Traditional Production and Extensive Livestock Breeding in the Historical and Current Use of Public Land in the Province of Latina

Fagiolo A., Parisella P., Forlenza G.

in

Rubino R. (ed.), Morand-Fehr P. (ed.).
Systems of sheep and goat production: Organization of husbandry and role of extension services

Zaragoza : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 38

1999
pages 327-337

Traditional production and extensive livestock breeding in the historical and current use of public land in the province of Latina

A. Fagiolo*, G. Forlenza and P. Parisella***
*Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana,
Via Appia Nuova, 1411, 00178 Roma/Capannelle, Italy
**Centro Istruzione Professionale Agricola, Assistenza Tecnica, Lazio,
Via B. Baldanzellu, 42, 00185 Roma, Italy

SUMMARY - This survey includes some territory of the former Papal State which currently belong, to the mountain and piedmont areas of the province of Latina. The territories examined belong to the XIII Mountain Community of Monti Lepini outside the areas enclosed in the commune of Terracina. This survey focuses on the orogeographical origin, the characteristics of the breeding farms, the husbandry and forestry.

Key words: Public lands, forage-areas, ranching, quality.

RESUME - *"Production traditionnelle et amélioration génétique de l'élevage extensif en ce qui concerne l'utilisation historique et actuelle des terres publiques de la province de Latina". Les montagnes et les piémonts des territoires des anciens Etats papaux aujourd'hui inclus dans la Province de Latina sont constitués en douze communautés de montagne des Monts Lepini faisant partie de la commune de Terracina dont nous étudions l'origine orogéographique, les caractéristiques des fermes d'élevage et les forêts.*

Mots-clés : *Terres publiques, fourrages-surfaces, élevage extensif, qualité.*

Introduction

The following research work, which focuses on the use of the public lands of the province of Latina, concerns exclusively the communes of the northern and central areas (from Terracina to Roccamassima). The inhabitants of these territories, which were enclosed in the Papal State, are entitled the right of public use; a right which shows accurate historical evidence. The enquiry carried out in the Archives of the State in Latina (Table 1), showed that the public land in the communes analysed amount to 30,000 hectares out of a total surface of 60,000 hectares. More than one kind of public land has been appreciated.

(i) Total public land: the right of pasturing, gathering firewood and fruit harvesting could be exercised throughout the year.

(ii) Partial public land: the right of pasturing, above all, could be exercised for some periods.

(iii) Public use onto private land.

A small amount of money called "Fida Pascolo" was paid in orda to use public lands, furthermore, it was distinguished between big and small animals. The use of private lands was paid to the owner in kind.

The search for the use could be carried out by the citizens of the commune, outside the territory of the commune itself, i.e., on territories enclosed in other communes. It was possible to point out different kind of Joint estate, i.e., agricultural co-operatives, associations of producers, confraternities and other social bodies. All this served to the utterly agricultural economy so as to supplement the income of the farms and to favour their subsistence. The territorial, physical, juridical and legislative changes occurred as a result of the drainage of the Pontine Marshes (during the 1920s-'30s) as well as the enfranchisement and legitimation of large public areas (state properties and public lands).

Local authorities could hardly identify the public estate. At present, it is hard to quantify the extension of public lands or land subject to public use which represent the greater part of mountain lands or fringe territories, assessed at 15-16,000 hectares.

Table 1. Surface during the Papal State

Commune	Altitude (above sea level)	Total surface		Right to pasture		Year
		Table†	Centiare††	Table	Centiare	
Priverno	150	74087	71	30866	28	1870
Roccagorga	280	23682	76	6797	60	1870
				4000*	18*	1870
Prossedi	200	20729	64	6856	28	1870
Terraciana		200003	88	150000		1870
Bassiano	560	31235	7	5783	21	1865
				4388**	20**	1865
				14115***	17***	1865
Cori	380	64090	3	13208	8	1870
Sonnino	400	63953	72	17148	12	1864
Norma	400	31655	95	9817	77	1865
Roccamassima	730	17762	26	4549	1	1870
Sermoneta	250	46577	68	33988	63	1870
Giulianello		19173	34			1870
Maenza	350	3856				1870

†1 table=1,000 square metres
††1 centiare=100 square metres
*Property Doria-Pamfili; **Property Pietrosanti; ***Property Comune di Cisterna

The territory

Geography

The territory analysed is situated in the region Latium, within the province of Latina in the orographic area of Monti Lepini and in the northern area of Monti Ausoni. It is about 60 km from Rome and it is situated on the 42nd parallel of latitude. The mountain groups belong to the calcareous ridge of Volsci which forms the Subappennine chain of southern Latium.

Geology-Morphology

The mountain chains examined are made up by calcareous rocks, dolomitic limestone and dolomitic rocks which originated from the middle Jurassic to the Palaeocene. The characteristic morphology of the first chain is formed by two parallel chains developing towards north-east and south-west. From North to South, Mount Lupone (1,378 m above sea level) is the predominant peak, likewise in the western chain Mont Malaina (1,480 m), Mount San Marino (1,387 m) and Mount Gemma (1,457 m). Monti Lepini are about 15 km from the sea.

The second group, Monti Ausoni, is divided from Monti Lepini by the valley of the river Amaseno, it appears as a not very high tableland which degrades eastwards into the valley Latina and westwards onto the Tyrrhenian sea. Thus, it forms the Gulf of Terracina and the large amphitheatre that surrounds the plain of Fondi as far as Sperlonga. The main mountains are: Mount Calvilli (1,116 m) and Mount delle Fate (1,160 m) (Table 2).

Table 2. The surfaces of the agricultural regions of the province of Latina which are at a disadvantage established by the EEC REGULATIONS 75/273 and 84/167 and total number of the farms operating in the respective territories

Commune	Total surface (ha)	Mountain surface (ha)	Farms number
Bassiano	3163	3163	206
Cori	8601	2910	1629
Maenza	4257	4257	709
Norma	3082	3082	669
Priverno	5685	2000	1244
Prossedi	3608	3608	424
Roccagorga	2398	2398	1226
Roccamassima	1807	1807	281
Roccasecca	2363	2363	280
Sermoneta	4514	850	469
Sezze	10134	1900	2269
Terracina	13694	3540	2813
Sonnino	6376	6376	1832
Total	69682	38254	14051

Pedology

The main pedologic substrata in the territory analysed derive directly from the calcium carbonate origin of the geological substratum. The most widespread earth is the so-called Italian "terra rossa" which originated as a result of the dissolution of the rocks made up of calcium carbonate, formed by insoluble residues of the Mesozoic limestone. Generally, these rocks do not originate evolved soils, above all because of the superficial erosion, of the acclivity as well as of the deterioration of vegetation. The fertility of land is not high as well as the presence of nutritive elements. This kind of land is lacking in assimilable phosphoric anhydride; provided with potassium, on the average; and though deriving from a calcium carbonate origin, it lacks calcium. The reaction is subacid, from ph 5.5 to 6. and the humus content is very unsteady, ranging from 1 to 8 per cent. The capacity of water retention is high as a result of the structure which tends to be clayey.

The Mediterranean red soil is the most widespread substratum and allows the typical plant formation of the maquis and garrigue, when the vegetal cover is evolved, broad-leaved wood and forest develop in brown forest soil.

The other kinds of soil existing in this territory are formed by: tuff and pozzuolana, which are deposited in less steep areas, (valleys depressions) as a rule and normally they do not build up considerable strata. These ones were conveyed onto the mountains by the eruption of the volcanoes in Latium (one million years ago) as well as by secondary volcanic phenomena which occurred in several places in the ridge. These substrata evolve in acid reaction fertile lands, which are typical of deciduous broad leaved weed and of anthropical origin (pasture grassland). Other kinds of meadowlands of earth existing in this territory are: (i) sandy soils blown by the wind, which are typical of piedmont land; (ii) detrital soils which are under the main peaks and walls (screes); (iii) clayey soils deriving from inversions of beddings an from remote alluvial phenomena; and (iv) Miocenic soils which are detectable only in some places.

The last two kinds of soil are remarkably impermeable. If these soils lie in the depth of a natural depression, they originate small fillings and make up the main substrata which enable the formation of suspended strata which feed small sources at height.

Climatology

The general climate of the area examined is of the Mediterranean type with variations due to the exposure as well as to the altitude. Furthermore it is influenced by the distance from the sea. In the

area of Monti Ausoni which are overlooking the sea (Terracina, Sonnino, Roccasecca), the climate is typically Mediterranean (Blasi, 1993).

Lower Mediterranean thermotype with average precipitations ranging from 1,000 to 1,200 mm of rainfall in a period of summer dryness (July-August), average temperature 17°C and a brief period of stress caused by winter cold (November-March). A similar climate occurs in the piedmountain hilly area of Monti Lepini, where the precipitations are more important since it is farther from the sea. In the submontain and mountain horizon, sheltered by the hilly area, two less typically Mediterranean belts can be examined:

Upper hilly thermotype (sub-mountain) which involves the belt with an altitude ranging from 800 to 1,200 m as well as the walls with a northern exposure. It is characterized by abundant precipitations, 1,200-1,500 mm of rainfall, by brief summer dryness, average temperature 12-14°C and by a prolonged period of stress caused by cold (November-March).

Mountain thermotype which concerns the belt of the top of the mountains, Mount Lupone and the group of Mount Semprevisa. It is characterized by high precipitations, 1,300-1,600 mm of rainfall, average temperature 9-10°C, no summer dryness and remarkable stress caused by cold which can last from October throughout May.

Vegetational aspects

The natural vegetation of the territory is directly influenced by the climate, the exposure as well as by the pedologic substratum. In the low-lying areas with a southern exposure, the forest vegetation of the holm oak can be examined, with variations in the areas closer to the sea where also the carob tree grows (Terracina-Sonnino). The deteriorated forest formation originate the Mediterranean Maquis, the garrigue as well as the steppe.

The Mediterranean maquis is mainly made up of: lentiscus, buckhorn, oleaster and mirtle. The garrigue is made up of: rockrose oleaster, lentiscus and asparagus. The steppe is made up of some bulbous plants. The cork plantation and its degradations can be found in more acid and siliceous substrata (in the area Priverno-Fossanova). In the submontain area, the predominant wood is the mixed deciduous broad-leaved wood where the black hornbeam, the oak, the maple, the manna ash, the Eastern hornbeam, the white hornbeam, and fruit rosaceans are the prevailing trees and the cornelian cherry, the blood orange, the hawthorn, the terebinth and the broom are the prevailing shrubs. In this very area also the chestnut wood can be found (formations of anthropical origin) in acid tufaceous soils.

The pasture land, the grassland and the cultivated land have been obtained by man above all in the submountain area. The mountain area is characterized by the large wood of beech, maple (sycamore maple), white hornbeam, turkey oak, linden, yew and holly. In this area, there are also the so-called pesudo-alpine meadowlands, of a remote anthropical origin, situated to a great extent in the less steep valleys included between the highest peaks.

The forest vegetation, made up by high trunk and mixed woods, as well as by coppice and reforestation, occupies about 30% of the territories, the rest is covered by 20% by pasture land, by 15% by olive groves, 10% by abandoned cultivated lands; the rest is made up by 20% by degenerated soil (steppe, desert and stony soils, or by very sloping soils and by urbanized soils), as well as by 5% by shrubbery and bushes.

Pastures and fodder lands

Pastures and pasture meadows include also those lands that are defined uncultivated, unproductive and all those areas free from arboreal vegetation, in which there is an excessive presence of emerging calcareous skeleton, they are also called discontinuous pastures or soils with a slope exceeding 70%. An important consideration to make is that the whole land from sea level to 1,500-1,800 m should be covered with weed as this is the climax form of potential vegetation. All the fodder lands or anyway not covered with arboreal vegetation derive from the multimillenian

deterioration action directly or indirectly exercised on vegetation. Therefore most pastures derive from soils that have been cultivated for long during the centuries and have been progressively abandoned in the last century, particularly in the last 50-60 years. Only some very narrow lands situated in the highest areas (mountain peaks) on the horizon of the beech could be defined like pseudoalpine meadowlands.

In the less steep and more fertile areas, at least one mowing for haymaking is made in the period between the middle of May and the beginning of June and the hay obtained is kept in haylofts or sheaves. However the pasture meadow area is a very small part of the whole pasture land. The grass and fast-growing forage crops (alfalfa, field bean or grassland with more than one kind of crop) are even smaller and are generally located in the neighbourhood of cities and rarely in some internal "cesa" (Table 3).

Table 3. Division of fodder lands and productions

Typology	Index of covering (%)	Annual production (q/ha normal hay)	Used hay/ha annual average
Meadow pastures			
Meadow pasture wood	100-70	20	800
Degraded pasture			
Degraded tree pasture	70-50	10	400
Bushy pasture	50-40	6	240
Degraded bushy pasture	40-30	4	160
Degraded pasture			
Without bushes	>30	2	80

During cold periods herbivores survival is ensured by other food resources, that are scrubs and woods. In a study carried out in the commune of Bassiano (Bassani *et al.,* 1988), small representative sample, it has been estimated that only 1/5 of the fodder units necessary to satisfy meet the needs of the domestic animals bred in the commune were produced by natural fodder areas, olive groves and sowable lands (Table 4).

Table 4. Division UAS (utilizable agricultural soil)

Commune	Sowable land (ha)	Meadow pasture (ha)	Permanent cultivat. (ha)	Other (ha)	Total (ha)
Bassiano	13	670	264	349	3163
Cori	778	1474	3154	755	2910
Maenza	300	891	713	170	4257
Norma	103	449	1393	980	3082
Priverno	1795	1055	1090	189	2000
Prossedi	306	1088	443	107	3608
Roccagorga	399	217	804	323	2398
Roccamassima	20	616	420	304	1087
Roccasecca	250	615	312	206	2363
Sermoneta	2158	76	411	575	850
Sezze	3870	1598	450	262	1900
Sonnino	745	2251	1652	189	6376
Terraacina	5404	1063	934	857	3540

The remaining 4/5, which equals at 2 million fodder units, were satisfied through the purchase of food produced outside the municipal territory and above all by the secular use of the pasture in the wood. This emphasizes the importance of arboreous formations in the Mediterranean climate also for

a non natural activity such as extensive zootechnic breeding. Animals eat leaves, twigs, barks, buds, fruit, shoots, seedlings, withered leaves, roots, bulbs, rhizomes and can overcome difficult seasons with great nutritional stresses.

During cold periods weed and evergreen scubs (ilex groves, Mediterranean maquis) are very important as they permit a green feeding even if not completely balanced. During drier and more arid periods, deciduous woods (beech woods and mixed woods) provide for food shortage with foliage, buds, small branches, etc., that have higher nutritional value. The same shepherds in the area used and use to make the *"la fronda" (leafy branch)* that consist in cutting young leafy branches above all of hornbeams, manna-ashes, maples, beeches; they are eaten directly by animals or are kept in the *"cese"* and given out in winter. The persistent presence of animals in the weed has always caused their deterioration. At the same altitudes, on the same substratum, with the same steepness, the hottest sides are those which present the most degraded arboreous vegetation up to pre desert forms, while the coldest sides keep a very good vegetation coverage.

That happens as most of the year animals stop and feed on the hottest sides with great impact on the whole phenologic cycle of plants and only in the more arid summer times they go to the cold sides, less compromising the wood dynamics. The same coppice that predominates in the whole area, favours a fodder utilization in the wood. The present vegetation keeps the sign of this type of secular utilization from domestic herbivores. This is a general survey of food resources present in the area. The accidental, irregular, arrogant use of fodder resources, brings to a low transformation output and to their continuous impoverishment.

Botanic aspect

Pastures can be divided into three main classes: "xerobrometo", "mesobrometo", "errenanthereto", which should correspond to the areas that have been and are still influenced by man (manuring, mowing), that is the meadow pastures located in the best climatic and pedologic areas, obtained by the far-off tillage of mesophyll woods of oaks and hornbeams. Just like most of Appennine pastures, also the pastures of the area are considerably unbalanced in their flower composition with a clear prevalence of grasses over legumes; all that is produced by the excessive and uncontrolled grazing that is also the cause of the development of the infestand and nitrophilous flora. The same animal dejections, strewed on the ground, favour grasses and other pasture essences while they indirectly damage legumes that, as you know, directly fix nitrogen through "rizobi" and are sensitive to shortage of phosphor in which overexploited soils are lacking.

The grass production is aleatory as it is mostly concentrated in the months of May and June. In the typically Mediterranean climate, pasture grass starts growing towards the end of March, with certain exceptions for the most internal areas; it is at the height of the production in the month of May and from the end of June it is going to reach vegetative stagnation owing to the lowest rainfall and the great increase of temperature which causes aridity; the stagnation often lasts till all September. After the first rains of late summer there is a new growth in autumn and it can last till December, if the temperature does not drop too fast and for long periods. From December onwards there is winter vegetative stagnation due to the low temperature, often below zero or to the snow blanket. In the beechwood, there is not summer vegetative stagnation if summer is not too dry; there is instead a vegetative slowdown; vegetation develops late and in the lowest average temperatures it gets exhausted before, while the stagnation due to winter cold is longer.

The grasses are the first to appear, they are those which grow again in autumn while legumes germinate or bud later and persist more in summer and in winter; some of them like *Lotus corniculatus, Trifolium pratense* have been noticed till late December. The vegetation development of pastures has characteristics that may be found in the whole Mediterranean area, that is conditioned, as you know, by the temperature of rainfall as well as the exploitation of pastures and also of more species at the same time.

Zootechnical aspects

Since the early postwar period this area has been characterized by a prevalently agricultural woody pastoral economy (about 40% of population was employed in agriculture and sheep farming).

The main breeding was sheep rearing, therefore the figure of the shepherd was very important from an economic, social and cultural point of view; this economy and this tradition have developed and have lasted uninterruptedly for at least three thousand years, before the foundation of Rome and it seems that the ancient Volscian populations that invaded the area brought them. For this reason, their stamp on the area is wellmarked.

Till Pontine reclamation shepherds used to practice transhumance vertical to the Pontine plain, the middle and the lower Amaseno valley and the Sacco valley. This breeding system increased the fodder availability for rearing. In flat areas the flock stopped especially in winter in order to exploit grass availability; as regards the Pontine plain, they stopped in areas not submerged by water to exploit grass availability. After the cut of the corn, which was the most common cultivation in the plain, some flocks practiced transhumance on the stubbles in the period July. August which was very arid especially in the Amaseno and Sacco valley. Mountain populations owned large-sized areas in the plain as common properties, Agricultural Universities or Cow Societies (Agriculture University of Sermoneta and Cow Society of Sezze). Owing to the reclamation, these areas have been alienated for the building of new communes (Pontinia, Latina, Sabaudia) or released or used for different purposes, also extra agricultural.

Fodder resources outside the mountain area have been used, so that the great number of bred cattle head and also the great number of people employed in pasture have not caused a desertification of the area during the centuries. Owing to the sudden lack of these fodder resources, the coming of industrialization, the development of more modern and productive agriculture technics, a great number of people employed in pasture have abandoned the productive sector and the consequence was a downfall of the number of bred cattle.

In the thirties and fifties on the west side of the Lepini mountains, at present in the province of Latina, Morandini (1946) using the data of agriculture census, has deduced that 5,000 goats, 40,000 sheep, 8,700 cattle (of which at least 3,000 bred in the piedmont and flat areas of Sermoneta and Sezze), 9,000 horses and 6,000 pigs were bred. The area with the greatest zootechnic inclination resulted to be the middle Amaseno Valley, a reclaimed area in which sowable lands were spread and it was also possible to irrigate in some cases. If we compare the data of fifty years ago with the present ones, we can notice that the number of grazing animals has greatly fallen and consequently their pressure on the area has decreased too (Table 5).

Table 5. Zootechnic heritage

Commune	Total	AUL† (ha)	Buffalos	Sheep	Goats	Pigs	ABB
Bassiano	3163	1078	390	1260	830	50	320
Cori	8601	4972	590	2700	240	530	30
Maenza	4257	2636	950	495	540	125	130
Norma	3082	1365	104	1030	140	22	241
Priverno	5685	2841	2440	2023	180	290	164
Prossedi	3608	1294	1810	1710	720	100	180
Roccagorg	2398	1274	165	1400	242	70	537
Roccamass	1807	877	220	880	55	30	50
Roccasecc	2363	1007	740	550	390	75	140
Sermoneta	4514	2313	3289	946	43	18000	410
Sezze	10134	6739	3600	3870	560	418	230
Sonnino	6376	4356	1863	2700	446	194	130
Terracina	13694	6283	12100	1630	620	5014	207

†Agricultural usable land

As regards the zootechnic heritage of the communes of Terracina, Sonnino, Sezze, Sermoneta, Priverno and in part Prossedi, according to the data of ISTAT, cattle and buffalos are bred for milk and do not graze in the public land. The head of cattle bred for meat in a wild state in the above areas represent about 10%. Besides, in the communes of Sermoneta and Terracina there are intensive

breedings of pigs. In the flat areas of the communes of Sezze, Sonnino, Priverno there are permanent sheep breedings which do not use public land and they represent about 40% of the total heritage.

The great drop in the presence of animals in the area appears from the neglect and the decay of the traditional structures present in the area ("cese", pens, troughs, paths, shelters, dry walls, etc.), from the loss of fodder land owing to the invasion of thorny, toxic poisonous species or refused by animals and from a general revival of wood. From a naturalist point of view, that has caused an improvement of vegetable topsoil, but from another point of view now there is not any control of grazing which at present is practised indiscriminately on the whole area. This new scenery makes it possible a general reflection on extensive breeding and a reorganization in using fodder resources less harmful and not compromising the environment and vegetation.

Racial aspects: the sheep and goats traditionally bred in these areas have never belonged to special races. As regards sheep, races with many-sided aptitude have been always bred, even if we have news that just since last century there were numerous attempts to improve the heritage and there was the introduction of animals of "sopravissana merinizzata" breed the latter mostly in the side of the Amaseno and Sacco valleys. At present these races have been mostly supplanted through a crossbreed of replacement from "comisana" and its half-breeds, introduced in the seventies together with a number of Sardinian sheep. The half-breeds between these breed are very frequent.

Sheep: traditional breeding

The herds made up of "sopravissana" breed sheep consisted of 100-150 head an average, with on average of a male for each 20-25 adult females. The males were kept together with the females for the period from the covering till the birth, fecundation happened through the free covering which allowed and allows to obtain a high prolificness. The births took place in the period autumn-early winter even if a great number of sheep lambs also in spring. The females were kept productive for about eight years, while the males till five years. The rate of further covering was about 20%, that involved the sale of all the males and of 80% of the females at the age of one month or forty days, with a live weight of 10-12 kg and the meat was the main source of profit. Together with lambs adults were sold at the end of their productiveness, the latter with a live weight of about 35-40 kg.

The "sopravissana" race supplied a day average of half litre milk which was turned into cheese and "ricotta" on the spot. The yield was about 1 kg of fresh cheese every five litres of milk, from these quantities also 400 g of "ricotta" were obtained.

In mixed herds cheese was produced adding also goat milk, only in the period spring-summer, in winter only with sheep milk, as goats did not produce milk. The cheese rennet obtained from the abomasus of lambs and goatlings was used for making cheese. The stomach was corned through salting, then it was tied and put to dry in huts in the bad season and outdoors in the shade in the good season. The breeding of "comisana" and sardinian breed is still practised with these historical technics, even if the lamb is not any more the classical *"roman spring lamb"*, the milk production is greater but the yield of cheese is lightly lower. Now shepherds often integrate pasture with concentrates and hays. Cheese making is mostly a farm business, but industrial cheese rennet is used. Animals are more controlled from the medical point of view.

Goats: the animals bred in the area are not identifiable with precise racial characters, therefore it is more correct to consider them as a local population that presents morphological diversifications, but homogeneous performances. They could be also defined as parts of a population that shows a certain number of morphological characters through permanent frequencies; however these goats can be included in the widest population named *"Appennine Goat"*. The phenotype is medium-sized, very rustic with an exceptional adaptation to the environment and resistance to diseases; it is well adapted to semiwild breeding with good production of milk and very good fertility and prolificness, checkable in the whole area examined. The major morphological differences can be noticed in the coloration of coats, in the length of hair, in the shape and length of horns (a good percentage of the individuals presents the character "lack of horns"), the majority is characterized by short scimitar-shaped horns, others have spiral-shapes longer horns and a small percentage have helix-shaped horns.

It is a local population of ancient origins, descending from the breeds of the Mediterranean group which, in the course of history, has suffered isolated interventions of selection, with short supply of pure breed. Shepherds have empirically selected the animals for the production of milk, rusticity and

resistance. Few are the goat herds made up of more than 100 head; the majority consists of herds of small size. The ratio of males to females is one to 20-25 and they are present in the herd only in the period of covering, from September till November. In all the area the common characteristic of births has been found in the period late winter-spring, that is from February to March. The greater number lambs in the month of March. Shepherds usually try to concentrate the births in the month preceding Easter celebrations, to obtain as many milk goatlings as possible, mostly for the heavy demand for this type of meat during the feast period. The main productions are meat, cheese and "ricotta". Shepherds point out that the average daily goat milk production is greater than the one supplied by sheep and is 3/4-1 litre per day, for a period of 180-200 days of lactation. All the milk of goats is turned into cheese and "ricotta" every day. To obtain 1 kg of cheese, 8-10 litres of milk are necessary on average; from this quantity also 4 hg. of "ricotta" are obtained.

Besides sheep and goats also oxen, horses and pigs are bred in a wild state.

As regards oxen, animals are bred with characteristics belonging to Maremmana race often more and less mixed with meat and milk races (Charolaise, Chianina, Marchigiana, Bruna Alpina, Frisona Italiana). The local Maremmana race presents characteristics of the smaller and slimmer mountain phenotype, more suited to the environment.

Breeders have never engaged themselves in the selection of this race as wild cattle breeding is a part-time job which has to absorb few resources and little time. These animals are bred for meat, they are slow, have not rapid ponderal increase and their yield is middle low.

The horses bred in the area are the result of different genetic heritage, deriving from work horses which were bred formerly. Therefore there is not a precise race, but a heterogeneous population with different origins and characteristics. However the main characteristics can be attributed to Maremmana horse race adapted to the mountain.

We must also stress the presence of a small horse named Pony d'Esperia which is going to be selected again. Wild horse breedings can be considered the height of part-time. Small horse herds often live in a semi-wild condition. The breeder is mainly involved in choosing some animals for the sale of meat and he is rarely involved in foraging them in the most difficult periods or in providing for watering. Some horse breedings present in the area derive from ancient pasture farms; the shepherds retired or the members of the family, after leaving the main activity, introduce some brood-mares and a stallation into the area and start breeding.

Oxen and horses are present in all the environments of the area for the whole year, they often move by themselves following natural fodder availabilities and waterings. Almost all of them calve and foal naturally at the beginning of spring. In this way they can better exploit the natural fodder resources for location. In the Southern area of the district we are considering from Maenza till Terracina, there has been a diffusion of buffalo semiwild breeding (on limited areas) for about 15-20 years in the period of life going from heifers to adults. Breeders integrate natural pasture with fodders.

Pig wild breeding in the land is concentrated mostly in the Northern area of the district in the communes of Bassiano, Norma and Cori. Pigs live free all the year round and they can use natural food sources (acorns, fruit, rhizomes, tubers, roots) better than other species.

Any trail of the old local breeds is lost now, mostly half-breeds of English or Danish meat races (Large Withe, Landrace, Duroc) are bred (random). These phenotypes often determined by the crossbreed of the wild boar or selected by the environment, are characterized by smaller sizes; they show like the old races, the tendency to produce storage fat useful in the most difficult periods. Therefore they cannot be considered animals producing sausages, but meat.

All the species bred in the district use prevalently natural fodders which often have high biological characteristics. They live and reproduce according to their genetics and however in harmony with the environment. They are exposed to some zoonosis and to forms of parasitosis.

But after eliminating or keeping under control carbuncle and scab and after curing brucellosis, the main task is the reclamation of the environment and the planning of prophylaxis for parasitosis. All that includes the quality production of goods such as meat, milk, cheese which should have high nutritional values adequately appreciated.

Civic uses and collective lands

The extensive zootechny is one of the methods that allow the use of environmental resources in natural marginal areas, producing consumer goods, income, work, safeguarding traditions and culture. If this is true, it is necessary that it is carried out through rational not impoverishing systems which should respect also the general rights of the community: the public goods and the new values such as the environment, education, research and recreation (AA.VV., 1985). The condition of mountain areas and of vegetation coverage (meadows, pastures, woods) often reflects the precariousness of the utilization which is linked to the type of property of the land. These areas are mostly public properties belonging to the communes or are subject to civic use. Also in the district of this research the negative aspect of the abuse of civic use is evident. Local populations have exploited collective lands, mostly pastures, indefinitely and indiscriminately. Everyone has herded his own cattle to pasture in the best or most comfortable areas causing effects of overexploitation.

The floristic composition of pastures has been altered in favour of bad fodder species which are infestant adventitious or pioneers. Some overpastured woods risk to disappear for the lack of natural renovation caused by the animals' bite. Some infrastructures (paths, fencings, troughs, cisterns) are in a complete neglect as breeders prefer to let animals move for long tracts and are not interested in recovering these structures.

Conclusions

The public lands are the collective domain, the lands subject to civic use, the ones belonging to communities of citizens deriving from ancient rights of populations of which the local authority, the commune is only the representative. In the district we are considering, these public lands have allowed the establishment of an economic system with main agricultural woody pastoral vocation till the thirties and afterwards more and more marginal. The collective uses of the land have favoured the creation of an agricultural activity mostly directed to self subsistence; this has supported and integrated the economy and the existence of the traditional agricultural activities through pastures, the harvesting of acorns, fruit, leaves, wood and other.

These goods were collected on the soil in a dispersive and discontinuous way, and they were different sources of income often far also at legal and judicial level. Then through integral and landed reclamations, through releases, the best part of public lands has been privatized, that has made it possible the establishment of agricultural extra-marginal farms not any more devoted to selfsubsistence, but to the market. The remaining lands mostly mountain and hill areas which are not sowable lands, have not been privatized and still house a primitive traditional agriculture linked exclusively to extensive zootechnic breeding and to forestation. A part of mountain populations and the agricultural operators could take advantage of this possibility in order to develop the economy of the area in a balanced way. Therefore it is necessary a census of all the areas of civic use owned by the State in the district. Research programs on the consistency of goods should be carried out from an economic, environmental, naturalist point of view. A public juridical subject should be created with full availability of the management of the use of goods and their conservation for the common good of the community that owns them and for the satisfaction of new needs (AA.VV., 1985). In order to suitably exploit the fodder resources of the area, it would be better to make opportune use of pasture, dividing it into plots, considering both the fodder resources and the number of present animals.

Tree-covered areas and the ones where forestation works have been carried out, need a rest from grazing in order to re-establish the natural tree coverage. Besides some areas should be destined only to sheep as oxen and horses cause a greater damage to grass coverage with soil erosion phenomena. Also the use of wood from goats, if practised with some precautions is useful mostly for the undergrowth productions, which can cause fires in summer if they are not exploited. It would be necessary to carefully consider watering points, cisterns, troughs and springs. In fact watering points can be dangerous when they are used by more species and mostly when we do not know anything about the health of the animals that use the same watering point.

The springs where water stagnates are a risk for "fascioliasi". A rational use of pastures can help contain the parasitary diseases linked to the nature of soil; in fact steep, tree-covered or rocky soils are difficult to be reclaimed for the "dicroceliosi". Finally diseases caused by sporiferous germs such

as "clostridi" and hematic carbuncle can spread in some periods of the year for the excessive exploitation of grass coverage with the possibility of the emerging of spores. It would be important to start a quality project which would bring income and an economy greater than quantity:

(i) Quality against quantity.

(ii) Quality as it is more and more in demand in the market.

(iii) Quality as it can be integrated from the economic and social point of view in other activities of the land linked to cycles and natural productions.

(iv) Quality as it can start land improvement processes such as historical tourism, environmental tourism and tradition research.

At last we can see the phenomenon of unlawful privatization of collective areas and that happens with the general indifference of the community towards its own heritage. Consequently for the survival of traditional extensive zootechny it is essential a correct exploitation of pastures and of fodder resources before any other solution.

References

AA.VV. (1985). Atti del convegno *Terre collettive e usi civili tra Stato e Regioni*, Regione Lazio, Fiuggi.

Anonimo (1967). *Note illustrative della carta geologica d'Italia.* Foglio 159-160. Servizio Geologico D'Italia, Nuova Tecnica Grafica, Rome.

Bassani, P., Hermanin, L., Forlenza, G. and Clementi, L. (1988). *Piano di assestamento delle risorse silvo pastorali del Comune di Bassiano.*

Blasi, C. (1993). *Carta del fitoclima del Lazio.* Regione Lazio, Rome.

Bono, P. and Cappelli, G. (1981). *Al di là della preistoria. Regione Lazio e EPT Latina.* Turismo scolastico e itinerari.

Direttiva 75/273/CEE del Consiglio delle Comunità europee del 28 aprile 1975 relativa all'elenco comunitario delle zone agricole svantaggiate ai sensi della direttiva 75/268/CEE (Italy).

Direttiva 84/167/CEE del Consiglio delle Comunità europee del 28 febbraio 1984 che modifica la direttiva 75/273/CEE relativa all'elenco comunitario delle zone agricole svantaggiate ai sensi della direttiva 75/268/CEE (Italy).

Forlenza, G. (1990). *Aspetti naturali dei Monti Lepini.*

ISTAT (1985). *Censimento Agricoltura 1985,* Rome.

Landi, C. and Vittor, J. (1955). *Guida dei monti d'Italia Appennino Centrale.* CAI e TCI, Milano.

Morandini, G. (1946). *Studio antropogeografico dei Monti Lepini.* CNR, Rome.

Tomaselli, R., Balduzzi, A. and Filippello, S. (1993). *Carta bioclimatica d'Italia.* Ministero Agricoltura e Foreste, Collana Verde.