

The potential effects of social interactions on reproductive efficiency of horses*D. Burger¹ and C. Wedekind²**¹Swiss Institute of Equine Medicine, ALP-Haras and University of Berne, Les Long-Prés 1, 1580 Avenches, Switzerland, ²Department of Ecology and Evolution, University of Lausanne, Le Biophore, 1015 Lausanne, Switzerland; dominik.burger@vetsuisse.unibe.ch*

The reproductive efficiency of domesticated horses is often lower than what could be expected from observations in feral herds. In the wild, stallions typically live with mares in harem bands, with other stallions in bachelor bands, or occasionally in mixed sex transitional bands. Hereby foaling rates of up to 90% are achieved, compared to approximately 75% in well-managed domesticated horse populations. An interdisciplinary view and analysis of the intra- and intersexual interactions of stallions and mares and their effects provide new potentially important informations which in the future might be used for optimization of breeding management. We provide here a summary of our present knowledge of female and male reproductive strategies in horses, leading to higher fertility and biodiversity.

Do stallions recognize the oestrous state by smelling the odor of mares?*C. Briant¹, A. Bouakkaz², Y. Gaudé³, I. Couty⁴, D. Guillaume⁴, J.M. Yvon³, Y. Maurin⁵, B. Nielsen⁵, O. Rampin⁵ and M. Magistrini⁴**¹IFCE, HN, 41043 Blois Cedex, France, ²INSV, Université Ibn Khaldoun, Tiaret, Algeria, ³INRA, UEPAO, 37380 Nouzilly, France, ⁴INRA, PRC, 37380 Nouzilly, France, ⁵INRA, NOPA, 78352 Jouy en Josas, France; christine.briant@ifce.fr*

In some mammalian species, males recognize the estrous female on the basis of sex pheromones perceived through the reflex of flehmen. In horses the importance of olfactory signals is not clear. The aim of the present experiments was to evaluate if stallions can discriminate the estrous from the diestrous state by smelling mares or samples of urine or faeces of mares. In Exp1, 6 pony stallions were subjected to 4 different two-choice tests between an estrous and a diestrous mare: (1) in natural conditions; (2) stallions could not smell the mares; (3) stallions could not see the mares; (4) mares were sedated. In tests (1) and (2) stallions could differentiate between the two mares: more interactions with the estrous mare (sniffing/nuzzling, licking and biting), more flehmens, but could not in tests (3) and (4). In Exp2, 4 urine samples and in Exp3, 4 faeces samples (mare in estrus or diestrus, stallion, negative control) were presented to the stallions. The main observed behavior (sniffing, flehmens, early nasal discharge, shares of disinterest) showed that stallions do not discriminate the urines or faeces of estrus and diestrus but discriminate urine or faeces of mare and urine or faeces of stallion. In Exp3, analysis of serial blood samples showed that testosterone increases more after sniffing faeces of stallion and that prolactin increases more after sniffing faeces of mare. The time of semen collection tends to be reduced after sniffing faeces of mare. All these results suggest that stallions do not discriminate odors of estrus and diestrus but can distinguish odors of mare and stallion. Thus olfaction is not absolutely necessary for detection of the estrous mare but sight of the mare and interactions with her seem essential. However smell of the mare could stimulate sexual functions as ejaculation.