Future needs and challenges in dairy cattle breeding

Based on a survey with Austrian farmers

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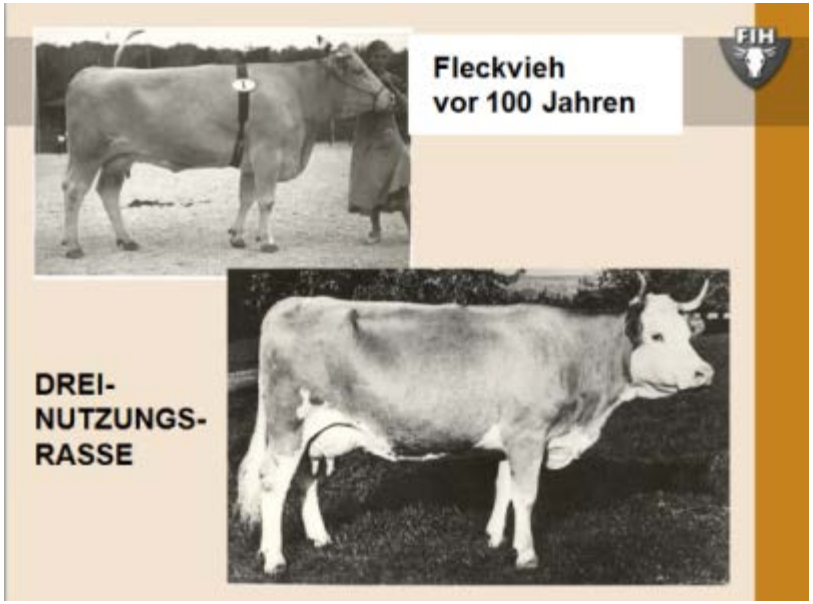
Earlier – today - future?



Cows today

Cows in future?

Development of the last 15 years

	Fleckvieh			Brown Swiss		
	1997	2012	Diff.	1997	2012	Diff.
Milk kg	5231	7039	+1808	5646	7094	+1448
Fat and Protein kg	396	533	+137	421	541	+120
Longevity (years)	3.92	3.81	-0.11	4.2	3.82	-0.38
calving interval (days)	393.5	391.4	-2.1	411.2	418.2	+7
Somatic cell count (in 1000)	188.8	190.6	+1.8	245.8	220.4	-25.4

- Tremendous increase in milk yield
- Marginal or no increase of functional traits
- Negative genetic correlations between production and functional traits
- Changing economic conditions

Current Total Merit Index

- Breeding goal expressed by Total Merit Index (TMI) since 2002
- **Revision of breeding goals needed** due to changing circumstances (genomics, consumer demands, prices,..)

Weights (%)	Dairy	Beef	Fitness
Fleckvieh (Simmental)	38	16	46
Brown Swiss	48	5	47

Project: OptiGene

- Optimization of long-term genetic progress of Austrian cattle breeds with emphasis on health and genomic selection
- Breeds: Fleckvieh, Brown Swiss, Holstein, Pinzgauer, Tyrolean Grey
- Main topics
  - Review of breeding goals
  - Optimization of Total Merit Index (TMI)
  - Optimization of breeding programs including genomic selection
  - Management of inbreeding

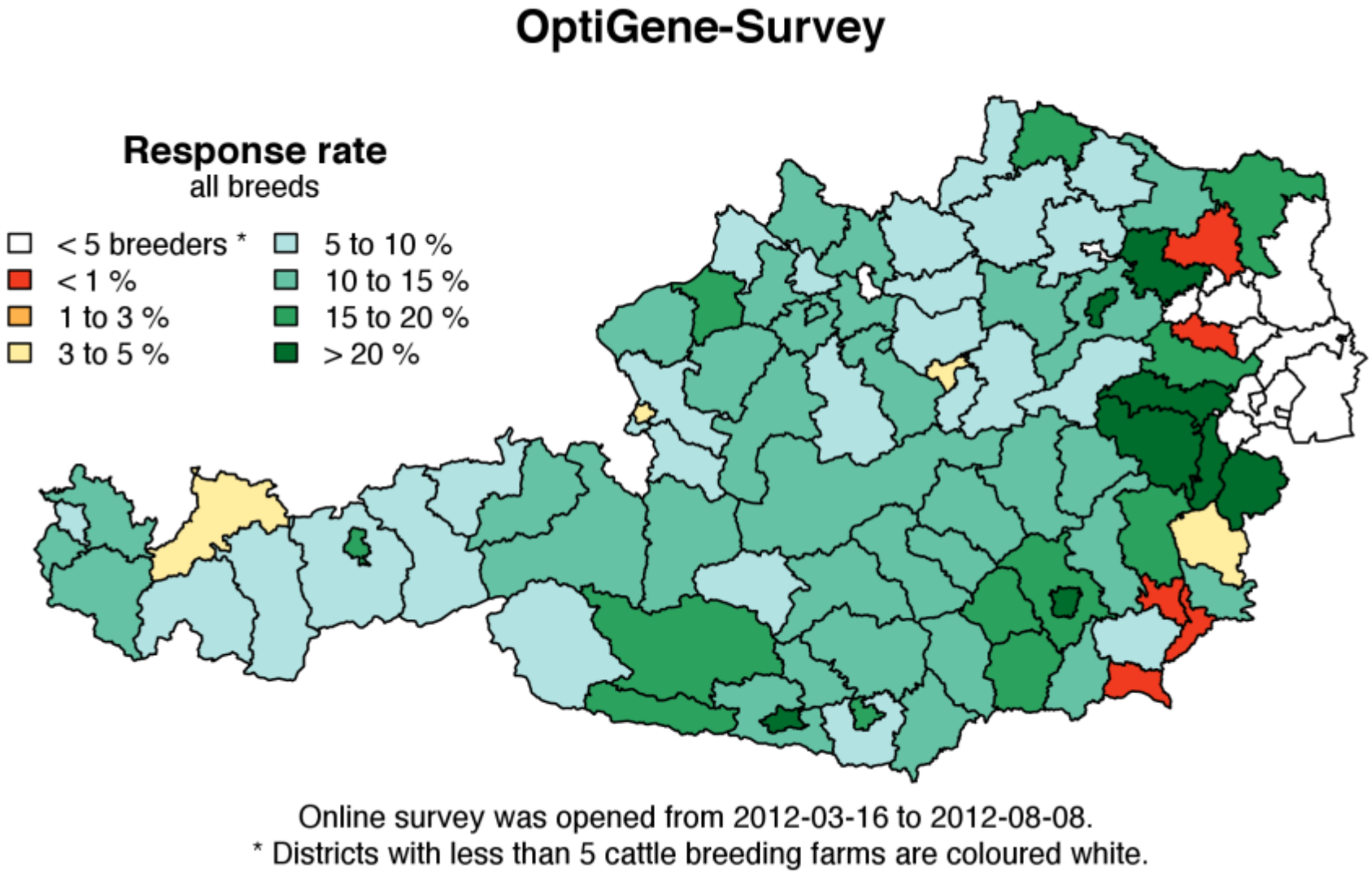
Material and Methods I

- Survey in Austrian cattle breeders
  - Breeds: Fleckvieh (Austrian Simmental), Brown Swiss, Pinzgauer, Tyrolean Grey
    - 20,000 breeders were potential participants
    - 7,700 got invited by Email
    - 2,200 breeders completed the questionnaire
    - Rate of response: 11%
  - Pure online survey with www.surveymonkey.com
  - March to August 2012
- Similar questionnaire in Southern Germany and Czech Republic

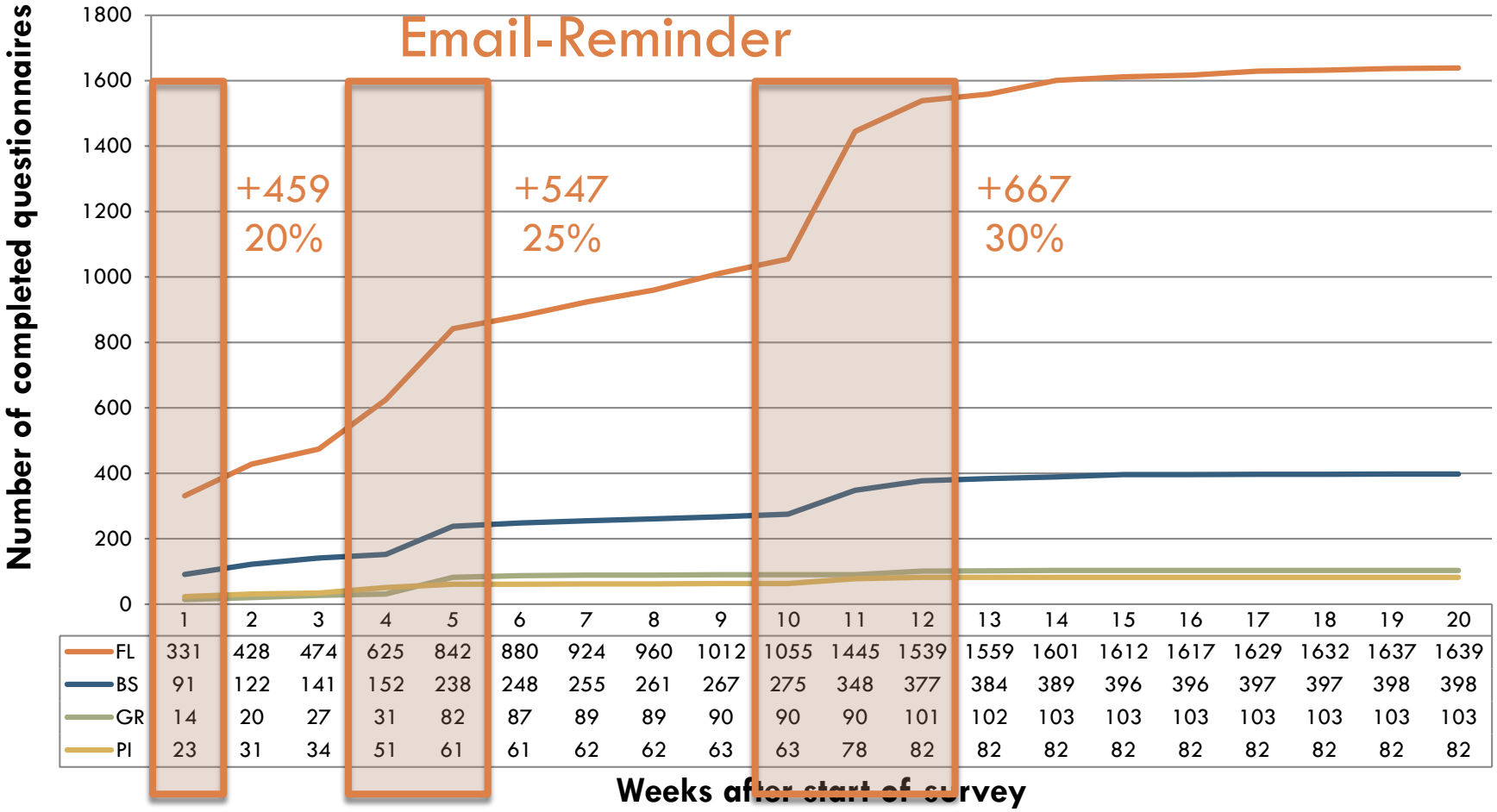
Material and Methods II

- Questionnaire with 25 questions
  - statistics of the farm (7)
  - statistics of the respondent (3)
  - breeding goal of the respondent (4)
  - strengths and weaknesses of the main breed (4)
  - trust in estimated breeding values (1)
  - usage of young bulls (2)
  - usage of service offered by breeding organisations (2)
  - agricultural and socio-political topics (2)

Response rate

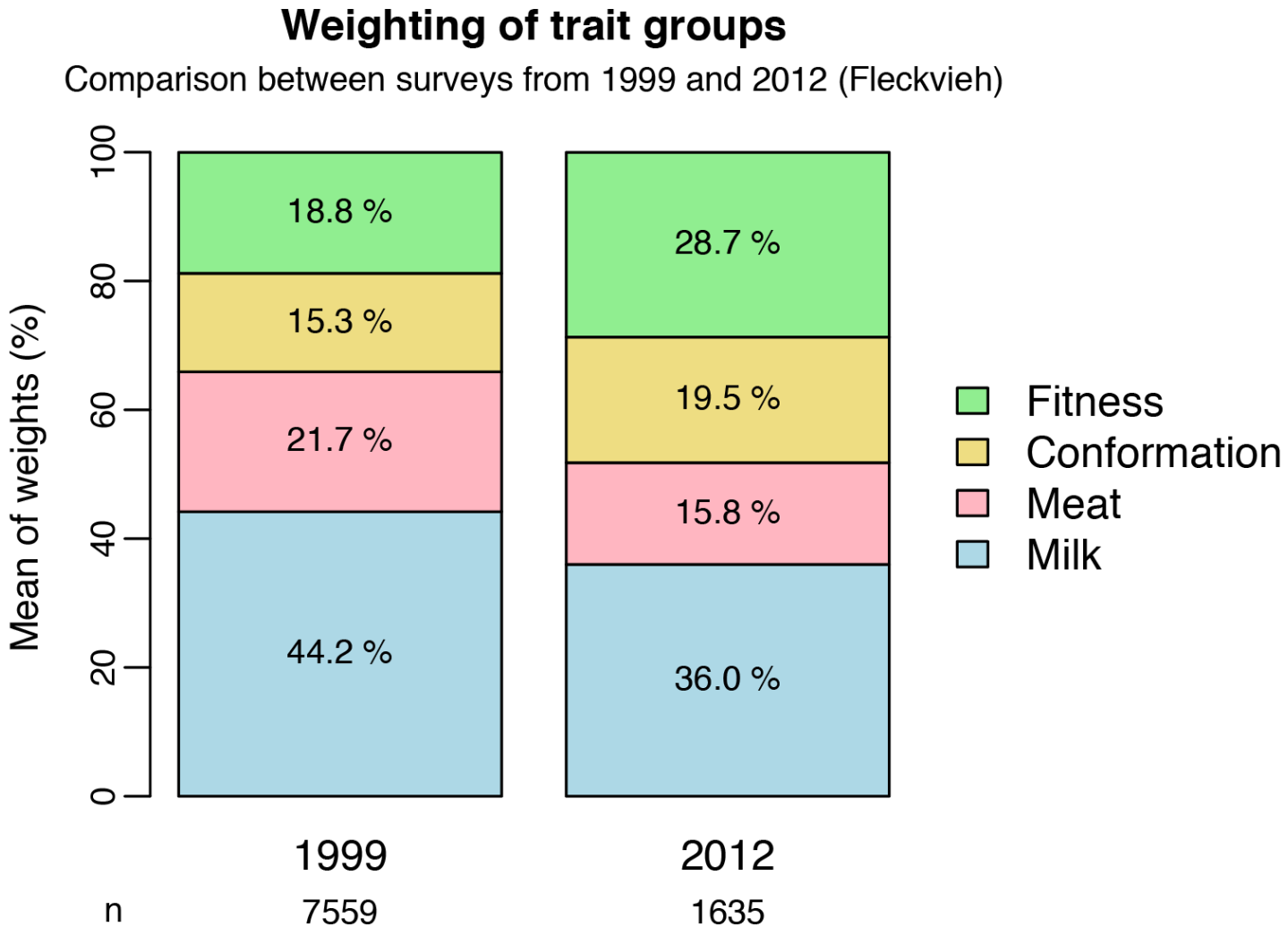


Rate of return

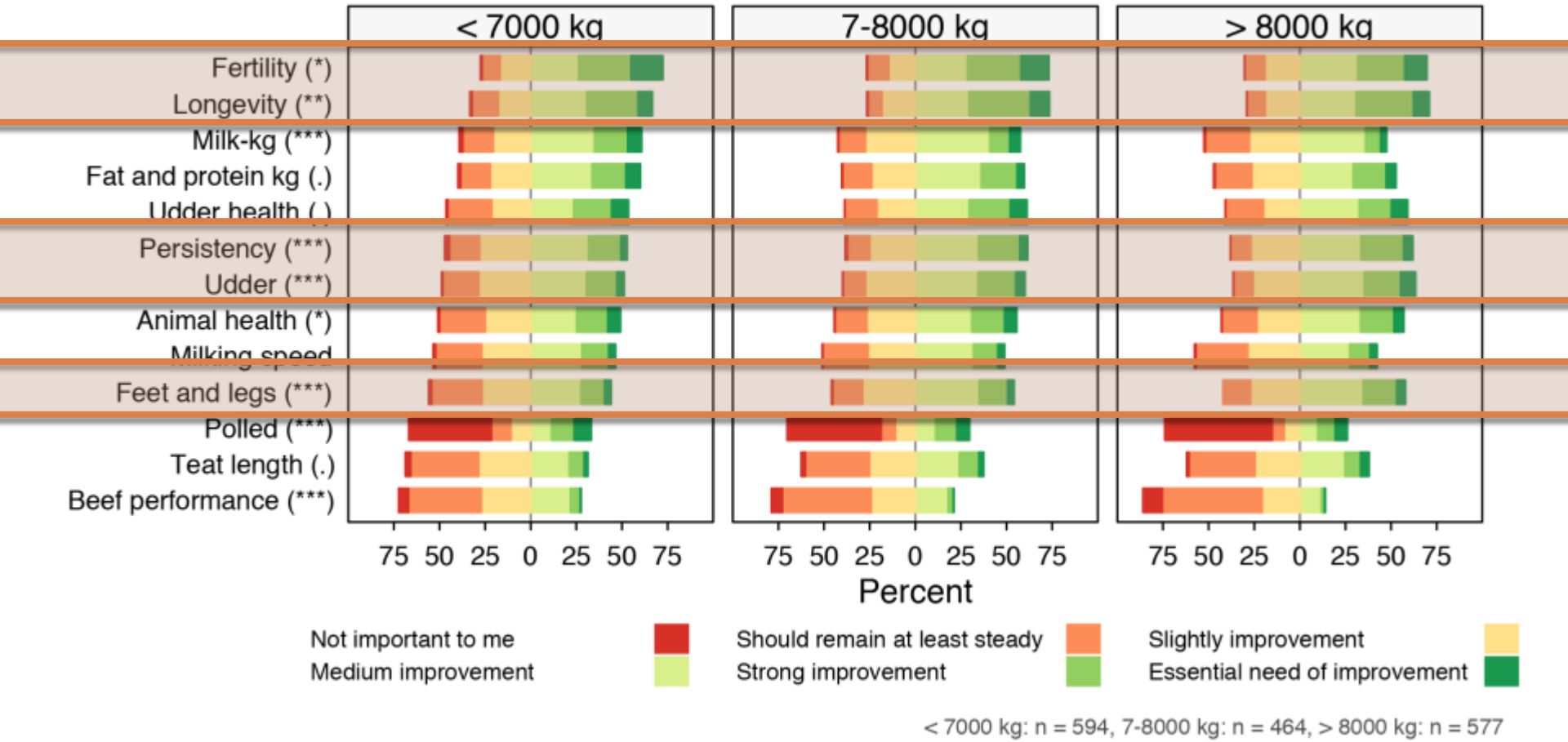


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FL	331	428	474	625	842	880	924	960	1012	1055	1445	1539	1559	1601	1612	1617	1629	1632	1637	1639
BS	91	122	141	152	238	248	255	261	267	275	348	377	384	389	396	396	397	397	398	398
GR	14	20	27	31	82	87	89	89	90	90	90	101	102	103	103	103	103	103	103	103
PI	23	31	34	51	61	61	62	62	63	63	78	82	82	82	82	82	82	82	82	82

Change of weights (Fleckvieh)

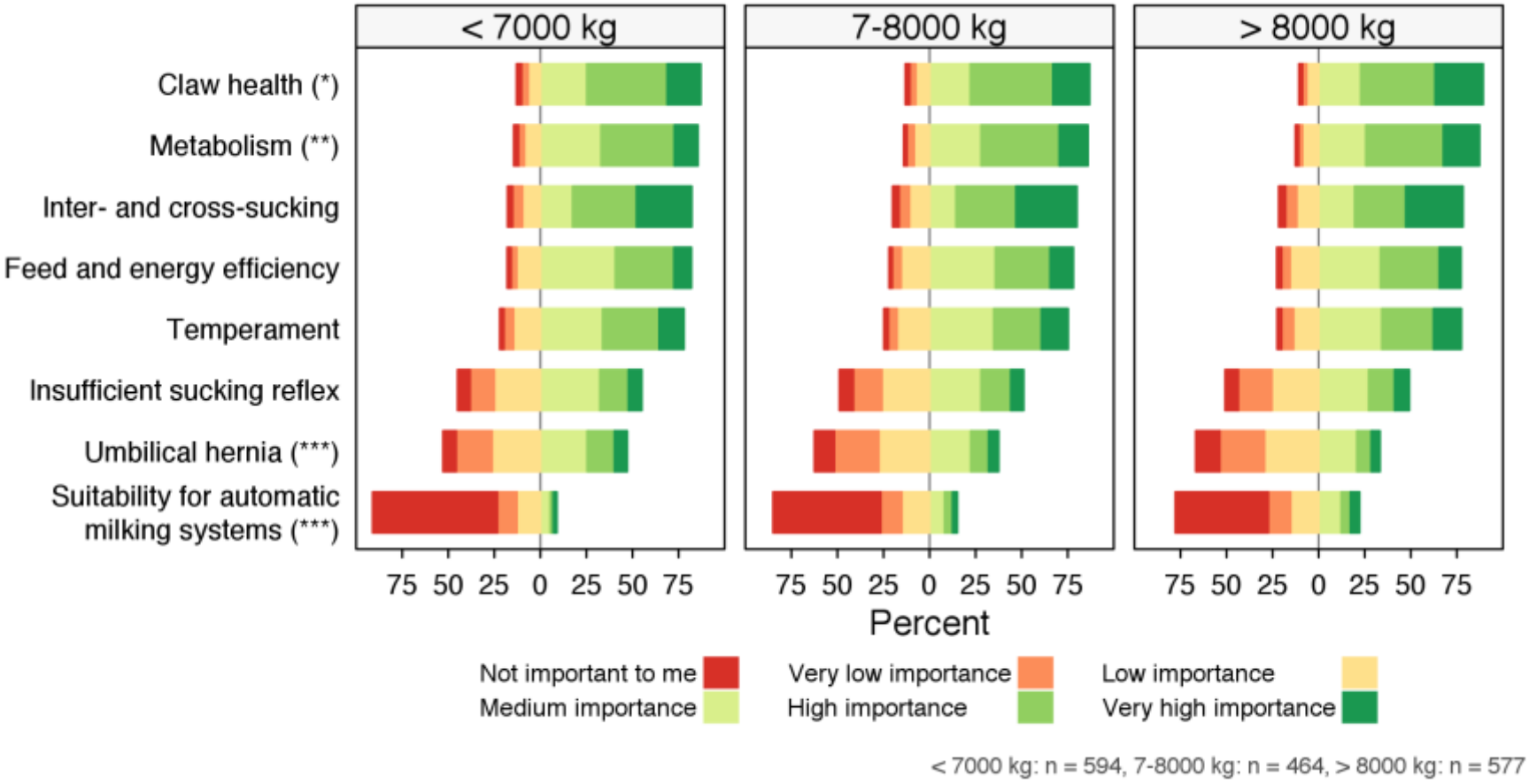


Personal breeding goal (FL)



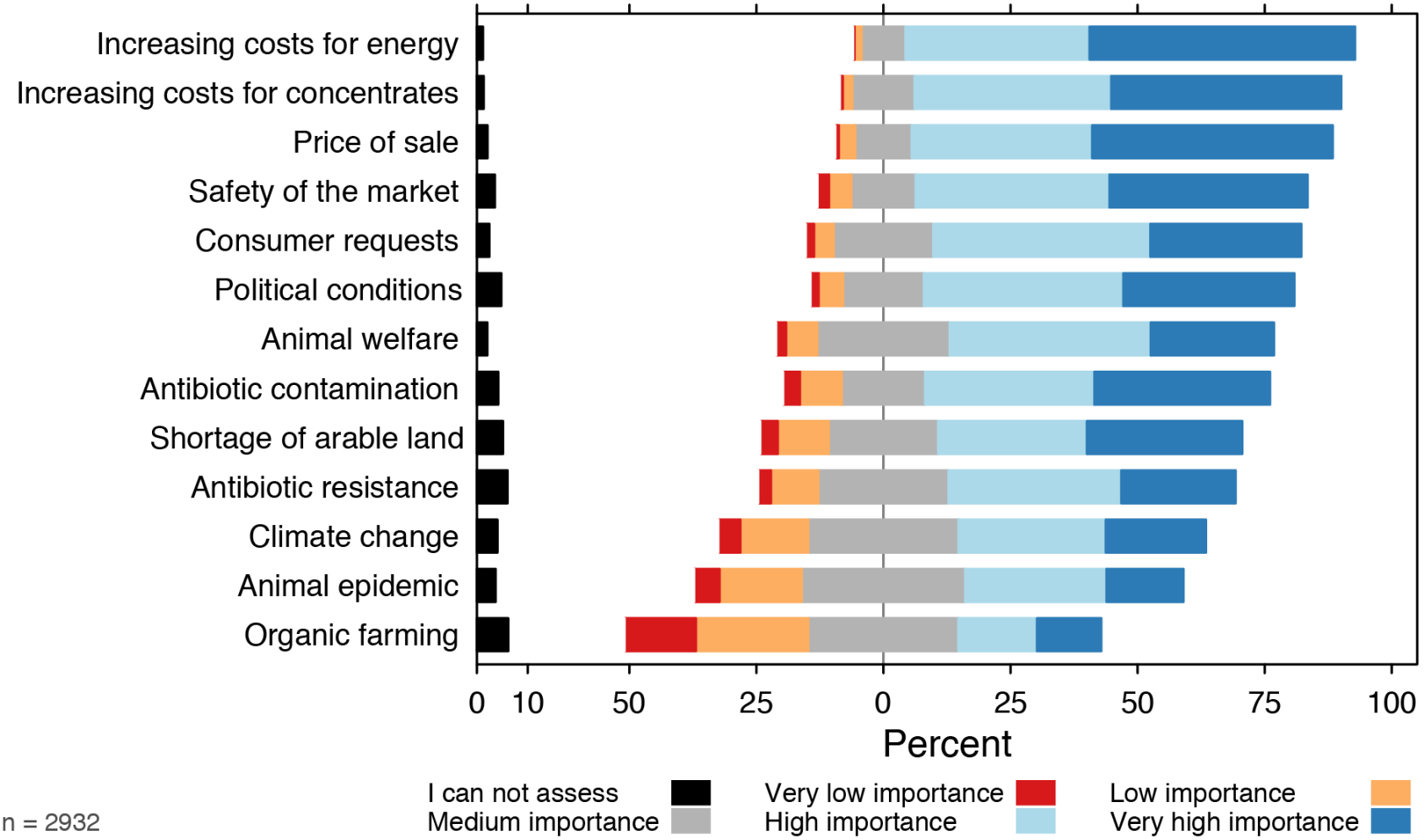
Kruskal–Wallis one-way analysis of variance (±= 0.05)

Priority of new traits (FL)



Kruskal–Wallis one-way analysis of variance (±= 0.05)

Challenges for next 10 years



n = 2932

Use of online surveys

- Online surveys are a quite cheap method to give breeders the possibility to participate in defining the breeding goals.
- Breeders are interested in these possibilities.
- Although the response rate looks low, most results were stable after only 2-3 weeks.
  - Average response rate at week 3: 3.12 %
- Chance to force the contact between breeders and breeding associations.

Conclusions I

- Circumstances of production are changing.
- The weights of fitness and conformation traits increased from 1999 to 2012.
- Especially longevity and fertility are in the focus of the breeders.
- Breeders demand inclusion of new traits;
  e.g. claw health, metabolism
- Slight differences in breeding goals between farms;
  e.g. dependent on herd milk yield

Conclusions II

- It is important to consider the needs of the farmers for designing breeding goals.
- Results of such surveys have to be carefully interpreted.
- Every farmer has his own personal preferences. But defining breeding goals for our breeding programs will not be decisions of single breeders.
- Breeding associations have to use this information to define the breeding goals.

Acknowledgement

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- Federation of Austrian Cattle Breeders
- International partners:
  - ASR (Association of cattle breeders in southern Germany)
  - LfL (Bavarian State Research Centre for Agriculture)
  - Czech Fleckvieh Breeders Association
- Farmers for answering the questionnaire

Thank you for your attention!

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