

Full Length Research Paper

Struggle against perinatal lamb mortalities by using techniques of improvement and control of breeding on the level of Tiaret area (Algeria)

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Accepted 22 December, 2009

In order to struggle against perinatal lamb mortalities, one hundred and twenty of Algerian Rumbi ewes were used in our study. These ewes belong to a private farm located in the region of Tiaret; our work was based on the programming of three reproduction seasons over a period of two years (September 2004 to September 2006). During each season, our sheep have received treatment of oestrous synchronization, control and qualified assistance of lambing. These techniques have clearly improved performances of our ewes with respective average rates of fertility, fecundity and prolificacy of 96.38, 135.83 and 140.92% and most of ewes those received Dexamethasone on day 144 of pregnancy lambbed within 72 h with a mean interval from treatment to lambing of 52.61 ± 6.32 h. We also reduced the total rate of lamb losses to 7.77% and made it possible to obtain an average of 3.75 lambs by ewe in two years.

Key words: Control of breeding, lambs, mortality, qualified assistance.

INTRODUCTION

The sheep breeding, although it was practiced for centuries in Algeria, it is still confronted by problems of perinatal mortality. Indeed, among the major constraints that our breeder meets are dry losses that generate lamb mortalities, especially after the enormous costs involved in feeding and monitoring of pregnant ewes, the farmer is expected to recover its investment and make profit, not the loss of his new product.

In a study that we conducted on thirteen thousand eight hundred of Algerian Rumbi ewes in the region of Tiaret during different breeding seasons which are spread over the two years 2004 and 2005, the average rate of perinatal mortality recorded was 25.09%; this high rate was due, in its majority, to bad controlled breeding methods (Abdelhadi et al., 2006). In Quebec, in a study conducted on the two years 2002 and 2003, mortality rate was 17.78% (Cimon et al., 2005).

The objective of this study is to fight against the mortality rates by using techniques of reproduction mastery in our farms in order to reduce them to more acceptable rates: 4 to 6% objective of several authors (Rook et al., 1990; Hindson and Winter, 1996; Berger, 1997; Radiostis, 2001).

MATERIALS AND METHODS

Our study, which was spread over a period of two years (from September 2004 to September 2006), was conducted at a private farm located in the region of Tiaret which has all infrastructures necessary for the well being of animals. 120 ewes were used, all of Rumbi race and ages between 2 to 3 years.

In the choice of animals, we have removed all the sheep with history of abortions, problems of mastitis or lameness during this period of the study. To avoid possible losses, every ewe of this lot has undergone a vaccination once a year, against pox (Pasteur Institute, Algeria) and twice a year against enterotoxaemia (Coglavax, Ceva Phylaxia and Hungary). In the same way, these sheep have received at the beginning of each spring and autumn treatments against internal and external parasites. Our work plan was based on the programming of three breeding seasons over two years. In order to prevent perinatal mortalities due to problems of low

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Table 1. Results of reproductive performances of our sheep over the three breeding seasons (September 2004 to September 2006).

Performances	Seasons of reproduction		
	Sep. 2004 - Feb. 2005 (%)	May 2005 - Oct. 2005 (%)	Apr. 2006 - Sep. 2006 (%)
Rate of fertility	95	97.5	96.66
Rate of fecundity	140	131.66	135.83
Rate of prolificacy	147.36	135.04	140.51
Rate of lamb's death	7.73	8.86	6.74

temperatures and lack of availability of fodder during lambing, our choice was about these three seasons; September 2004 to February 2005, May 2005 to October 2005 and April 2006 to September 2006.

At the beginning of each breeding season, ewes and rams destined for coupling have undergone a special feeding program with a supplementation of 200 to 300 g of concentrated feed per head and per day, before and during period of coupling. 15 days later, these ewes received treatment of oestrous synchronization: we applied to each ewe vaginal sponge impregnated with 40 mg of fluorogestone acetate (FGA) (Chrono-Gest, Intervet, France). After 15 days, we removed the sponges and injected to each ewe, 500 IU of PMSG (Foligon 1000 U.I., Intervet, France) by intra muscular way; just after we released rams with ewes (one ram for every 5 ewes). To establish the exact date of the beginning of pregnancy of every ewe, we have provided rams with aprons markers and recorded the date of the last marking of each ewe; this date was recorded as the starting day of pregnancy. Rams were kept in shape after period of coupling for ewes that have not been covered in the first. Again, after 4 months, the ewes underwent a supplementation of 200 to 300 g of concentrated feed per head per day. Among the ewes we confirmed pregnant on the 144th day, we administered to them 16 mg of Dexamethasone (Dexacortyl, Coophavet, France) intra muscularly.

We assisted all ewes in their lambing which happened mainly in the three days that followed our intervention. Our presence has helped to save a significant number of lambs from death, placement of preparturient ewes in places reserved for them to avoid crashes of newborns and phenomena of non-recognition by promoting a more maternal behaviour. We have also been able to reduce dystocia, assist newborns that are of low vitality until they take their first feed and if there is no milk in parturient, feed the newborn by colostrum of another ewe in the same phase. Also, in case of twinning, we have paid more attention to the weakest lambs.

Finally, we recorded the results of performances of our 120 ewes during the three breeding season's point of view; fertility, fecundity and prolificacy; we also recorded the mean interval from treatment with Dexamethasone to lambing and rate of perinatal mortality in order to see if our methods really had an impact on reducing them.

RESULTS

In our study, reproductive performances of our ewes over the period from September 2004 to September 2006 are shown in Table 1. The program of breeding mastery that is used on the three seasons has helped to obtain the average rates of fertility, fecundity and prolificacy of 96.38, 135.83 and 140.92%, respectively. Distribution of lambing after treatment with Dexamethasone on day 144 of pregnancy is shown in Figure 1.

Most of ewes that received Dexamethasone lambed within 72 h of treatment; the mean interval from treatment

to lambing over the three breeding seasons (from September 2004 to September 2006) was 52.61 ± 6.32 h. Distribution of perinatal lamb mortalities according to age of losses is shown in Table 2.

During our study, average rate of perinatal mortality was 7.77%, however, the most critical period for lambs deaths was observed from birth to day 10 of their life, with an average rate of loss of 5.11%, the remaining deaths (2.65%) was distributed among the last month of pregnancy and period from day 10 to 30 of birth. Over the period of our study (from September 2004 to September 2006), we obtained 489 products, 38 were lost and 451 lambs survived which meant that we succeeded in getting an average of 3.75 viable lambs per ewe in two years.

DISCUSSION

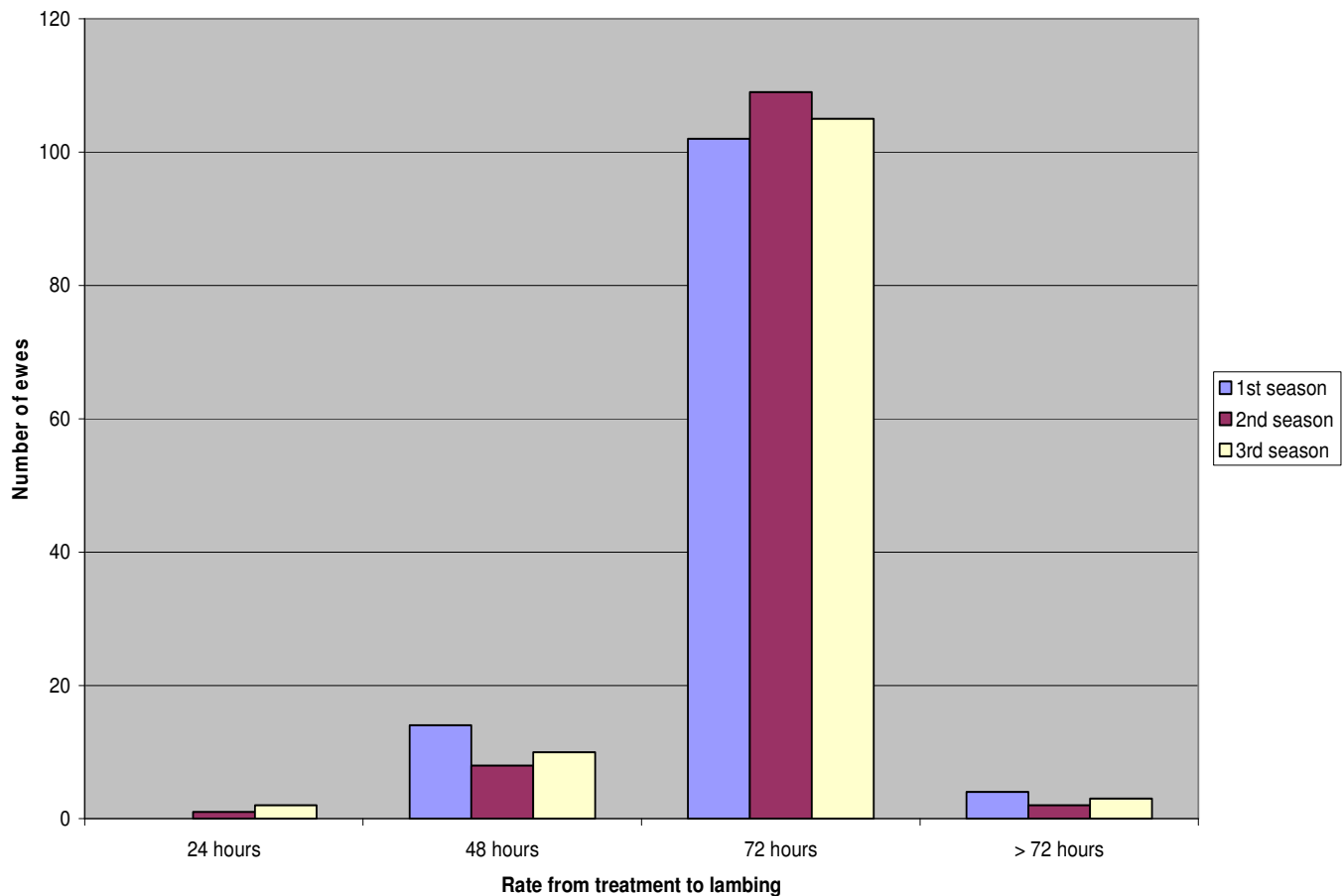
Over the three breeding seasons (from September 2004 to September 2006), control of reproductive parameters of our 120 ewes permitted to improve their fertility rate (96.38%), fecundity (135.83%) and prolificacy (140.92%).

Niar (2001), in his study conducted under the same conditions of our work, has synchronized oestrous of 120 ewes all of Rumbi race and aged 2 to 3 years, he reported rates almost similar to ours with a fertility rate of 86.66%, fecundity of 130.83% and prolificacy of 150.96%. Concerning the use of Dexamethasone to induce pregnancy on day 144, in our study, the mean interval from treatment to lambing was 52.61 ± 6.32 h and most of ewes lambed within 72 h of treatment. Our results are in agreement with the finding of Kastelic et al. (1996), who were able to induce parturition within 72 hours in approximately 90% of ewes treated with Dexamethasone during the last week of pregnancy. Niar et al. (2001) reported a mean interval treatment - lambing of 55.71 ± 6.89 h and all of ewes treated have lambed within 72 h. Concerning the mortality rate recorded over a period of 2 years (September 2004 to September 2006), synchronization of oestrous and lambing, monitoring and assistance of our 120 ewes during lambing have reduced this rate distinctly to 7.77 %, this rate is closer to the objective of 4 and 6% aimed by some researchers (Rook et al., 1990; Hindson and Winter, 1996; Berger, 1997; Radostits, 2001). Concerning the most critical phase for the lamb, we recorded a mortality rate of 5.11% during the period extending from birth to day 10.

Table 2. Distribution of perinatal lamb mortalities according to age of losses during the three seasons (September 2004 to September 2006)

Age of mortality	Average rate of mortality (%)
From the last month of pregnancy to birth	(07) 1.43
From birth to the 1 st day	(14) 2.86
From the 1 st to the 10 th day	(11) 2.24
From the 10 th to the 30 th day	(06) 1.22
Total	(38) 7.77

(): Number of died lambs.

**Figure 1.** Distribution of lambing after treatment with Dexamethasone on day 144 of pregnancy over the three breeding seasons (September 2004 to September 2006).

Our results are similar to those reported by most authors who consider that the first month of life of Lamb is the most critical (Jarrige, 1984; Rowland et al, 1992; Arsenault et al., 2002; Tremblay, 2003; Cimon et al., 2005). In the same way, over the period of our study, our 120 ewes have produced 489 products, 38 were lost and 451 lambs survived, which meant that we succeeded in getting an average of 3.75 viable lambs per ewe on two years. This result, in itself, is very satisfactory in Algeria.

Following these results, we hope to convince our farmers to change their behavior breeding in order to adopt models more intensified, where we can use techniques of control. This will certainly increase production and reduce costs in our farms.

ACKNOWLEDGMENT

We wish to thank the owner of the farm, Mr. Ammari

Ahmed for his cooperation during the study.

REFERENCES

- Abdelhadi SA, Niar A, Abdelhadi FZ, Smail NL, Ouzrout R (2006). Perinatal lamb mortalities on the level of Tiaret area (Algeria). *Assiut Vet. Medical J.* 52: 109.
- Arsenault J, Girard C, Dubreuil P, Belanger D (2002). *Ovine Symposium, How about the health of our ovine herds?* pp.59-73
- Berger Y (1997). Lamb mortality and causes. *Proceedings of the 45th Annual Spenner Sheep Day. Spooner Agricultural Research Station, University of Wisconsin-Madison* pp.33-41, 191-197.
- Cimon MJ, Rioux G, Vachon M (2005). Final report of the project of development of a plan of prevention of neonatal mortality in ovine production. Project no : 483-09-010911. Report of Center of Expertise in Ovine Production of Quebec pp.1-38
- Hindson JC, Winter AC (1996). *Outline of Clinical diagnosis in sheep.* Blackwell Science. Cambridge, MA. p. 242.
- Jarrige R (1984). *Perinatal physiology and pathology in farm animals.* Editor INRA, 1st edition p. 309.
- Kastelic JP, Cook RB, Mahon LR, Allister TA, Clellanc LA, Cheng KJ (1996). Induction of parturition in ewes with Dexamethasone and Cloprostenol. *Can. Vet. J.* 37: 101-102.
- Niar A (2001). Control of reproduction in sheep in Algeria, Doctoral thesis, Department of Biology, Faculty of Sciences, Oran University (Algeria).
- Niar AL, Abdelhadi SA, Benallou B, Al-Dahash SY & Ouzrout R (2001). Induction of parturition in Algerian Hamra ewes using various hormonal treatments. *Beni-suef Vet. Med. J.* (11) 1.
- Radostits O (2001). *Herd Health, Food animal medicine production*, 3rd edition. Philadelphia. : Saunders p. 884.
- Rook JS, Scholman G, Shea M (1990). Diagnosis and control of neonatal losses in sheep, *Advances in sheep and Goat Medicine, Vet Clin N. Am. Food Anim. Pract.* 3(6): 531-562.
- Rowland JP, Salman MD, Kimberling CV, Schweitzer Dj, Keefe TJ (1992). Epidemiologic factors involved in perinatal lamb mortality on four range sheep operations, *Am. J. Vet. Res.* 53(2): 262-267.
- Tremblay ME (2003). Analyse of Group Provincial in Ovine Production 2001. Federation of the producers of lambs and sheep of Quebec p. 24.