

# WEATHER EFFECTS ON MILK PRODUCTION TRAIT IN CAMOSCIATA GOATS: PRELIMINARY STUDY

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## INTRODUCTION

Mediterranean areas including Spain, Portugal, southern France, central and southern Italy and Greece are exposed annually for 3-6 months to considerable heat. In hot climates, high ambient temperatures, high direct and indirect solar radiation, wind speed and humidity, are the main environmental stress factors that impose strain on animals. These forms of heat stress are one of the limiting factors in dairy production in hot climates. Growth, milk production, reproduction and animal welfare are impaired by heat stress as a result of drastic changes in biological functions milk quantity also milk quality might be affected.



## RESULTS

Table 1: Description of the variables used

Daily measurement	MeansSD	Range
Milk production (g/d)	940±380	200-3000
Fat (%)	2,98±0,77	1,2-6,7
Protein (%)	2,60±0,71	1,0-8,6
Lactose (%)	3,98±0,92	1,0-6,6
SCC	938,71±3206	2-29169
Maximum temperature (°C)	23,64±7,17	7,8-46,00
Day average humidity	54,44±12,82	12,00-98,20
Minimum temperature (°C)	11,48±7,17	-3,2-27,00
Night average humidity	76,00±12,82	22,00-99,9
Night Temperature-Humidity Index (THI1) °C	12,87±4,22	5-18
Day Temperature-Humidity Index (THI2) °C	23,54±2,80	16-26

Table 2: Pearson correlations of all variables used.

	PG	G	P	L	SCS	T	U/n	T	U/d	THI1	THI2
	(g/d)	(%)	(%)	(%)	(%)	(°C)	(°C)	(°C)	(°C)	(°C)	(°C)
PG (g/d)	1										
G (%)	0,29	1									
P (%)	0,12	0,16	1								
L (%)	0,22	0,22	0,22	1							
SCS	-0,28	-0,61	-0,09	-0,31	1						
T min	-0,22	-0,22	-0,15	-0,32	-0,15	1					
U/n	-0,16	-0,33	-0,16	-0,25	-0,25	-0,51	1				
T max	-0,16	-0,33	-0,16	-0,25	-0,25	-0,51	-0,17	1			
U/d	-0,17	-0,11	-0,11	-0,11	-0,11	-0,11	-0,11	-0,11	1		
THI1 (°C)	-0,33	0,99	0,85	0,99	0,85	0,99	0,85	0,99	0,85	1	
THI2 (°C)	-0,69	0,90	-0,52	-0,47	-0,66	0,83	0,95	0,83	0,95	0,85	1

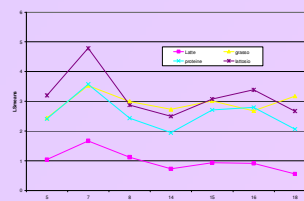
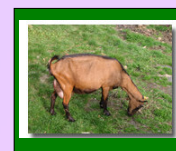


Fig.1 Effect of THI1 on milk production traits (milk, fat, protein and lactose) the same day of the test-day recording.

Fig.2 Effect of THI2 on milk production traits (milk, fat, protein and lactose) the same day of the test-day recording.

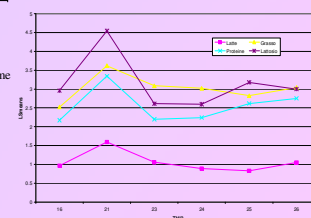


Fig.3 Effect of THI1 on Somatic Cell Scores during lactation

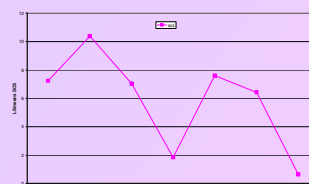
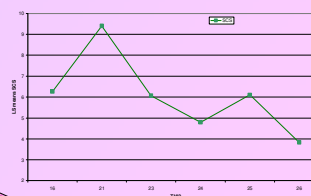


Fig.4 Effect of THI2 on Somatic Cell Scores during lactation



## CONCLUSIONS

Based on these preliminary results, no effects of the THI on production traits have been found. All models used were significant. Goats of this farm, even though they are reared in a hot environment, do not seem to be affected. However further analysis are needed to confirm these results.

## AIM

To investigate the weather condition effect on Camosciata goat production traits reared in the south of Italy.

## MATERIAL & METHODS

- 711 test-days belonging to 90 goats have been used.
- One Camosciata goat flock.
- Two subsequent lactations (2005-2006 and 2006-2007).



### Production data:

- daily milk yield;
- fat and protein contents.;
- somatic cell score (SCS).

### Metereological data (same-day as test-day)

- Maximum temperature ( $T_{max}$ )
- Minimum temperature ( $T_{min}$ )
- Average relative day humidity (DRH)
- Average relative night humidity (NRH)
- Temperature-Humidity Index (THI- Kelly & Bond,1971)

•THI1= Minimum Temperature & Night Humidity

•THI2= Maximum Temperature & Day Humidity

$$THI = [T - [0.55 \times (1 - RH)] \times (T - 14.4)]$$

A multiple regression model has been applied, including as fixed effects litter size, days in milk \* parity and THI.