tivity of each subject was assessed in 2 approach–avoidance conflict tests by pairing food with a stressful stimulus (*ie* the novelty of the environment in the 1st test, a surprise effect in the 2nd test). In both tests, heifers tested with a stressed partner exhibited more signs of disturbance. For instance, in response to the novel environment, they had longer latencies to approach the food and to eat than subjects tested in the presence of a calm partner (respectively: 60 ± 31 s *vs* 15 ± 12 s; $U = 11.5$; $P < 0.05$).

If the mere presence of conspecifics can enable domestic animals to cope with stressful events, our results show that a high degree of stress in conspecifics alters this social buffering effect by increasing levels of reactivity in naive heifers. The stressed partner may have influenced the subjects' behaviour by chemical or vocal communication as has been demonstrated in pigs, sheep and goats. The social communication of stress may have important implications for modern agricultural management and can be detrimental for production and reproduction. It should therefore be taken into account to improve productivity and animal welfare.

Steppic rangeland and rainfed pasture improvement on the Crau: utilization by Merinos d'Arles ewes. T Adama, P Lapeyronie, D Hubert, G Molenat *(INRA-ENSA Unité de Zootechnie Méditerranéenne, place Viala, 34000 Montpellier, France)*

Increased quantity and quality of spring forages can be considered as a major improvement for extensive Mediterranean sheep husbandary systems. It can be achieved by use of annual legumes either sown in temporary pastures or overseeded on rangelands.

The experiment involved 3 types of vegetation: native steppic rangeland of Crau (NR); improved steppic rangeland overseeded with subterranean clover (IR); and a plot cultivated with subterranean clover (SC). IR and SC were fertilized with P_2O_5 (to ensure normal clover development).

From March to June, over 84 d, 11 plots of NR, 11 plots of IR and 6 plots of SC were rotationally grazed by 3 groups of 20 ewes (1 group being assigned to 1 type of vegetation). Each plot was grazed for 4 d. Plot size was adjusted to provide 3.2, 3.0 and 1.8 kg DM/ewe/d for NR, IR and SC. Based on previous experience, 40% of the biomass on NR and IR was considered to be non-edible. Thus the edible DM/ewe/d was 1.8 kg for each treatment.

The total number of ewe days (ED/ha) were 800, 1 100 and 4 000 respectively on NR, IR and SC. The quantities of biomass 'consumed' per ewe per day (estimated by clipping on each plot before and after grazing) were 111 (NR), 105 (IR) and 76 (SC) g/kg $W^{0.75}$. The utilisation rate of the total biomass were 60, 60 and 74% for NR, IR and SC. Ingestion and rumination time, calculated on the basis of jaw movement (INRA recorders), varied according to the vegetation type: 33, 40, 33% of the total daily time for ingestion and 26, 25, 20% for rumination for NR, IR and SC respectively. The body weight increased by 4.5, 4.5 and 6.0 kg and body condition score increased by 0.2, 0.4 and 0.6 points for NR, IR and SC, respectively. The ewes were recovering their body reserves in preparation for spring mating.

This study has made it possible to obtain figures on the productivity of these pastures. Utilization rates of the biomass agree favourably with the obtained levels of animals performance. The higher ED/ha and body condition score obtained on IR and SC compared to NR pastures clearly demonstrate the effect of pasture improvement due to SC overseeding.

The effects of outdoor wintering on the variations in weight and body condition of dry pregnant Salers cows. J Agabriel, M Petit, J Lassalas, E Tannous *(INRA-Theix, Laboratoire Adaptation des Herbivores aux Milieux, 63122 Saint-Genès-Champanelle, France)*

In these experiments we investigated the effect of outdoor wintering on body energy mobilization (live weight and body condition) in order to simplify the management of pregnant dry cows calving in June in semi-mountainous (1 100 m) areas.

Three groups of 18 Salers cows, 4–7-months pregnant, outwintered in 3-hectar paddocks from mid-November to March during winter 1992 (O1), or winter 1993 (O2 and O3). They were fed with cocksfoot hay in limited quantities, 8.6 (O1), 8.7 (O2) and 10.9 (O3) kg of DM per day, distributed in racks where each cow got 1 place. These quantities correspond to an energy supply of 5.8, 5.4 and 6.7 UFL/d, which represent 1.3, 0.9 and