ABSTRACT

Social-political changes occurred and the economic reforms which took place in our country, after 1989, caused significant changes in growth and exploitation of sheep including: the drastic reduction in the number and productions obtained from sheep; change in the direction of exploitations; cancellation of breeding activities of flocks through disappearance of populations with role in genetic evolution of flocks.

Changes in sheep growing were determined by a variety of economic, social and technical factors, including: increase in operating expenses opposite to low prices for production capitalization; the size of the exploitations prevent the introduction of some technical activities regarding reproduction, flock breeding and production of breeding material; lack of legislation to support and to protect the sheep breeders.

Starting with the join of Romania to E.U required some reorganisation measures for sheep breeding sector to align it to the community demands. From this ones we mention: stopping the numerical decreasing of the flocks, stimulation of the meat and milk production increasing by according a grant per product, introduction of the European system for carcasses classification (SEUROP system), elaboration of new breeding programmes to improve and to increase meat and milk productions by using industrial cross-breeding.

The theme of the present research is referring at possibilities to improve the breeding technologies of sheep in household exploitations, with different capacities, from Mogoşeşti village, Iaşi and it is very important because in the future, sheep will be raised in great proportion in household exploitations with very different capacities.

The paper is presented in 7 chapters and it is structured in two parts. The first part have three great chapters in which are synthesized references data from the literature regarding at the applied technologies for sheep raising and offers a synthesis of “Knowledge stage”, and the second part is reserved to the own results obtained based on observations, case studies, research and effectuated analyses made in a long period of time. In the paper are presented 97 tables, 40 figures and 24 mathematical formulas and references include 101 titles.

The first part of the work, represent a synthesis of the literature regarding breeding technologies at sheep.

In chapter I it is presented the importance of sheep breeding, the actual tendencies for sheep raise and dynamics of the flock at national and world level. Are presented also some ways and methods to recovery the ovine sector on national level for its alignment to European Union standards.

In chapter II are presented the main genetic factors, intern and extern environment factors which could influence the production and reproduction at sheep.

In chapter III are presented breeding technologies for sheep at national and international level. This chapter includes a synthesis of the data from literature regarding the mean demands for energy and protein for sheep, at methods and technologies to increase the reproduction.

The second part of the paper represent the part of own research, structured in four chapters, and starts with the necessity and the purpose of research, continuing with the presentation of the biologic material and working methods.

In chapter V are presented material and research method, continuing with analyse of the environmental factors which could influence the production and reproduction at sheep, taking into account clime, vegetation, geology and geomorphology of the area. Also are analysed the economic – geographical situation of the village under two aspects: land framework and population structure on economic sectors. In the village composition enter four localities: Mogoşeşti, Mânjeşti, Budeşti şi Hadâmbu.

In chapter VI are presented the results of the research regarding the situation of sheep flocks. Are also presented the main characteristics of the sheep from Ţurcană breed, type of household exploitations and the structure of sheep effectives. At village level are 56 sheep household exploitations from which: 71.3% have between 1 – 10 heads, 21.45% have 11 - 50 heads, 5.5% have 51 - 100 heads and around 1.75% have 101 - 200 heads. In general, we could observe that the structure of the sheep effectives in exploitations of household type is respected and the size of sheep exploitations is strong connected with the arable land surface owned by the breeder.

In subchapter 6.2 are presented research regarding the improvement possibilities of sheep nutrition, of average yields at hectare realised by the farmers and the expenses for fodder yields in period 2006 – 2008. Also for each researched household exploitations we realised a feed balance and the achievement plan. Can be observed a deficit for the great part of the fodders. Regarding the coverage of the deficit in green mass we proposed to establish the green conveyer at exploitations E_1 and E_2. Obtaining low yields per hectare at the fodders used in exploitations are caused by the weak quality of agro-technical works, by the failure of crop rotation plan, by un-fertilization of soil.

We determine the chemical composition and the nutritive value of the fodders used for sheep feeding. In general the obtained values by us are very close to the ones from literature,

exception making by fibrous fodders, which are poor in crude protein, because the framers do not respect the optimal époque for harvesting. We calculate the nutritive value of the fodders in U.F.L. system and U.N.L. system.

To appreciate the sheep nutrition for the researched exploitations were established two categories of diets as follows: based on the investigation made in filed and in the next stage by their improving, according with the existed fodder base and especially the future one. We design improved diets for all the categories of ovine existed in the researched exploitations.

The diets were made from: grass hay, legume hay (alfalfa hay), legume haulms (beans), corn rattling and corn cobs. For the ovine in the first period of gestation, mating preparation and rams in rest, in the conditions of the exploitation we administrate only one category of diet and differentially for the rest of sheep categories (second gestation, rams with moderate activity, adult ovine on reconditioned, ovine youth for reproduction).

From the point of fodder usage in feeding diet at different categories of ovine we could appreciate that:

- the proportion of grasses hay was variable from 18.45%, at sheep in the second period of gestation, with thick wool, weighting 40 kg, at 38.47% at the ones in lactation;
- alfalfa hay has a low proportion, usually under 20%, being used at sheep in the second period of gestation in a proportion of 18.10%;
- corn cobs were introduced in diet in quite high proportions 9.56-36.9%; the highest share of 36.9% was at the diet made for the sheep in the first period of gestation, rams in resting period, and the minimum one of 9.56% was at sheep in lactation;
- rattling corn was administrated in proportion of 9.84% only in the structure of the diet of sheep in lactation;
- corn cobs were administrated at discretion, at all the ovine categories; calculations were made for an average consumption of 1 kg/head day.

In subchapter 6.3 are presented the research regarding the improvement possibilities of sheep breeding and exploitation technologies. Research were based the case studies for each category of ovine. Ovine breeders from the analysed exploitations used household system, extensive for growing and exploitation. Based on the recorded data, we proposed an ensemble of improving measures for growing and exploitation technologies for each category of ovine, so at exploitations with around 200 heads to be applied the semi-intensive exploitation system In this way in addition to covering issues connected with housing, assure of microclimate conditions, compliance of working program, we proposed endowment of the exploitation with equipments and installations for feeding and feed preparing, for milking and for sheep mower. Regarding at lambs categories, improvement measures for growing and maintenance technologies target aspects connected by obtaining of well developed and healthy lambs, able

to assure ovine youth with a good husbandry value. As regarding the category of ovine youth for reproduction, the improvement measures target to assure of a proper microclimate in shelters, in calves period and to assure the best possible grasslands. We propose that the rejected female youth from reproduction and the little rams to be fattened and sacrificed at corporal mass of 28 – 32 kg, contributing to the profitable of exploitation by increasing of meat production.

An important aspect is connected with the improvement of the grassland by organizing a rational pasture and by applying a minimum number of maintenance works to eliminate stones and useless vegetation, to restore the green carpet by over-sowing with a mixture of herbs formed by grasses and legumes.

In subchapter 6.4 is presented the profitable measures for improving the sheep growing in households exploitations by approaching of some methods able to induce an increase of the productions and implicit of the incomes realised by each female from the flock. For this thing in exploitations E_1, E_2, E_3 and E_4, the research plan includes forming of the control and experimental batches, individual examination of the animals from the health, maintenance conditions and corporal development point of view. The sheep from the control batch benefits of the feeding and maintenance conditions already existed in exploitations, and the ones from experimental batches, by an improved and stimulating feeding. Rams preparation consist in improvement of the fodder diet function of intensity of using for mating, assuring 0.78 U.F.L., 63 g P.D.I.N. and 63 g P.D.I.E. To improve some features regarding milk production, the owner of exploitation E_1, choose for reproduction rams from the sheep with a good milk production, practicing sister mating. Mating was made in autumn, and calving in spring. In exploitation E_1, at both batches, for screening the sheep in heat were used trying rams and was applied a directed mating. Research was made in the period 2006 – 2008, on duration of 2 – 3 sexual cycles, had as purpose to appreciate the efficiency of reproduction activity by calculating the reproduction indexes. From analysing the data it could be observe that the value of the reproduction indexes have an ascendant evolution face to the control ones, being in the standards of Țurcană sheep and its half breed, fact that shows that feeding is one of the environment factors with the greatest impact on reproduction. Must be imposed that the value of sterility index to be close to zero by eliminating form the flock the sterile sheep. In control batches reproduction indexes record value under the accepted standard. Low fecundity recorded in exploitation E_3 is a consequence of a weak state of maintenance of breeding sheep. The low value of birth index at exploitations E_2 and E_3, influence negative the milk production. Numerical survival index is under the accepted limit in exploitations E_2 and E_3, fact that show an over-pass of the percentage of exits at lambs in the period calving – weaning, as a consequence of failure for a proper microclimate in the shelters for mother sheep. Numerical

productivity index in exploitations E_2 and E_3 are a little bit lower under the standard, affecting negative the meat production. In general are small differences between control batches and also between experimental ones, in the period 2006 – 2007 and 2007 – 2008. Improved and stimulating nutrition of sheep correlated with a proper microclimate makes that reproduction activity from experimental batches on the studied period to be efficient.

In subchapter 6.5 we appreciate the meat production in household exploitations, at control and experimental batches, by corporal mass dynamics at birth, weaning, at 6 months, 15 months, 18 months and daily average gain during years 2007 – 2008. Statistical processing of the data obtained by weighting of the lambs at birth show that at control batches were obtained values under the accepted limit. Must be told the fact that the lambs from exploitations E_1 and E_4, had the greatest average corporal mass, around 2.6 kg, and in exploitations E_2 and E_3, between 2.3 – 2.4 kg. In experimental batches the mean weight of lambs at birth varied between 2.8 kg at exploitation E_2 and 3.2 kg at exploitation E_1. Correlation between lambs' weight at birth and ovine feeding show an inadequate nutrition form the qualitative and quantitative point of view during the whole period of gestation for sheep form control batches from the studied exploitations.

At experimental batches both lambs' weight at weaning and also the daily average gain recorded an ascendant evolution face to control batches, but a little bit under the standard limit at exploitations E_3 and E_2, with 14.2 kg, respectively 14.5 kg in 2007. The greatest weight at weaning was recorded at the lambs from exploitations E_1 and E_4 with 15.5 kg and with a daily average gain of 136.6 g, in 2007. Lambs' weight at weaning is under the standard of 15 kg at control batches, the highest weight of 13 kg being recorded in exploitations E_1 and E_4. Daily average gain is minim, being between 96.6 g at exploitation E_3 and 115.5 g la exploitation E_1, in 2007. So, the mean weight of the lambs at weaning depends on the sucked milk quantity, and this one at her turn is conditioned by the nutritive and energetic level of the nutrition diets administrated to sheep especially in gestation and nursing periods.

By corporal development of the breeding ovine youth is connected reproduction and production activities, reason to made studies regarding the possibility of improvement of corporal mass at ovine youth, by using a proper nutrition and maintenance, all in according with the farmers' possibilities. Analysing the data we observe significant differences between control and experimental batches from the studied exploitations. So at the control batches were recorded values under the accepted limit by the literature at all the categories of studied sheep. The highest value was recorded at exploitation E_1, around 20 kg at age of 6 months, 24.7 kg at 15 months and 28.9 kg at 18 months. At experimental batches corporal mass of ovine youth at 6, 15, 18 months had an ascendant evolution face to control batches. The best results were recorded at exploitations E_1 and E4, as follows: 22.7 kg, respectively 22.8 kg, at age of 6

months; 27.6 kg, respectively 27.4 kg at 15 months and 33 kg, respectively 32.8 kg at 18 months. Using the improvement diets and assuring good conditions of raising, maintenance and housing of all the categories of ovine is positive reflected in the realised corporal mass and average daily gain, so at the age of 15 – 18 month to reach 75% from corporal mass of the adult ovine, could be used at reproduction. Regarding the mean weight of adult ovine, could be observed that at experimental batches sheep have a mean weight between 39.1 kg at exploitation E_1 and 37.5 kg at exploitation E_3, and at control batches the weight of adult ovine varies between 37.9 kg at exploitation E_1 and 35.5 kg at exploitation E_3. This fluctuation of the mean corporal mass of adult ovine show the fact that ovine which benefit an improvement nutrition have a higher corporal mass that the ones feed in the exploitation conditions.

Research regarding the improvement of meat production at household exploitations E_1 and E_2, by fatting the rams and lambs rejected from reproduction, have in view the application at control batches of the extensive system of breeding and fatting, fact that assume the usage in exclusivity of grasslands and agricultural sub-products, and at experimental batches application of the intensive system, so the feeding is realised with a mixture of fodders, which have a structure that assure for one kg, around 0.88 kg D.M., 0.84 U.F.C., 89 g P.D.I.N. and 72 g P.D.I.E. Analysing the dates we could observe significant differences between control and experimental batches, regarding final mean weight and daily average gain, and specific consumption recorded on the total growing and fatting period is in 7.25 U.F.C./kg at experimental batches and over 8.5 U.F.C./kg at control batches.

Research regarding the improvement of meat production at adult ovine shows significant differences between control and experimental batches from exploitations E_1 and E_2 regarding the final average weight respectively the recorded daily average gain. Usage of improvement diets at experimental batches determines an increase in weight on duration of 80 days with over 7.8 kg. From the above mentioned facts we can conclude that the improved feeding together with good conditions of maintenance could be also expressed by meat production realised by all ovine categories, contributing to efficiency of studied exploitations.

Regarding the total milk production on lactation in household exploitations E_1, E_2, E_3 and E_4, in 2007, by improving the nutrition of ovine from experimental batches, recorded an ascendant evolution face to control batches. The best results were obtained at exploitation E_1, where total milk production was of 95.28 l, from which milk obtained from milking was of 54.08 l. Tracking the evolution of milk production on lactation at control and experimental batches from the studied exploitations, we could observe that just after lambs' weaning milk production gradually increase till May and after that was recorded a gradually decrease till deletion of lactation in September. In general, total milk production obtained on lactation is in the normal limits of Țurcană breed.

Research regarding wool production obtained in the studied exploitations was in the breed standard. For being profitable must capitalize the obtained production at right and correct prices.

We calculate the economic efficiency of ovine growing in two poses: in the exploitation conditions and in improved conditions. The obtained results show that in the improved feeding, maintenance and caring conditions, the net income per sheep is much better in comparison with the one obtained in the exploitations' conditions. We can conclude that at the level of obtained production and of prices, growing ovine in household exploitations with higher capacities (over 200 heads), could be profitable if are capitalized the resources from agriculture, exist a minimal endowment of household exploitations, application of improved growing and exploitation technologies on categories of animals and on phases of technologic flow and could be done through specialization of farmers opposite growing technologies for ovine.