

# Comparative study on production traits between local dual-purpose and dairy breeds in South Tyrol

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# Current situation in South Tyrolean dairy farms

- Small herd size (~ 15 cows/farm)
- Tie stall barns (> 70% barns)
- High production costs (e.g feed stuffs, labour)
- Tendency of high yielding dairy breeds
- Mainly part-time farms
- Risk of farm abandonment

# Future challenges



## Aim

- Compare the production traits between local dual-purpose and dairy breeds

Long term.....

- Propose recommendations for an economic and environmental sustainable dairy system in mountain areas

## Materials and methods

- South Tyrolean Dairy Association
- Years 2012 – 2017
- 1.5 mill. No. records
- Dual purpose:
  - Dairy:
    - Simmental (S) (n = 365405)
    - Holstein (H) (n = 278740)
    - Tyrolean Grey (TG) (n= 205080)
    - Brown Swiss (BS) (n = 487657)
    - Pinzgauer (PG) (n = 24461)
    - Jersey (n = 11050)

## Materials and methods

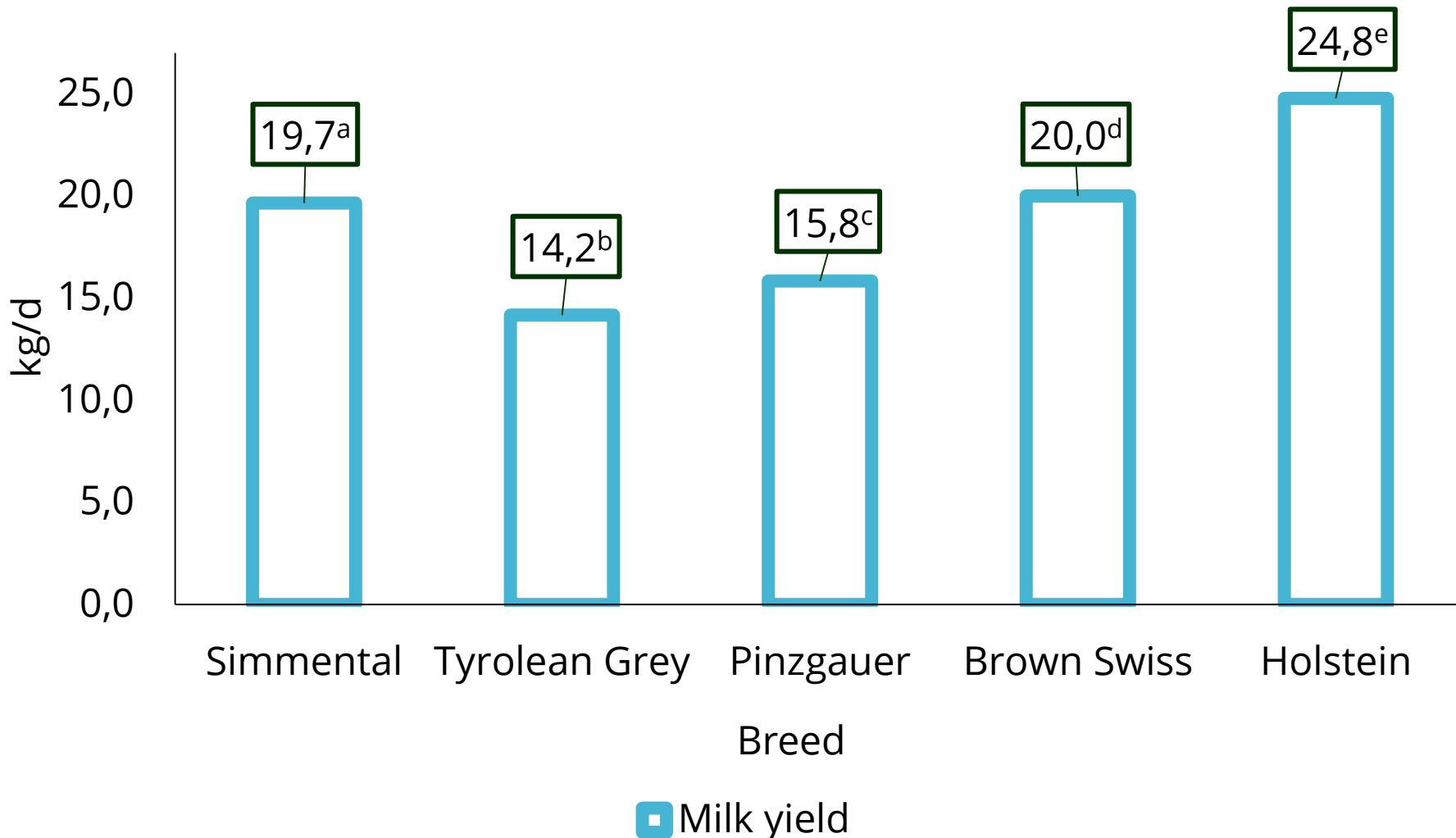
- Milk yield (kg/d)
- Milk traits (MIR) :
  - Fat (%), Protein (%), Lactose (%), Casein (%), Urea (g/100ml)
  - SFA (%), MUFA (%), PUFA (%)
- SCC:  $SCS = 3 + \log_2(SCC/100.000)$

MIR: Mid-infrared Spectroscopy, SCC: Somatic Cell Count, SCS: Somatic Cell Score,  
SFA: Saturated Fatty Acids, MUFA: Mono-unsaturated fatty acids, PUFA: Poly-unsaturated Fatty Acids

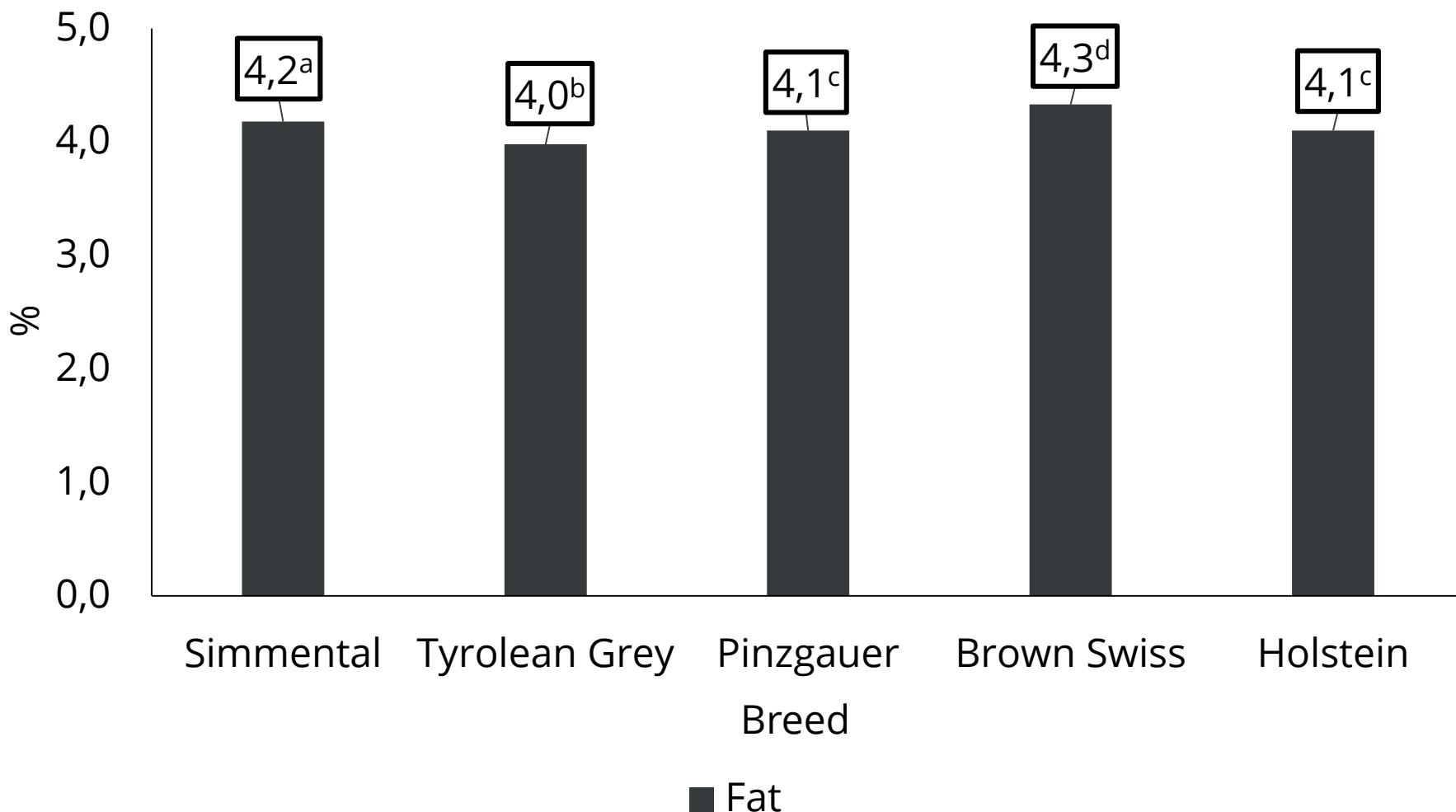
# Materials and methods

- Mixed model:
  - Breed
  - Parity categories (1 – 4,  $\geq 5$  parities)
  - Lactation stage (16 classes 30d each)
  - Year
    - Q1 (December to February)
    - Q2 (March to May)
    - Q3 (June to August)
    - Q4 (September to November)

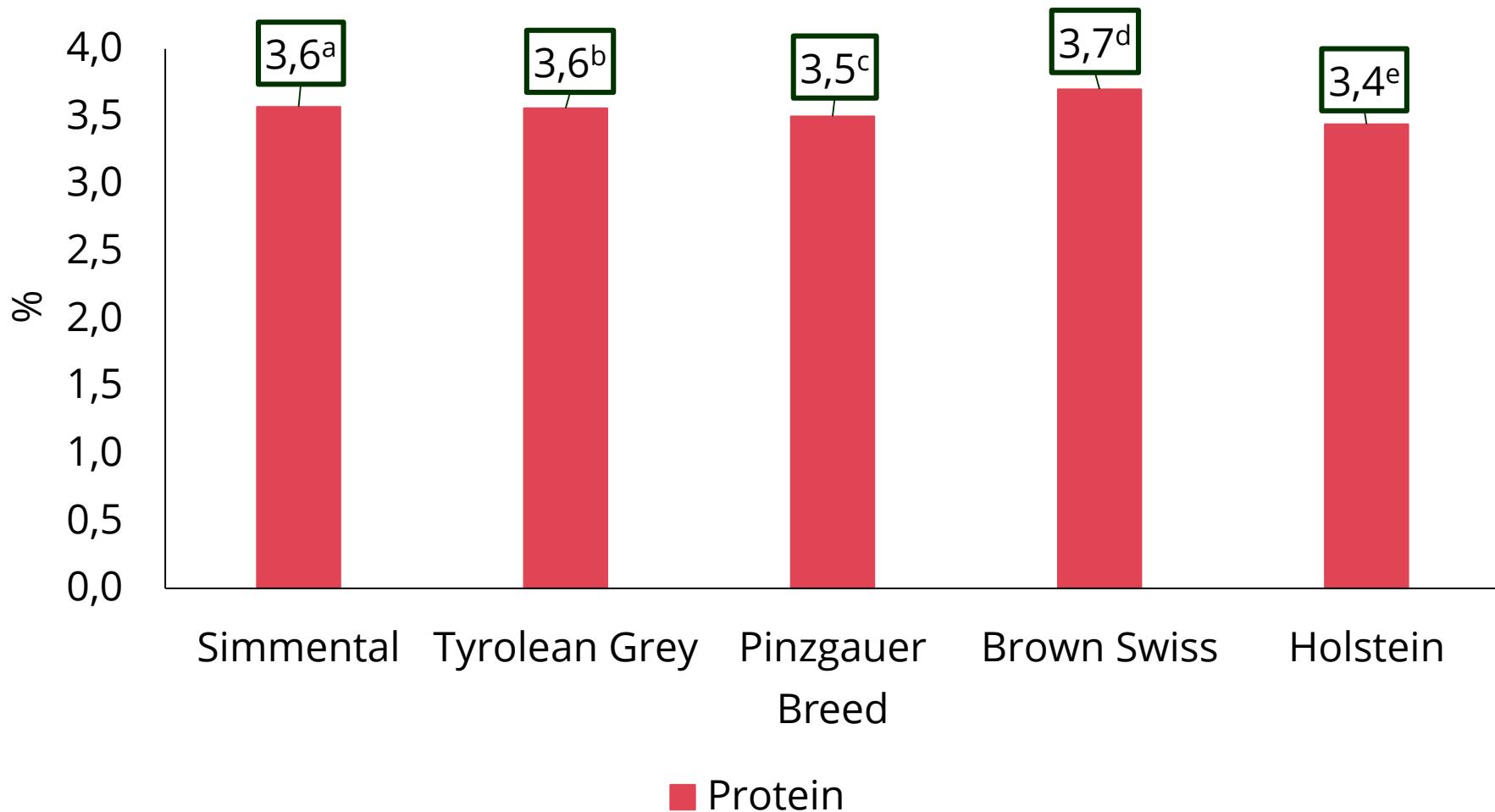
# Breed effect on milk yield



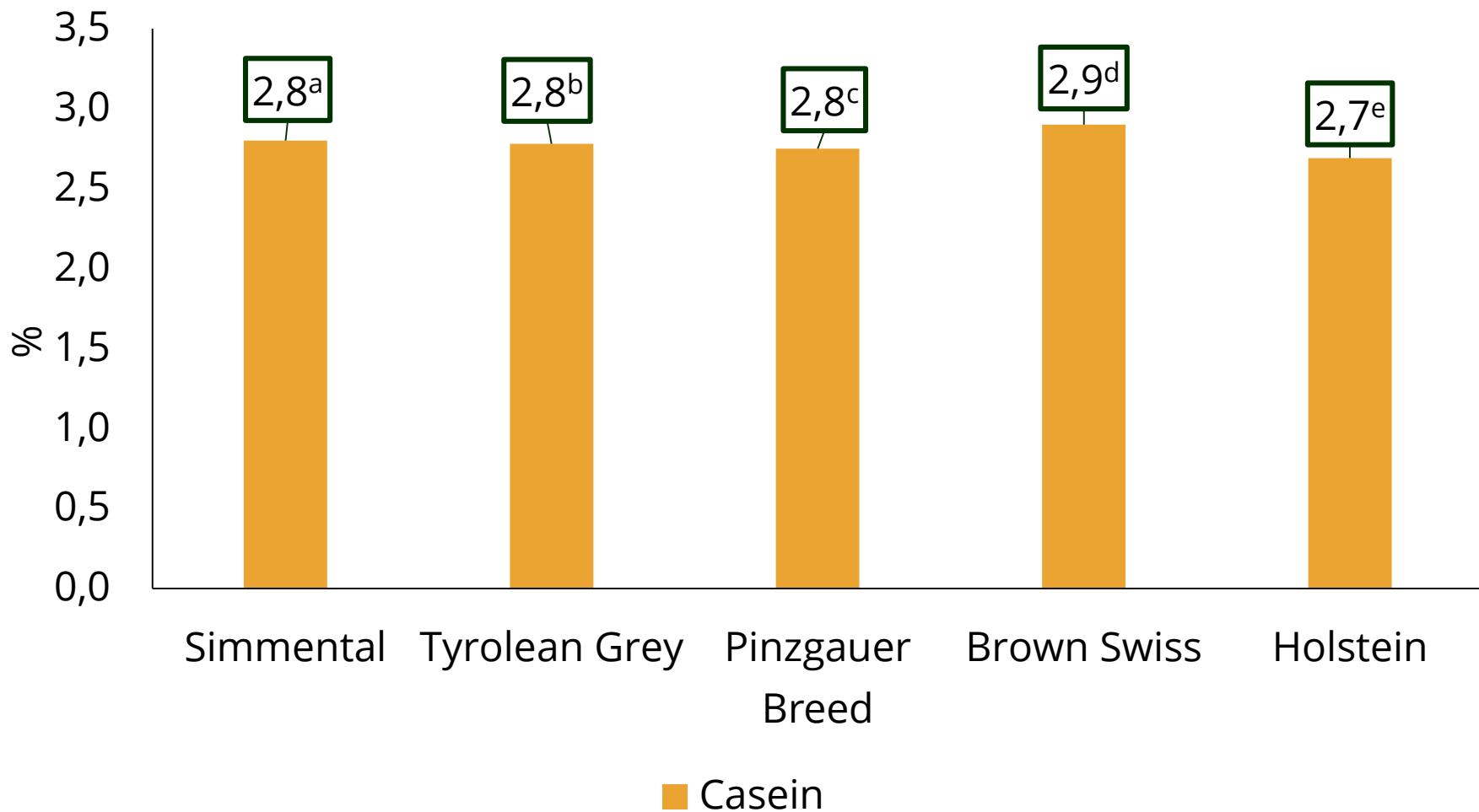
## Breed effect on milk traits



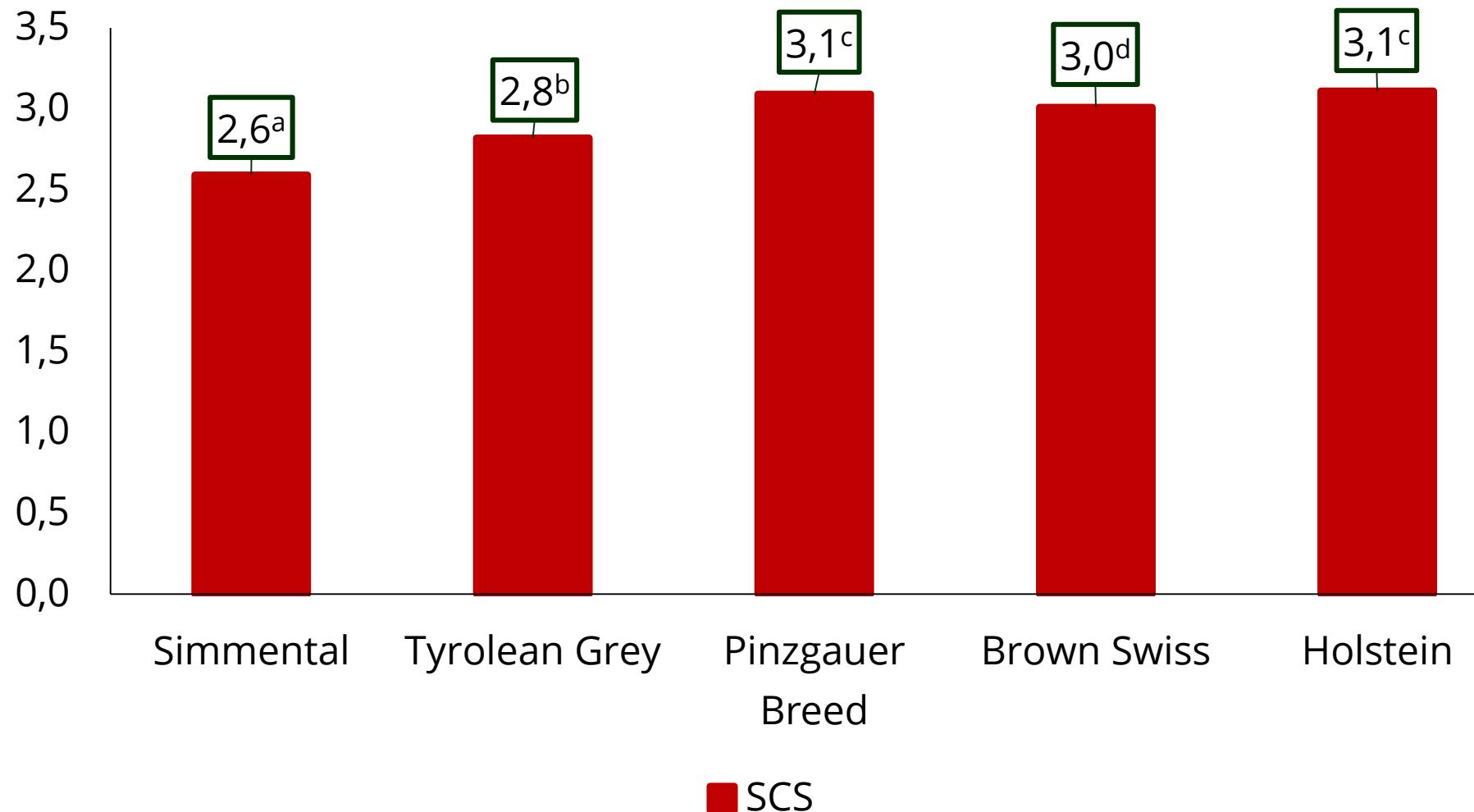
## Breed effect on milk traits



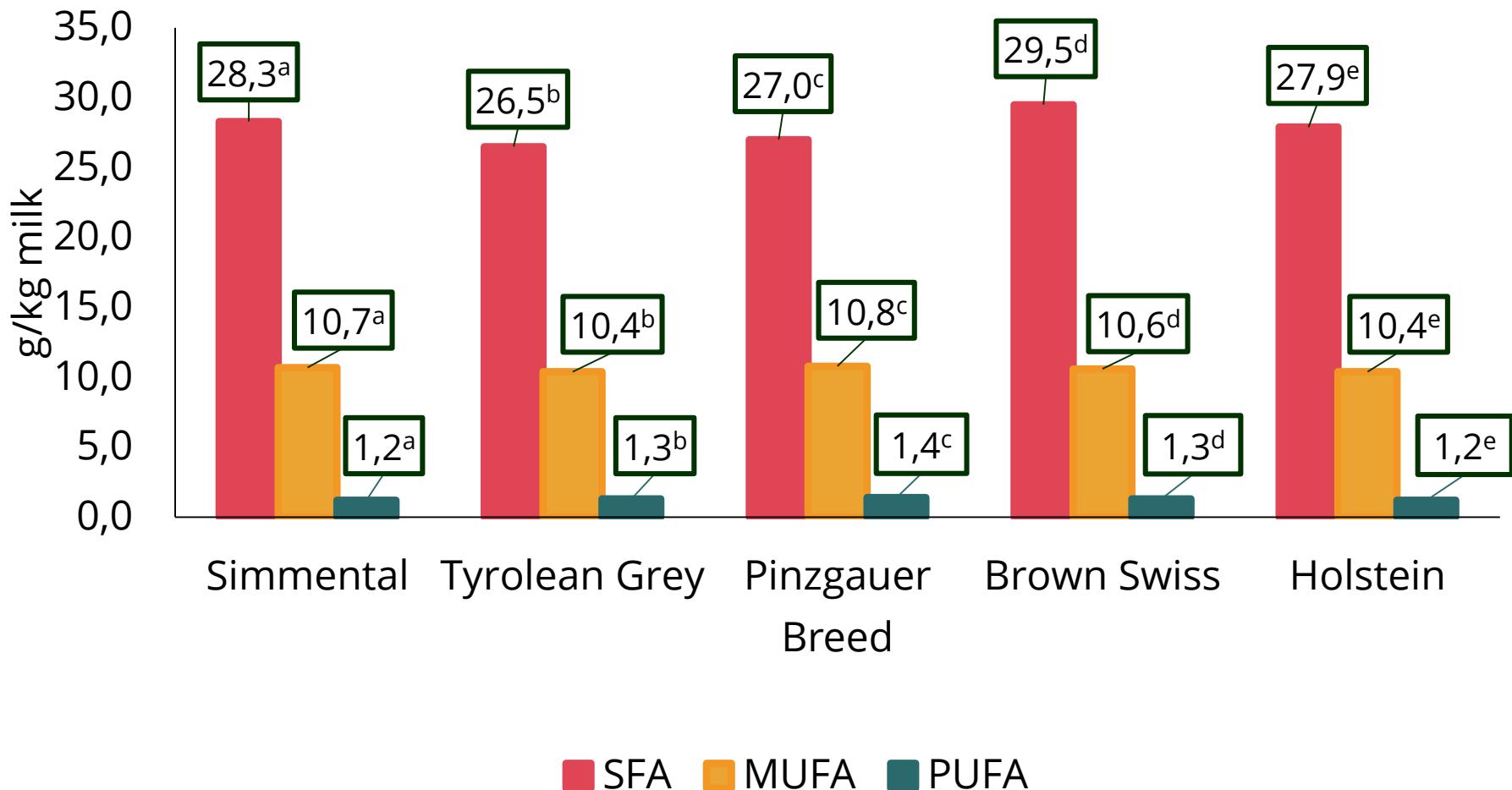
## Breed effect on milk traits



# Breed effect on milk traits



# Breed effect on SFA & MUFA & PUFA



# Conclusions

- Milk yield  key for South Tyrolean farmers
  - H > BS > S > TG > PG
- Adaptation of indigenous breeds:
  - Tie-stall barns
  - Local conditions

Evaluate parameters:

- Husbandry system
  - Animal Welfare
  - Environmental impact
- 
- Economic sustainability

# Thank you for your attention!

