of being a butcher, making young people going to this business.

Table 1. Surveys conducted by category and region

Region	Butchers		Consumers		Livestock owners		Total
	N	%	N	%	N	%	
Big Tunis	**63**		**71**		**257**		**391**
age <= 35		48		32		23	
35 < age<45		22		31		17	
age >= 45		30		37		60	
Sidi Bouzid	**33**		**32**		**152**		**217**
age <= 35		58		53		22	
35 < age< 45		15		13		16	
age >= 45		27		34		62	
Siliana	**62**		**50**		**192**		**304**
age <= 35		47		45		22	
35 < age< 45		18		05		16	
age >= 45		35		50		62	
Total	**158**		**153**		**601**		**912**

Sheep activities

Dominant sheep activities in the studied areas are shown in Table (2). Three activities were identified. In Big Tunis, the capital area, 59 % of livestock owners are breeder-fatteners, 25 % are only breeders and 16 % are fatteners. In Sidi Bouzid, livestock owners are mainly breeders (47 %) while 33 % are breeder-fatteners and 20 % are fatteners. Siliana is in a between situation. Even though breeding sheep is still encountered as an activity by itself, fattening activities (breeding-fattening or only fattening) are becoming more and more dominant and they represented 75 %, 53 % and 65 % of sheep activities in big Tunis, Sidi Bouzid and Siliana, respectively.

Table 2. Sheep activities by region (%)

Region	Breeder	Breeder-Fattener	Fattener
Big Tunis	25	59	16
Sidi Bouzid	47	33	20
Siliana	35	53	12

The fattening operation was mainly practiced to satisfy a massive demand for lambs during the Aid, a religious Holliday where lambs are sacrificed. The breeder-fattening operation, on the other hand, serves more than one purpose. Beside selling lambs for the Aid, lambs are sold to meet the family financial needs during the year round.

Most of lambs from the specialized fattening operation in big Tunis (84%) were sold for the Aid, while 52% of lambs sold by breeder-fatteners were for the Aid and 48% of lambs sold were for family financial needs. In Siliana, lambs sold for the Aid by fatteners, represented 47% and those by the breeder-fatteners represented 41%. The same trend, as in Siliana, was seen in Sidi Bouzid. This indicates that the main objective of fatteners in big Tunis, was to produce for the Aid, while in the other two regions both the Aid and family financial needs have similar importance.

Identification of trends

Sheep breeds composition

Sheep ecotypes encountered in the studied areas were the Barbarin (53% in Big Tunis; 49 % in Sidi Bouzid; and 74 % in Siliana). It is worth notifying that one decade ago, Sidi Bouzid had only the Barbarin breed which represents, these days, only 49 % of its total sheep population. The new breed to the region is the thin tail QFO and it represents 46 % (Table 3). While only two breeds (the Barbarin and the QFO) and their crosses are encountered in Sidi Bouzid, the big Tunis and Siliana have the Barbarin and two thin tail breeds (the QFO and BT) and their crosses. This is to show that thin tail breeds are gaining position in number and in space at the expense of the fat tail well adapted Barabrin.

Table 3. Sheep ecotypes raised in studied areas (%)

Region	Barbarin	Thin Tails		Crosses
Big Tunis	53	**QFO**	15	
				16
		BT	16	
			31	
Sidi Bouzid	49	**QFO**	46	05
Siliana	74	**QF**	14	
				08
		BT	04	

Butchers preferences

Figures in table (4) show that butchers preferences were 76%, 79% and 55% in favor of thin tail breeds compared to fat tail Barbarin lambs in big Tunis, Sidi Bouzid and Siliana, respectively. Beside Siliana, where the thin tail and fat tail lambs are almost equivalent in preference with a little superiority to thin tail lambs, all butchers in the other two regions prefer thin tail lambs.

Table 4. Butchers breed preferences

Breed	% in big Tunis	% in Sidi Bouzid	% in Siliana	Number of lambs slaughtered in big Tunis	%
BB	24	21	45	128	32
QFO	27	79	21	99	25
BT	28	-	11	96	24
X	21	10	23	77	19
Total	100	100	100	400	100

Reasons for breeds choice (Table 5) showed that thin tail breeds are butchers favorite. Even though the Barabrin breed got the highest answer (41%) for consumers habit, carcass yield and meat quality (less fat in the carcass) are apparent main reasons for butchers to choose thin tail breeds. Butchers favor thin tail breeds in 59%, 99% and 80% for consumers habits, carcass yield and meat quality. This apparent judgment is in total contradictions of scientific

findings proving that the barabrin and thin tail breeds are not different in carcass yield and carcass quality (Atti et Khaldi, 1988).

Table 5. Reasons for butchers breed preferences (%)

Reasons	BB	QFO	BT	Crosses
Consumers habit	41	24	14	21
Carcass yield	1	51	34	14
Meat quality	20	40	24	16

Consumers preferences

Consumers breed preferences are shown in table (6). The majority of consumers prefer Barbarin lambs over thin tail lambs. Consumers were 55%, 59% and 70% in favor of the Barbarin breed in big Tunis, Sidi Bouzid and Siliana, respectively. These results are in total contradiction of butchers breed preferences reported in table(4).

Table 6. Consumers breed preferences (%)

Regions	BB	QFO	BT	Crosses
Big Tunis	55	24	7	14
Sidi Bouzid	59	41	-	-
Siliana	70	22	2	6

Reasons for consumers breed preferences are shown in table (7). These figures show that even though consumers still prefer fat tail lambs due to traditional consuming habits and favoring the taste of Barbarin lambs, the latter are not available on markets. The availability on markets is a translation of butchers policy that favors thin tail breeds over fat tail breeds. Butchers usually express their concern about the fat of the tail of Barbarin lambs which can not be sold easily. This is why the availability of Barbarin lambs in market is lacking.

Table 7. Reasons for consumers breed preferences (%)

Reasons	BB	QFO	BT	Crosses
Consumers habits	70	17	3	10
Meat quality	59	30	5	6
Availability in the market	17	45	7	31

Farmers preferences

Livestock owners choices showed a slight superiority toward the Barabrin breed but there is a clear trend toward thin tail breeds and their crosses. There were 58%, 46% and 59% of livestock owners responses in favor of the Barabrine breed. It is worth notifying that Sidi Bouzid region, which is used to be known as the birth place of the Barbarin breed, is now split (half and half) between the Barbarin breed and the thin tail breed (QFO) (Table 8).

Table 8. Trends in farmers breed preference by region

Regions	BB	QFO	BT	Crosses
Big Tunis	58	12	15	14
Sidi Bouzid	46	45	-	9
Siliana	59	24	4	13

In looking at farmers preferences by livestock activities (table 9), it appears that breeders favor the Barbarin breed in 64% of their answers. The same trend can be said about breeder-fatteners. On the other hand, fatteners tend to favor thin tail breeds over the Barabrin.

Table 9. Trends in farmers breed preference by activity (%)

Activity	BB	QFO	BT	Crosses
Breeder	64	22	16	
Breeder-fattener	59	17	10	14
fattener	42	30	8	20

Reasons for farmers preference are shown in table (10). Hardiness is the trait of choice of the Barbarin breed. Fat tail is an adaptive trait suited to environments with extreme fodder availability fluctuation during the year (Iniguez, 2005). Prolificacy gave the advantage to thin tail breeds.

Table 10. Reasons for farmers breed preferences (%)

Reasons	BB	QFO	BT	Crosses
Hardiness	88	1	1	10
Meat quality	54	17	11	18
Prolificacy	9	49	39	3

Conclusion

Information generated in this study revealed that the shift toward sheep thin tail breeds at the expense of the fat tail Barabrin was mainly due to butchers interests and not consumers demand. It was found that, because difficulty in selling the fat of the tail, butchers were reluctant in selling fat tail animals. Consumers still prefer the Barbarin breed but farmers admit that butchers preferences are impacting their income because they are paying favorably thin tailed and non fat tail animals.

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