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Perspective of sustainable Piemontese cattle rearing in the north-west of Italy

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SUMMARY – To verify the prospects of sustainable livestock development of Piemontese cattle in their distribution areas, a survey was conducted with local farmers. Despite the reduction in the number of animals, the Piemontese breed is reared in extensive and traditional systems, as well as in marginal areas, because of the revenues farmers can obtain from the typical and high quality products. In the mentioned areas animals are normally fed on pasture and some producers complain about soil fertility losses due to the breed frugality that influences the amount of excreta, even if the breed hardiness confers animals a high adaptability to poor environments. In conclusion, Piemontese cattle rearing in the breed distribution areas is important to promote the territory and landscape maintenance and to avoid environmental imbalances. Political and financial measures recognising the additional market functions of such livestock systems could stimulate the local economy.

Keywords: Livestock functions, multifunctional activity, marginal areas, local breed.

RESUME *– "Perspectives de l'élevage durable d'animaux Piemontese dans le nord-ouest de l'Italie". Pour vérifier les perspectives de développement soutenable de l'élevage de bétail Piemontese dans les zones traditionnelles de diffusion de la race, a été menée une enquête auprès des éleveurs locaux. Malgré une réduction du nombre de bétail, la race est encore élevée en systèmes extensifs et traditionnels, même dans les zones marginales, en raison du bon revenu obtenu par les produits typiques et de haute qualité. Dans ces zones les animaux sont normalement alimentés au pâturage, et quelques producteurs déplorent des pertes de fertilité du sol dues à la frugalité de la race qui influence la quantité d'excréta, mais à leur rusticité les animaux doivent une adaptabilité élevée aux environnements pauvres. Donc, la présence de l'élevage du bétail Piemontese dans la zone de diffusion de la race est importante pour promouvoir l'entretien territorial et du paysage et pour éviter un déséquilibre environnemental. Des mesures financières et politiques, en stimulant les fonctions agricoles extra-économiques de tels systèmes d'élevage, pourraient stimuler l'économie locale.*

Mots-clés : *Fonctions zootechniques, activité multifonctionnelle, zones marginales, races locales.*

Introduction

Livestock develop several environmental functions and services, both positive (territorial maintenance, rural employment, food security, etc.) and negative (environmental pollution, erosion, landscape changing, system entropy growth, etc.) (Biagini and Lazzaroni, 2001). Generally the firsts prevail in non-intensive rearing systems and the lasts in intensive ones (Aimone and Biagini, 1999), and the public opinion is interested to stimulate the less intensive rearing systems, more respectful of animal welfare and guarantying a more healthy production. It appears clearly that sustainable productive processes are often linked to the livestock multifunctional role.

In the North-West of Italy (Piemonte region) an important multifunctional role is developed by the Piemontese cattle breed rearing, especially for marginal areas subject to environmental risk. In fact, in spite of a reduction in the number of such animals and farms –with a decrease in the last twenty years approximately of 35% in the cows and 50 % in the total cattle number, these lasts reared in about 15,000 farms (APA Cuneo, 2005)–, the breed is still spread in hilly or mountain areas, where begin to be evident the effects of the agriculture abandonment. In such areas, where is important the maintenance of sustainability of the agricultural and livestock production systems, the Piemontese cattle are reared in extensive and traditional systems for the good income obtained by typical and high quality products (meat and cheese), very appreciated by the market.

To evaluate the sustainability of the Piemontese cattle rearing and its future developing perspective in the breed traditional diffusion areas, a survey has been carried out on local farmers in

the North-West of Italy. The aim was also to determine the local and specific real or potential extra-market functions, related to the socio-economic environment, to be stimulated by financial and political tools.

Materials and methods

A questionnaire was prepared and submitted to a representative sample of local farmers rearing Piemontese cattle and joining to EU Council Regulation 1257/99 on support for rural development stimulating sustainable productive systems adoption. The farms were chosen following the indications of two local Producers Associations and the Breed National Association, and 48 local farmers answered to the questionnaire. In the studied area the number of farmers and animals enrolled in the registry of the Breeders' National Association were about 2,700 and 181,000 respectively (ANABORAPI, 2005), but much more were the farms and the animals not enrolled.

To understand the perspective of growth for a sustainable Piemontese cattle's rearing is essential to know the farms characteristics and their link with the socio-economic environment. So, the surveyed data were: (i) general information on the farms characteristics and typology (management form, total farm area, cultivated areas, production re-employment, workforce, family workers number, plots scattering, etc.); (ii) livestock characteristics (reared species and breed, number of animals and their categories, feeding systems, manure production and management, etc.); and (iii) environmental, territorial and socio-economical functions (extra-agriculture no-paid activity carried out). The link to the socio-economic environment was estimated on the basis of the farmers' answers and the changes in agricultural, livestock, social and economic macro-indexes.

Results and discussion

The farms were prevalently sited in hilly or mountain areas (average farms altitude about 600 m) and their characteristics are showed in Table 1. The greater number of producers joined the organic livestock regulation (EU Reg. 1804/99, financed by EU Reg. 1257/99) and in these productive units, obviously, also the vegetable productions were organic converted. All the farms were family managed and the workforce was prevalently by the family. In fact, only 4 farms had engaged one salary worker, generally employed in animal surveillance on pasture. These findings underline the farm extensive management system adopted. The farmers joined the EU Council Regulation 1257/99 on support for rural development mostly for the financial support assigned by the Region to stimulate the sustainable productive systems adoption, but those that strongly believed in the extensive productive process importance were over 20%. These latest ones represent the producers' quota that should proceed with a sustainable method adopted also without public support.

In the investigated areas many farms had little size, but the sampled farms had an average extension of 77 ha. Among the farms, in fact, the middle (30-50 ha) and big ones (>50 ha) were the majority, especially due to the large alpine pasture rented. The data was confirmed also by the extension of the pasture area, similar comparing the >50 ha classes. The pasture was used by all the farms, but extensively (low number of animals per hectare, able to preserve the integrity of the pastured surface) only by more than the 50% of the sampled ones also before to join the EU Regulation1257/99. The pasture area (average extension about 54 ha) prevailed over the meadow ones (average extension about 15 ha) and the meadows, at least one per farm, were used both for fresh feeding and hay production. The crop area (average extension about 13 ha) was linked to the farm feedstuffs production. In fact the cultivations were corn (barley and maize) or legumes (protein pea). The corn fields were utilised also for the forage production (maize silage) and some corn derived products were utilised for animal feeding (bran and straw).

A large share of farms (73%) carried on also other cultivations, maintaining a productive diversification. These ones, together to the farms plot fragmentation (the average plots number was 34), assured a balanced, but onerous, soil utilization and a spread of human and animal presence on the territory.

Table 1. Farms characteristics

Investigated aspects	Categories or classes	%
Management form	Property	31
	Rent	17
	Property and rent	52
Productive system	Organic livestock	62
	Conventional livestock	38
Family workforce	1	32
	2	52
	3	14
	4	2
Farms with salary workers	1	8
Reason for EU Reg. joining	Financial support	42
	Personal choice	21
	Others	37
Total farm area	<10 ha	6
	10-50 ha	56
	>50 ha	38
Meadow area	<10 ha	54
	10-50 ha	41
	>50 ha	5
Pasture area	<10 ha	37
	10-50 ha	32
	>50 ha	31
Crop area	<10 ha	64
	10-20 ha	18
	>20 ha	18
Orchard and wood area	<5 ha	61
	5-10 ha	11
	>10 ha	28
Other plants or non utilized area	<5 ha	83
	5-10 ha	11
	>10 ha	6
Pasture managed extensively	Yes	56
	No	44
Plots number	<10	20
	10-30	50
	>30	30

Livestock characteristics are reported in Table 2. The number of reared cattle showed a prevalence of medium and big herds. Almost all farms (98%) bred Piemontese cows and only one had also one other beef breed (Limousine). Again, only one farm reared also a dairy breed (Alpine Grey). Considering the little amount of those rearing also others species, as sheep, goat and swine, the examined farms showed a high productive specialization. Concerning the cattle rearing system, the free range system was adopted by a high number of producers, also if the tied stall was still adopted from the majority of them. Nevertheless, in such farms the animals could use pasture or open areas for several months in the year. Moreover, in the mentioned area the animals were normally fed on pasture, also the alpine ones. Such practise was usually adopted also in the studied farms and the alpine pastures were utilised by about 70% of the farmers, allowing the farmers to rear a low number of animal per unit area (for the organic farms the critical limit is normally considered 2 Adult Livestock Unit, ALU, per hectare of Utilised Agricultural Area, UAA). The low number of animals per hectare

could be linked to the soil fertility losses complained by some producers. Such problem is perhaps due to the Piemontese breed frugality that influences the excreta quantity and then the supply of nutrients and organic matter to the soil. In fact, for the Piemontese breed organically reared there is a derogation of the conversion coefficient to evaluate the farm animal load. Moreover, the breed rusticity is important in a sustainable livestock productive system because give the animals a high adaptability to different and poor environments. The produced excreta were exclusively solid manure and it was mainly re-employed on the farm plots. The prudential limit of 170 kg/ha for nitrogen supply was exceeded only in a little number of farms (10%). Only two producers partially sold or exchanged the manure for straw; four did not store manure but directly spread it on the soil. Considering the cultivation allotment, only a little number of farms (8%) needed buy forage to partially compensate an insufficient self production, while the feedstuffs self-sufficiency was assured only in the 21% of the farms. Only one farm sold the weaned calves, otherwise the calves were fattened and sold as bulls and rarely as steers or oxen. Although the livestock products transformation was not investigated, in some farms the cows were milked for cheese production ("Bra" or "Castelmagno" PDO cheese and other farm's cheese), sometimes directly sold to the consumers.

Table 2. Livestock characteristics

Investigated aspects	Categories or classes	%
Piemontese cattle number	<10	10
	10-50	50
	>50	40
Piemontese cows number	<10	21
	10-50	47
	>50	32
Farms with others cattle breeds	Beef	2
	Dairy	2
Farms with others species	Sheep	2
	Goat	4
	Swine	2
Cattle rearing system	Free range	23
	Pens	15
	Tied stalls	62
Cattle on pasture	<4 months	28
	4-7 months	46
	8-10 months	20
	>10 months	6
Cattle on alpine pasture	Yes	69
	No	31
ALU per hectare of UAA	<0.5	30
	0.5-1	32
	1-2	28
	>2	10
Manure employment	Only on farm plots	96
	Also sold	4
Manure nitrogen soil supply	<170 kg/ha	90
	>170 kg/ha	10
Manure storage	Yes	92
	No	8
Purchased feeds	Only forage	2
	Forage and feedstuffs	6
	Only feedstuffs	73
	None	19

In the farmers interviews, the no-paid activity (positive externality by an economic point of view) indirectly developed by the agricultural and livestock presence and their socio-economic repercussion were investigated. The extra-agriculture functions were classified (Table 3) on the basis of their prevalent spin-off in: (i) environmental; (ii) territorial; (iii) and socio-economical function. Analysing the farmers' activities declared during the interview, among the environmental functions the water management should be stimulated also considering the local recent alluvial events. The stone walls and terracing care should be stimulated because important for territory maintenance and as landscape component with socio-economic spin-off. Several livestock activities develop environmental or territorial functions such as organic matter soil supplies with spread manure, woody fires and avalanches prevention, visual value of rural landscape, territory surveillance, secondary road and path maintenance. For the territorial aspects, only the secondary buildings utilise and care, where the tourist's flow is higher, and the presence of animals in the mountain's landscape should be stimulated. Others functions have repercussions on the local economy and society. So, to stimulate the tourists' visits could be important increase the recreational areas and the farms tourist activity. Also the public support to local and typical livestock production could stimulate the local economy.

Table 3. Benefit linked to the livestock activity with environmental (E), territorial (T) and socio-economical (S) prevalent functions

Benefit	Function	To be stimulated	Link to socio-economic environment†
Water management	E	Yes	M
Dry-stone walls care	E	Yes	M
Terracing cares	E	Yes	M
Country roads restore and maintenance	E	No	H
Territory maintenance	E	Yes	H
Organic matter soil supplies with manure	E	Yes	L
Woody fires and avalanches prevention	E	Yes	H
Areas near untilled fields care	T	No	H
Farm roads system maintenance	T	No	M
Secondary buildings use and care	T	Yes	M
Transhumance paths and roads care	T	No	H
Mountain pasture uses	T	No	L
Farmers at mountain pasture	T	No	L
Animals at pasture by night	T	Yes	L
Farms-tourist paths proximity	S	No	M
Recreational areas presence	S	Yes	H
Farms tourist activity	S	Yes	H
Farm products selling	S	Yes	H

†Socio-economic interaction: L = low; M = medium; H = high.

Conclusions

Considering the recent changing process of the UE agriculture begun with the new millennium, that seems to show a long-term risks of unsustainability (Hodges, 2005), the presence of a considerable number of Piemontese cattle in local marginal areas, reared in a sustainable way, could represent a deterrent to the territorial damage and could have important repercussion on the local socio-economic environment. The characteristics of the examined farms show the possibility for a development of a competitive but sustainable production, primarily considering the high value of the Piemontese cattle productions and the breed territorial integration. In conclusion, the presence of Piemontese cattle rearing in the traditional breed diffusion areas is important to promote the territorial and landscape maintenance and to avoid a possible biotic and abiotic imbalance. The valorisation of local and typical productions, so as specific financial and political measures recognising the agricultural extra-market functions of such livestock systems, could prevent the reduction of Piemontese cattle in the examined areas and also stimulate and improve the local economy.

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