

## Effects of crossbreeding of Holsteins cows with Montbéliarde and Swedish Red in first and second generation on cheese yield traits



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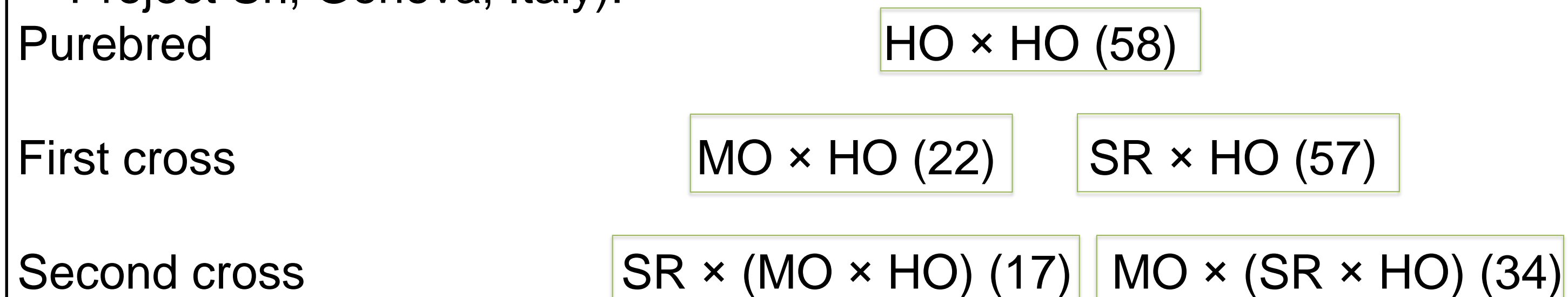
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### Background and aim of work

- Crossbreeding positively affects profitability of dairy farms through its effects on milk production, fertility and health of dairy cows
- Interest in crossbreeding of Holstein (HO) cows with other breeds increased and several studies have considered milk yield and quality
- However, effect of crossbreeding on cheese yield (CY) not explored yet
- **The aims was to investigate the effect of crossbreeding of HO cows with Montbéliarde (MO) and Swedish Red (SR) bulls on milk composition, CY and other cheese- making traits**

### Material and Methods

- 188 cows from 3 dairy herds (Northern Italy) originated from the following 3-breed rotational crossbreeding system (ProCross, Genesi Project Srl, Genova, Italy):



Individual milk samples (1000 ml):

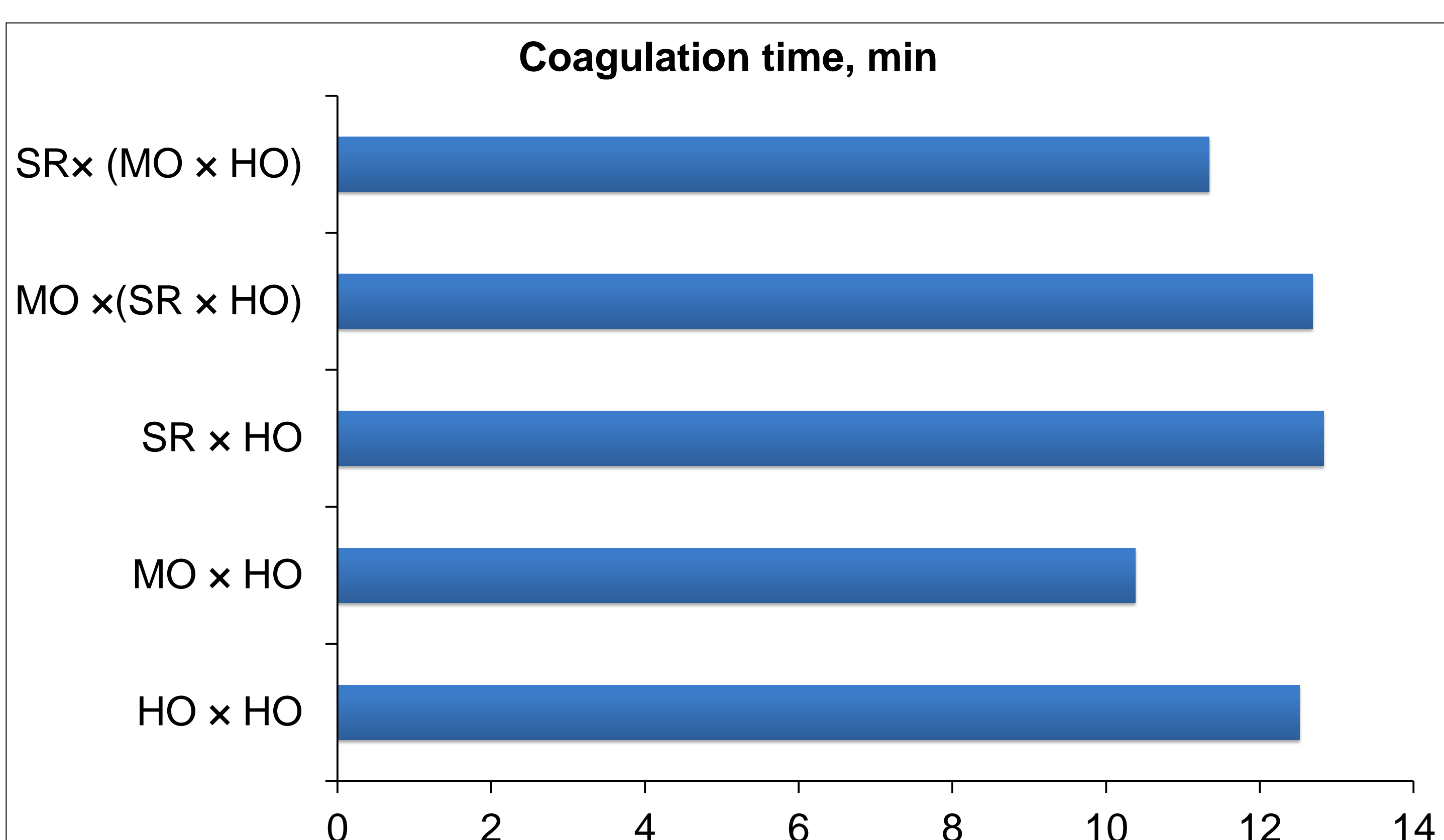
- analyzed for nutrient content (Milkoscan FT2) and pH
- processed according to a model-cheese making method (Cologna et al., 2009) for assessing CY and whey and curd composition
- based on the weight and composition of milk and whey, the ratio between the fat and protein content of curd and milk (recovery of fat and protein, REC\_F and REC\_P, respectively) and the daily cheese yield (D\_CY, kg/d) were computed
- Data were analyzed according to a mixed model which included the breed combination as fixed effect.

### Results

**Table 1.** Milk yield (MY), composition and pH in different breed combinations

Traits:	Breed combinations					SEM	P value
	Purebred	First cross		Second cross			
	HO×HO	MO× HO	SR×HO	MO×(SR ×HO)	SR×(MO × HO)		
MY, kg/d	31.1	31.5	30.8	29.3	29.8	1.40	0.79
Milk pH	6.46	6.44	6.46	6.50	6.47	0.01	0.06
Total solids, %	13.64	13.92	13.76	13.64	14.01	0.17	0.52
Fat, %	4.35	4.71	4.48	4.27	4.74	0.19	0.39
Protein, %	3.82	3.78	3.83	3.84	3.87	0.04	0.85

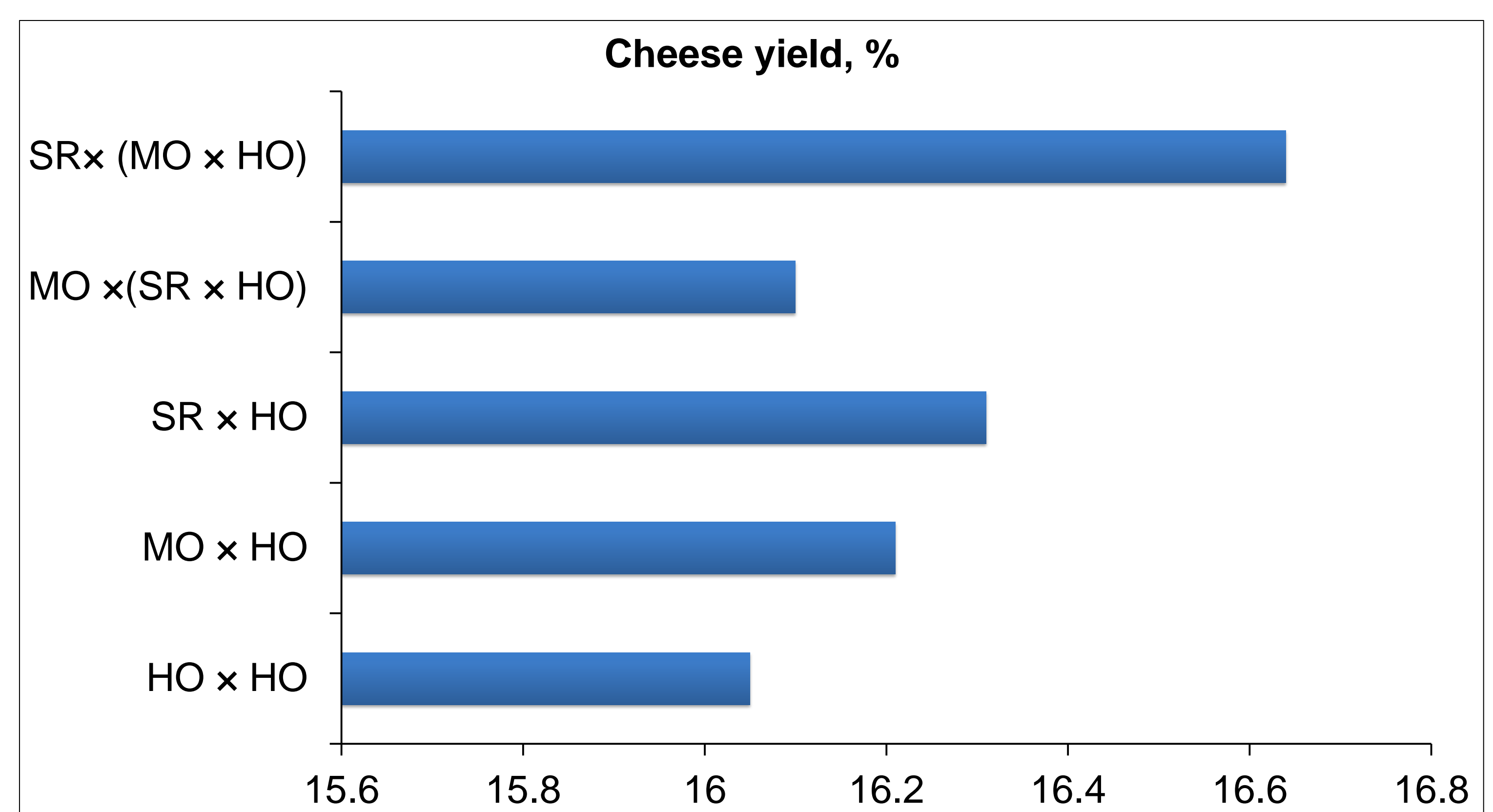
**Figure 1.** Milk coagulation time in different breed combinations (P>0.05)



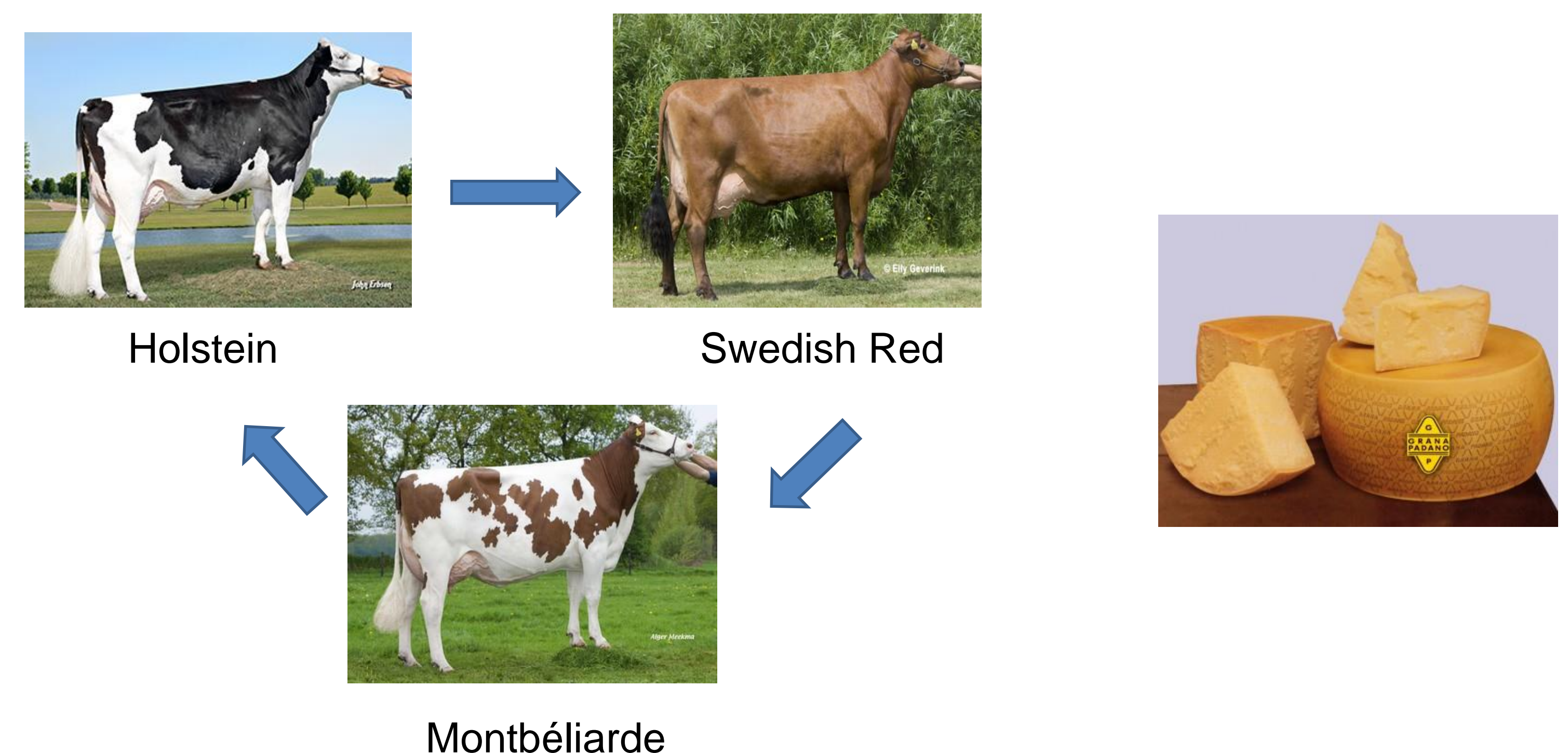
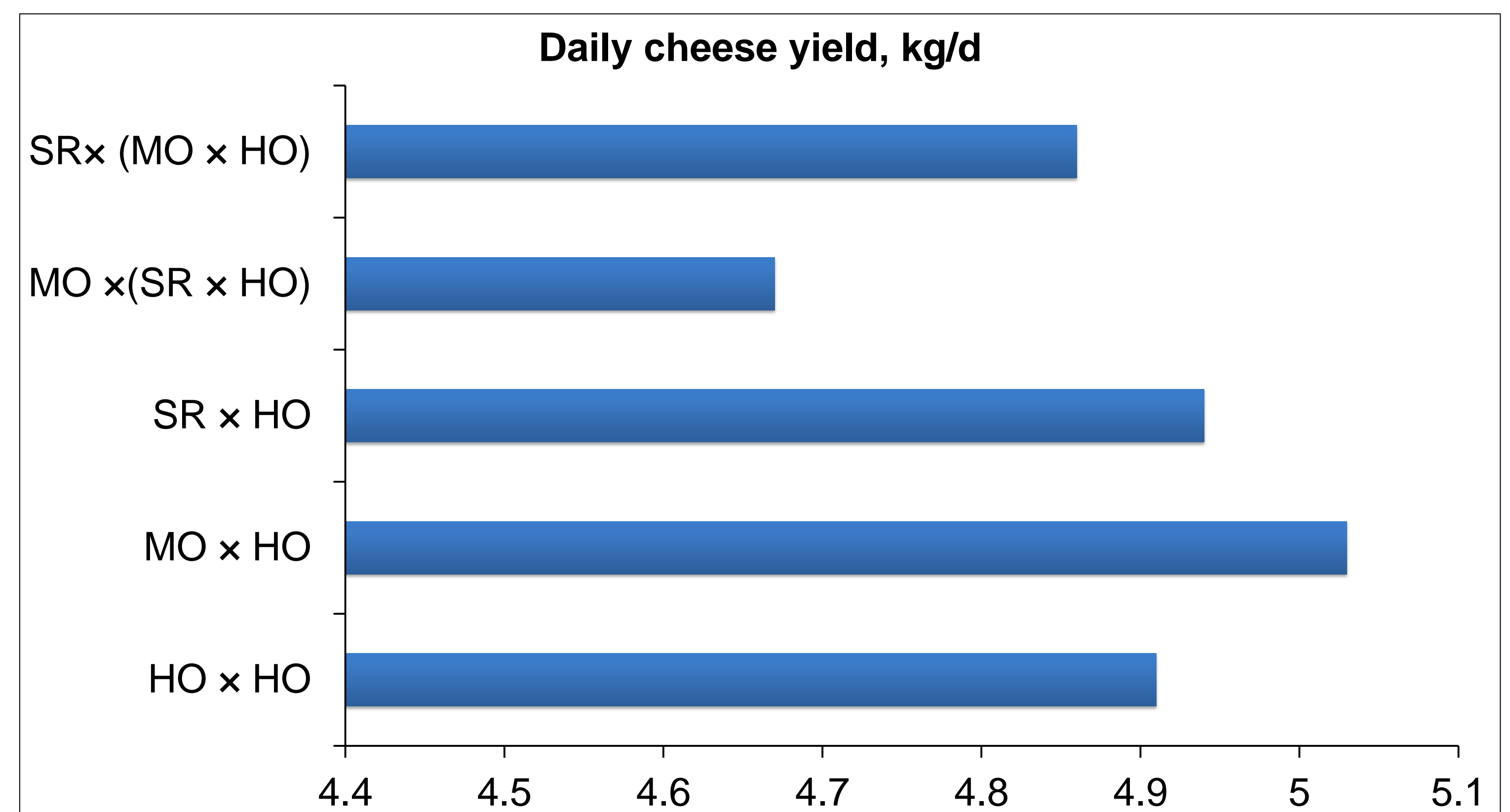
### Conclusions

- The 3-way rotational breeding system considered did not impact on cheese-making properties of milk, and can be proposed even in herds specialized in PDO cheese production
- Further studies with greater cow sample size are needed for obtaining more robust estimates of effects and for better evaluating the performance of the different breed combinations

**Figure 2.** Cheese yield in different breed combinations (P>0.05)



**Figure 3.** Daily cheese yield in different breed combinations (P>0.05)



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