*Indian J. Anim. Res.*, **41** (3) : 233 - 234, 2007

# NON-GENETIC FACTORS AFFECTING WOOL YIELD IN ANGORA RABBITS

**Anshul Sood, K. Gupta, K.S.Risam, S. Katoch, O.P. Kaila**

Department of Animal Breeding Genetics and Biostatistics, College of Veterinary and Animal Sciences, Himachal Pradesh Krishi Vishvavidyalaya, Palampur (H.P.) - 176 062, India

## ABSTRACT

**Data on 586 German Angora rabbits maintained at North Temperate Regional Station, CSWRI, Garsa, Distt. Kullu (HP) of five years period was utilized to study least square analysis of variance. Effects of non-genetic factors such as sex, year of birth and season significantly increased the wool yield of German Angora rabbits.**

The Angora rabbit is well known for its finest wool quality that can be blended with other fabrics for manufacturing quality garments. In the present study an attempt has been made to analyze the effects of various non-genetic factors on wool yield of German Angora rabbits maintained under sub temperate conditions in Himachal Pradesh

The present study was undertaken to evaluate the performance of wool traits in Angora Rabbits. For this study data of 586 German Angora rabbits maintained at North Temperate Regional Station, CSWRI, Garsa, Distt. Kullu (HP) from 1992-1997 were utilized. To study the effect of season each year was sub-divided into four seasons viz. winter (November to March); summer (April to June); rainy (July or August) and Autumn (September to October). The annual wool yield was calculated from the yields of all the clips during the year. The first shearing was done at the age 52 days with subsequent shearing done at the interval of 65 to 75 days. Since the observations on different traits were unequally distributed among different subclasses, the least-square analyses technique was used to study the effects of different factors with significant sub-class differences tested by modified Duncan's Multiple Range Test (Kramer, 1957).

The overall least square means obtained were 450.79±3.62 g and 567.36±3.47 g for first year and second year wool yield (Table 1). The present findings were in close agreement with the findings of Niedzwiadek *et al.* (1992) and Sambher (1992) in different strains of Angora rabbits. However, several authors have reported the estimates on the lower side of present study (Dai *et al.*, 1985 and Singh, 1987). Higher values for annual wool yield in Angora rabbits have also been reported by several workers (Zhao-Lizhi *et al.*, 1995 and Lu-Yong Yan *et al.*, 1999).

The least square mean for cumulative wool yield for two years was observed to be 1018.15±7.09 g. The present findings were slightly lower in magnitude as compared to those reported by Sambher (1992) in German Angora rabbits.

The birth years had significant ($P<0.05$) effect on annual wool yields of first two years but highly significant on cumulative wool yield. No specific pattern was observed in increase or decrease in the annual wool yield during different years. Significant effect of birth year on annual wool yield was also reported by Thebault *et al.* (1992) and Sambher (1992) in Angora rabbits. However, non-significant effect of year of kindling on annual wool yield was reported by Singh (1987) in Russian, British and crossbred Angora rabbits. The difference in the annual and cumulative wool production in different years may be due to the variation in the availability of feed and fodder resources for different years.

Season of birth also significantly

**Table 1.** Least-square means ± S.E. for first year, second year and cumulative wool yields

| Source of variation | No. of records | First year wool yield (g) | Second year wool yield (g) | Cumulative wool yield (g) |
|---|---|---|---|---|
| **Overall mean** | 586 | 450.79±3.62 | 567.36±3.47 | 1018.15±7.09 |
| **Year of birth** | | | | |
| 1992 | 112 | 444.40±7.94$^{b}$ | 560.96±7.65$^{b}$ | 1005.35±15.58$^{c}$ |
| 1993 | 72 | 435.37±7.91$^{b}$ | 551.93±7.62$^{b}$ | 987.30±15.53$^{b}$ |
| 1994 | 94 | 445.75±6.50$^{b}$ | 562.31±6.7$^{b}$ | 1008.06±13.22$^{c}$ |
| 1995 | 164 | 479.56±4.88$^{c}$ | 596.13±4.77$^{c}$ | 1075.69±9.65$^{d}$ |
| 1996 | 54 | 414.46±9.20$^{a}$ | 531.02±9.23$^{a}$ | 945.48±18.43$^{a}$ |
| 1997 | 90 | 485.22±6.72$^{c}$ | 601.79±6.43$^{c}$ | 1087.01±13.16$^{d}$ |
| **Season of birth** | | | | |
| Winter (Nov. - March) | 178 | 471.06±5.25$^{b}$ | 587.62±5.36$^{b}$ | 1058.69±10.61$^{b}$ |
| Summer (April - June) | 308 | 436.12±3.65$^{a}$ | 552.69±3.69$^{a}$ | 988.81±7.35$^{a}$ |
| Rainy (July - August) | 58 | 431.51±8.46$^{a}$ | 548.07±8.76$^{a}$ | 979.58±17.22$^{a}$ |
| Autumn (Sept. - Oct.) | 42 | 464.48±9.62$^{ab}$ | 581.04±9.60$^{b}$ | 1045.52±19.22$^{b}$ |
| **Sex** | | | | |
| Male | 284 | 443.83±4.4$^{a}$ | 560.39±4.37$^{a}$ | 1004.22±8.80$^{a}$ |
| Female | 302 | 457.76±4.35$^{b}$ | 574.32±4.26$^{b}$ | 1032.08±8.61$^{b}$ |

Means with the same superscripts in a column don't differ significantly.

influenced the annual wool yield and cumulative wool yields. Winter born animals recorded the highest wool yield, while the lowest wool yield was observed in rainy season born animals. Similar findings were reported by Singh (1987), Rochambeau *et al.* (1991) and Gupta *et al.* (1995) in Angora rabbits. Higher wool yield from winter born animals may be due to the high temperature during the period of fiber growth by increased flow of nutrients to the wool follicles which influenced the wool growth in these animals.

Sex was found to have a significant effect on the annual wool yield and cumulative wool yield. Female Angora rabbits recorded a significantly higher wool yield than the males. Significant effect of sex on annual wool yield was also reported by Rochambeau *et al* (1991) and Bhasin *et al.* (1998). However, non-significant effect of sex was reported by Deb *et al.* (1995) and Sambher (1992) on annual wool yield and cumulative wool yield in German and Russian Angora rabbits.

**ACKNOWLEDGEMENT**

The authors are highly thankful to Director, CSWRI, Avikanagar, Rajasthan for granting permission to utilize the data at NIRS Garsa.

**REFERENCES**

Bhasin, V. and Singh, D. (1995). *Intern. J. Anim. Sci.*, **10**(1): 77-79.
Dai, H.N. *et al.* (1985). *Chinese J. Rabbit Farming*, **3**: 27-29.
Deb, S.M. *et al.* (1995). *Wool and Woollens of India* April-June, 23-25.
Gupta, S.C. *et al.* (1995). *World Rabbit Sci.*, **3**(4): 143-146.
Harvey, W.R. (1990). User's guide for LSMLMW, PC-2 version. *Mineograph. Ohio State University, Ohio, USA.*
Kramer, C.Y. (1957). *Biometrics*, **13**: 13.
Lu, Y.Y. *et al.* (1999). *J. Econ. Anim.*, **3**(2): 11-14.
Niedzwiadek, S. *et al.* (1992). *J. Applied Rabbit Res.*, **15**: 1658-1665.
Rochambeau, H. de *et al.* (1991). *J. Anim. Prod.*, **52**: 383-393.
Sambher, V.K. (1992). *M.V.Sc. Thesis, H.P.K.V., Palampur, India.*
Singh, R.N. (1987). Division of Fur Animal Breeding, Garsa, Kullu (H.P.), pp. 158-170.
Thebault, R.G. *et al.* (1992). *J. Applied Rabbit Res.*, **15**: 1568-1575.
Zhao, L.Z. *et al.* (1995). *Acta Agriculturae Zhejiangensis*, **7**(3): 210-216.