

## Seasonal Prevalence of Oestrus ovis in Awassi Sheep of North of West Bank (Palestine)

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**Abstract:** This study was done to investigate the prevalence of Oestrus ovis of Awassi sheep herds in the northern region of West Bank (Palestine). A slaughterhouse survey was performed from March 2006 to February 2007; a total of 335 Awassi heads were examined. Oestrus ovis were found in 181 sheep out of 335 (53. %). The highest rates ( $P<0.05$ ) of infection were in the months of June, July, August and October (77, 80, 82, and 73%, for these months, respectively). The mean percent of larvae (L) in infected sheep heads was 46 with L1, 30 with L2 and 23 with L3.

O.Ovis infestation is wide spread in the studied area. Measures must be applied continuously in order to decrease the incidence of the infestation on local herds.

**Key words:** Awassi sheep, Oestrus ovis, prevalence, West Bank.

مدى تاثير فصول السنة على انتشار يرقة نغف الغنم Oestrus ovis في أغنام

العواسي المرباة شمال فلسطين

**ملخص:** تم إجراء هذه الدراسة لمعرفة درجة انتشار يرقات Oestrus ovis في أغنام العواسي المرباة في شمال الضفة الغربية إذ تم فحص 335 رأس لأغنام العواسي المذبوحة في الفترة الممتدة من شهر مارس 2006 إلى شهر فبراير 2007 ، وتم اكتشاف إصابة 181 رأس بيرقات Oestrus ovis (53%) ، وقد دلت النتائج أن انتشار الإصابة كانت الأكبر خلال أشهر يونيو ، يوليو ، أغسطس ، وأكتوبر إذ توجد فروق معنوية مع بقية أشهر السنة ( $p<0.05$ ) ، 77% ، 80% ، 82% و 73% على التوالي. كما أشارت الدراسة أن نسبة وجود يرقات نغف الغنم Oestrus ovis في مراحلها الثلاثة كانت موجودة في رؤوس الحيوانات المصابة على مدار أشهر السنة وكانت نسبة وجودها L1 46% ، L2 30% ، L3 23% .

ونتيجة هذه الدراسة تدل على أن انتشار الإصابة متشابهة مع دراسات أخرى أجريت في مناطق مختلفة من دول العالم ، ولا بد من الأخذ ببعض الإجراءات الوقائية لتخفيض نسبة الإصابة.

**Introduction:**

The infection with the sheep nasal fly *Oestrus ovis* prevails where sheep and goat herds reside. Sheep and goats considered as host for part of *Oestrus ovis* life cycle of this fly. Adult flies keep tracking of animals to seek a perfect place for deposition of its young larvae. Areas around nostrils and nasal cavity are target for placing young larvae especially in warm sunny days. The first larval instar (L1) will soon parasite on tissues of the nasal passages and sinus cavities and stay for a period of two days to nine months, depending on climate conditions, where second larval instar (L2) emerge. In forehead sinus and sinus cavities L2 is converted to the third larval instar (L3) which will in turn introduced to animal environment due to physical movement and a sneeze of the host animal where it reaches the pupal stag. It takes three to six or more weeks to reach a mature fly. It takes longer time in cold climates. Sheep nasal fly is widely distributed in countries of Mediterranean region in particular and many other regions of the world (Abo-Shehada, et al., 2000; Caracappa et al., 2000; Dorchies et al., 2000; Jacquet and Dorchies, 2002; Colebrook and Wall, 2004). It is well documented that sheep nasal fly causes oestrosis disease that is characterized by its effect on respiratory tract. Wide range of symptoms can be described as labored breathing, blocking of respiratory tract especially in the upper tract with mucus and larvae, that forced animal for mouth breathing. In many cases of the disease, lung abscesses can be diagnosed with sever lung inflammation. Adult fly has negative impact on animals. In rangeland, animals try to seek shelter to avoid the mature fly. This will reduce feed intake of animals causing poor performance (Sibalic and Cvetkovic, 1985; Goddard et al., 1999; Dorchies et al., 2000; Alcaide et al., 2005). Infection with the fly causes great economical losses in many countries due to reduced production of sheep and goats products (Yilma and Dorghies, 1991). Similarly, infection when reaches human will cause health hazards as ophthalmomyiasis as witnessed in many countries in Mediterranean region (Massodi and Hossein, 2003; Abo-Shehada et al., 2003).

In spite of large population of sheep and goats in Palestine, there is nearly little or no information about the prevalence of sheep nasal fly in local conditions. The objectives of this study is to investigate the prevalence of sheep nasal fly in north of West Bank (Palestine).

**Materials and Methods**

A total of 335 head samples were examined for *Oestrus ovis* infection during the period of March 2006 and February 2007. Samples of both sexes were collected from Nablus municipal slaughter house and other private

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slaughter facilities in the area. Heads of animals with ages one to three years were considered for investigation. Age was determined through Heads were opened using an electric sawing machine through the longitudinal axis. Larvae were collected from nasal cavity and sinuses and counted according to Zumpt (1965) and were classified to L1, L2 and L3.

All data were analyzed using SAS (1988) package utilizing the t test (Ott, 1988).

### Results

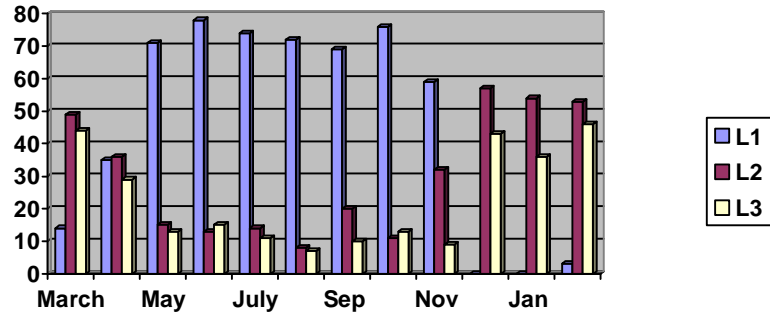
The study showed that about 53% of samples investigated were infected with *Oestrus ovis* (181 out of 335). The high incidence of infection was observed in the period of June to August and in October (Table 1). The percent of infection in August was 82% followed by July (80%) and June (77%) then October (73%). These infection percentages were higher ( $P < 0.05$ ) compared to percent of infection observed in other months of the study. It is shown by the study that all stages of larvae, L1, L2, L3 were observed in samples in all months of the year (Fig. 1). Numbers of larvae of each stage were variable. L1 stage was at peak in June (78%) while the peak for L2 and L3 were December and February, respectively. The study showed that the average percent of each of larvae stages that L1 was the highest (45%) followed by L2 which averaged 30% then L3 with average of 23%.

**Table 1. Distribution of examined samples and percent of infection during March 2006 -Feb. 2007 in the northern area of Palestine.**

Month	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
Examined animals	30	27	28	27	30	28	27	30	28	28	25	27	335
Infected	6	10	14	21	24	23	16	22	18	15	7	5	181
% infection	20c	37c	50b	77a	80a	82a	59a	73a	64a	53b	28c	18c	53.4

**Columns with different letters are significantly different at  $P < 0.05$  level**

**Fig. 1. Prevalence of L1, L2 and L3 of in sheep during March 2006- Feb. 2007 in the northern area on Palestine.**



The infection with L2 was the highest in most of winter months, while that of L3 was the highest in spring where larvae are growing and ready to emerge to outside of the animal.

**Discussion:**

The high prevalence of infection during summer and October can be explained by that mature sheep nasal fly become active in late spring to autumn. During this period flies attack its host to deposit its larvae. The high temperature with dry weather during the above period is perfect for flies to be aggressive (Sibalic and Cvetkovic, 1985). Management practices by farmers can be another possibility for the high prevalence of infection during summer where herds are driven to poor range lands to feed on crop residues. Practicing the (dipping) procedure only at late spring by farmers gives a chance for fly to infect animals. Due to limited local feed resources, farmers usually to get rid of dry ewes and does in early summer. This reduces total number of animals causing high chance of infection. These findings are in agreement with other research from other countries. The percent of infected sheep in west of Italy was 91% (Scala, et al., 2001) and was 65% in west of France (Suarez et al., 2005), 72% in Morocco (Colebrook and Wall, 2004), 58% in Jordan (Abo-Shehada et al., 2000), 23% in Kingdom of Saudi Arabia (Alahmad, 2000) and 73% in South Africa (Horak, 1977).

This finding agrees with other research which indicated the spread of *O. ovis* infection all year round and exert negative effects on host animals (Abo-Shehada et al., 2000; Alcaide et al., 2005; Dorchies et al., 2000). This study indicated the prevalence of the mature sheep nasal and its larvae in north of Palestine. According to this and to the potential negative effect of

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the fly, strict control measures must be applied by related authorities. These measures may include providing good farming practices and management. Paying special attention to feeding standards and feeding programs. In order to decrease chance of infection while grazing, animals should avoid grazing at mid days in summer. Dipping practice should be applied to all herd members with all ages at least twice, at late spring and August using an efficient insecticide. ((Sibalic and Cvetkovic, 1985).

The high percent of L1 in late spring and summer months was associated with the activity of the adult sheep nasal fly and the favorable climatic conditions. The high rate of infection in October can be explained by the warm weather prevailed during that month in 2006 and low precipitation.

### Acknowledgments

The author greatly acknowledgment Prof. Jamal Abo Omar for critical reading of the manuscript and Dr. Nemer Khraim for analyzing the data.

### References:

1. Abo – shehada, M. N., B. Arab, R. Mekbel, D. Williams, and P. Torgerson, 2000. Age and seasonal variations in the prevalence of *Oestrus ovis* larvae among sheep in northern Jordan. *Prev.Vet. Med.*47 , pp.205 – 212.
2. Abo-shehada, M. N., Th. Batainah, N. Abuharfeil, and P. R. Torgerson, 2003 .*Oestrus ovis* larval myiasis among goats in northern Jordan. *Prev. Vet. Med.* 59, pp. 13-19.
3. Alahmed, A. M., 2000. Seasonal infestation of *Oestrus ovis* larvae in sheep heads in central region of Saudi Arabia. *J. Egypt. Soc. Parasitol.* 30, PP. 895-901.
4. Alcaide, M., D. Renia, E. Frontera, and I. Navarrete, 2005. Analysis of larval antigens of *Oestrus ovis* for the diagnosis of Oestrosis by enzyme-Linked immunosorbent assay. *Med.Vet. Entomal.*19, PP.151-157.
5. Alcaide, M.,D. Renia, E. Frontera, and I. Navarrete, I., 2005. Epidemiology of *Oestrus ovis* (Linneo,1761) infestation in goats in Spain. *Vet. Parasitol.*130, PP. 277-284.
6. Caracappa, S., S. Rilli, P. Zanghi, V. Dimarco and P. Dorchie, 2000 Epidemiology of ovine Oestrosis (*Oestrus ovis* Linne 1761, Diptera Oestridae) in Sicily. *Vet. Parasitol.* 92, PP. 233-237.
7. Colebrook, E., and R. Wall, 2004. Ectoparasites of livestock in Europe and the Mediterranean region. *Vet. Parasitol.* 120, PP. 251-274.
8. Dorchie, Ph., J. P. Bergeaud, G. Tabouret, C. Duranton , F. Prevot and Ph. Jacquiet , 2000. Prevalence and larval burden of *Oestrus ovis* in

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- sheep and goats in northern Mediterranean region of France. *Vet. Parasitol.* 88, PP. 269-273.
9. Goddard, P., Bates, and K. A. Webster, 1999. Evaluation of a direct ELISA for the serodiagnosis of *Oestrus ovis* infections in sheep. *Vet. Rec.* 144, PP. 497-501.
  10. Horak, I. G., 1977. Parasites of domestic and wild animals in South Africa. I. *Oestrus ovis* in sheep. *Jour. Vet. Resea.* 44, PP. 55-64.
  11. Jacquie, Ph., and Ph. Dorchies, 2002. Towards a lower prevalence of *Oestrus ovis* infections in sheep in a temperate climate (south west France). *Vet. Res.* 33, PP. 449-453.
  12. Masoodi, M., and K. Hossein, 2003. The respiratory and allergic manifestations of human myiasis caused by larvae of the sheep bot fly (*Oestrus ovis*). *Ann. Trop. Med. Parasitol.* 97, PP. 75-81.
  13. Ott, L. 1988. An introduction to statistical methods and data analysis 3<sup>rd</sup>.
  14. Scala, G. Solinas, C. V. Citterio, L. H. Kramer, and C. Genchi, 2001. Sheep Oestrosis (*Oestrus ovis* Linne 1761, Diptera: Oestridae) in Sardinia, Italy. *Vet. Parasitol.* 102, PP. 133-141.
  15. Sibalic, S., and L. Cvetkovic, 1985. Parazitske bolesti domacih zivotinja. 499-503.
  16. Suarez, J. L., A. scala, J. A. Romero, A. Paz-Silva, J. Pedreira, M. Arias, P. Diaz, P. Morrondo, P. Diez- Banos and R. Sanchez-Andrade, 2005. Analysis of the humoral immune response to *Oestrus ovis* in ovine. *Vet. Parasitol.* 134, PP. 153-158.
  17. Yilma, M., and Ph. Dorchies, 1991. Epidemiology of *Oestrus ovis* in Southwest France. *Vet. Parasitol.* 40, PP. 315-323.
  18. Yilma, M., and A. Genet, 2000. Epidemiology of the sheep nasal bot, *Oestrus ovis* (Diptera: Oestridae), in Central Ethiopia. *Revue. Med. Vet.* 151, PP. 143-150.
  19. Zumpt, F., 1965. Myiasis in man and animals in the old world Butterworths Editions, London, PP. 225-267.