World-Wide Trends in Milk-Recording in Cattle

P. Bucek, K. Zottl, J. Kyntäjä, F. Miglior, H. Leclerc, J. van der Westhuizen, K. Kuwan, Y. Lavon, K. Haase, C. Trejo, D. Radzio, Elsaid Z. M. Oudah

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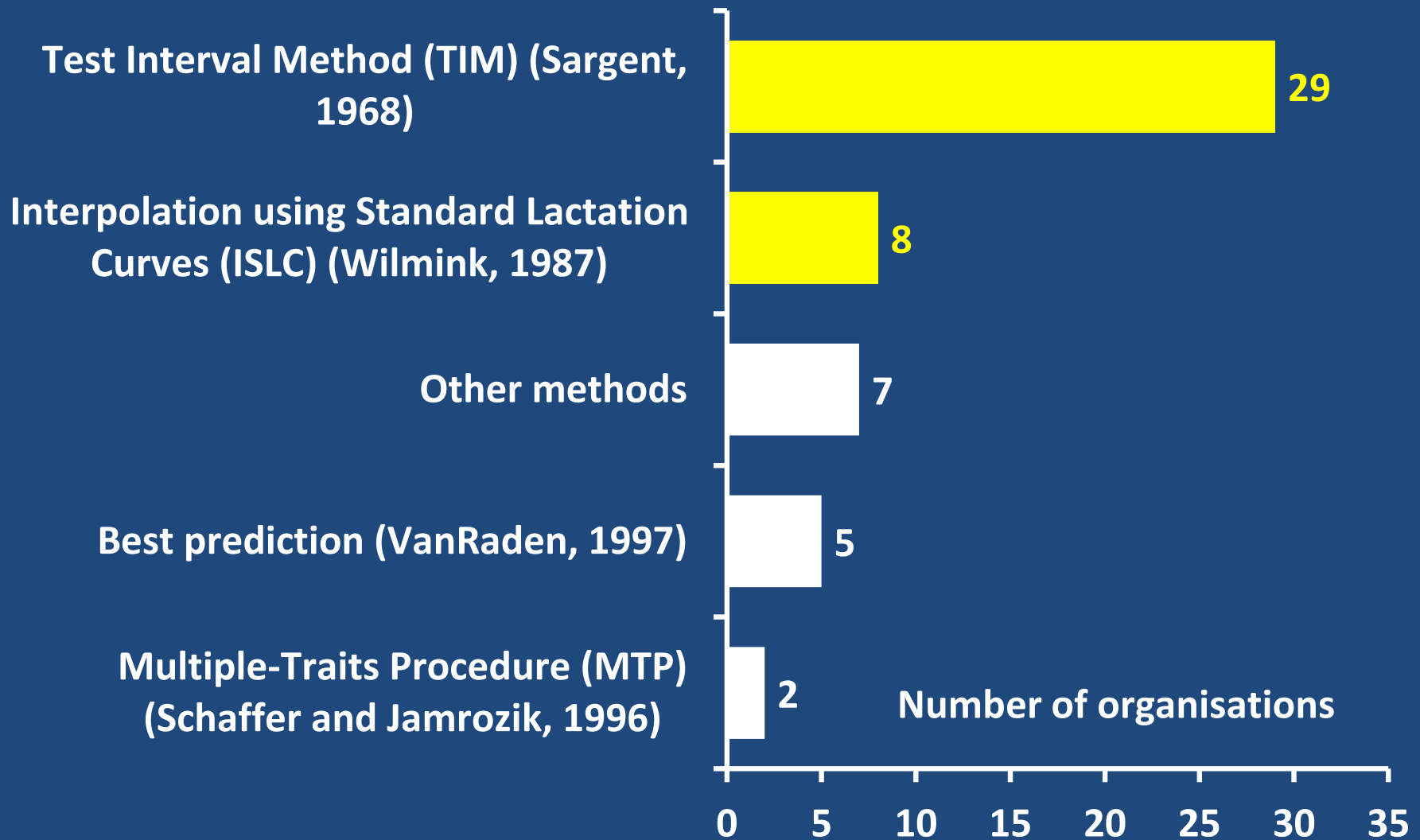# General overview of the project and available data

Indicator	Number
Dairy cows covered in the questionnaire	21,486,116
Number of recording organisations	287
Number of milk-analysis laboratories	169
Number of organisations that completed the questionnaire	46

The survey covers most of the important ICAR regions across the World.

The survey included 106 questions covering the most important phases of milk recording, incorporating the collaboration and feedback of milk-recording organisations involved in the project.

World map by www.freeworldmaps.net

Lactation calculation methods used in milk-recording organisations

Test Interval Method (TIM) (Sargent, 1968) — 29

Interpolation using Standard Lactation Curves (ISLC) (Wilmink, 1987) — 8

Other methods — 7

Best prediction (VanRaden, 1997) — 5

Multiple-Traits Procedure (MTP) (Schaffer and Jamrozik, 1996) — 2

Number of organisations

0   5   10   15   20   25   30   35

From the analysis, it is evident that most organisations use the Test Interval Method and Interpolation using Standard Lactation Curves.

Daily-yield calculation methods used in milk-recording organisations

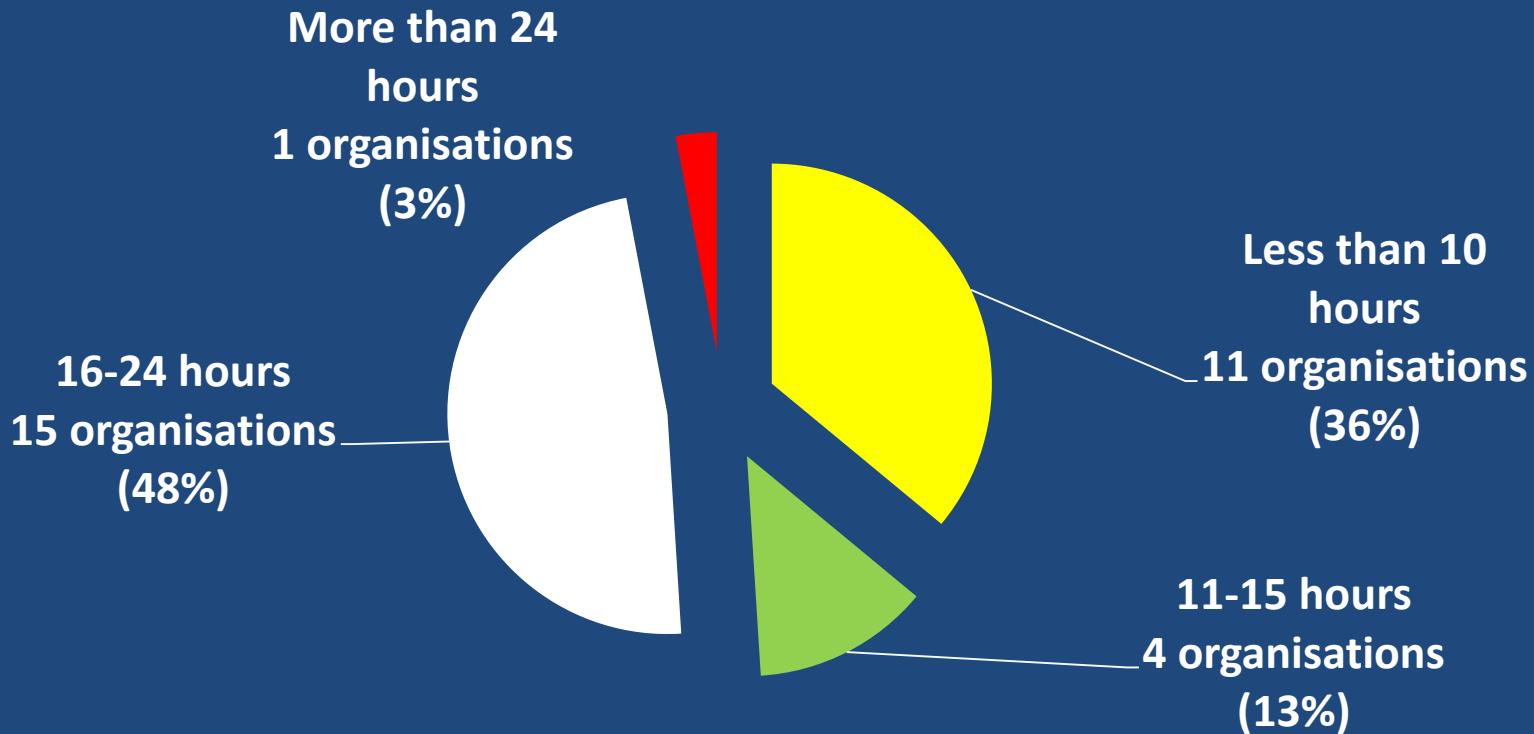| Method	Number of organisations
AMS (milking robots); Data used from more than one day (Lazenby et al., 2002)	16
AM/PM milkings, Liu et al. (2000)	14
Other methods (in brief)	12
Delorenzo and Wiggans (1986)	10
Correction based on preceding intervals, ICAR Guidelines 2. 1. 7. 1.	8
AMS (milking robots); Estimation of fat and protein yield (Galesloot and Peeters, 2000)	7
Electronic Milk Metre (EMM); Data used from more than one day (Hand et al., 2006)	3
AMS (milking robots); Data used from 1 day (Bouloc et al. 2002)	3
AMS (milking robots); Sampling period (Hand et al., 2004; Bouloc et al., 2004)	2

Number of organisations

ICAR 2015 TECHNICAL WORKSHOP
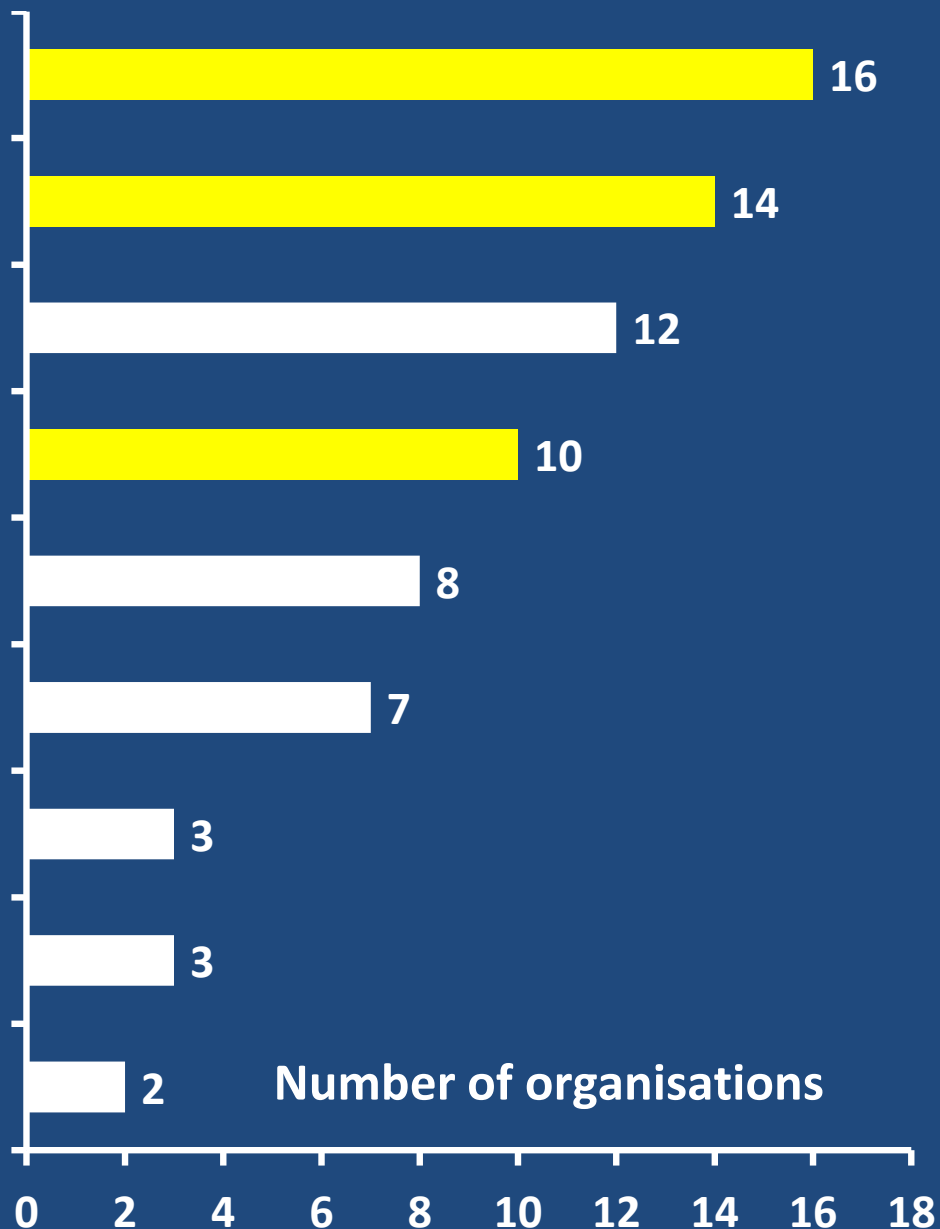
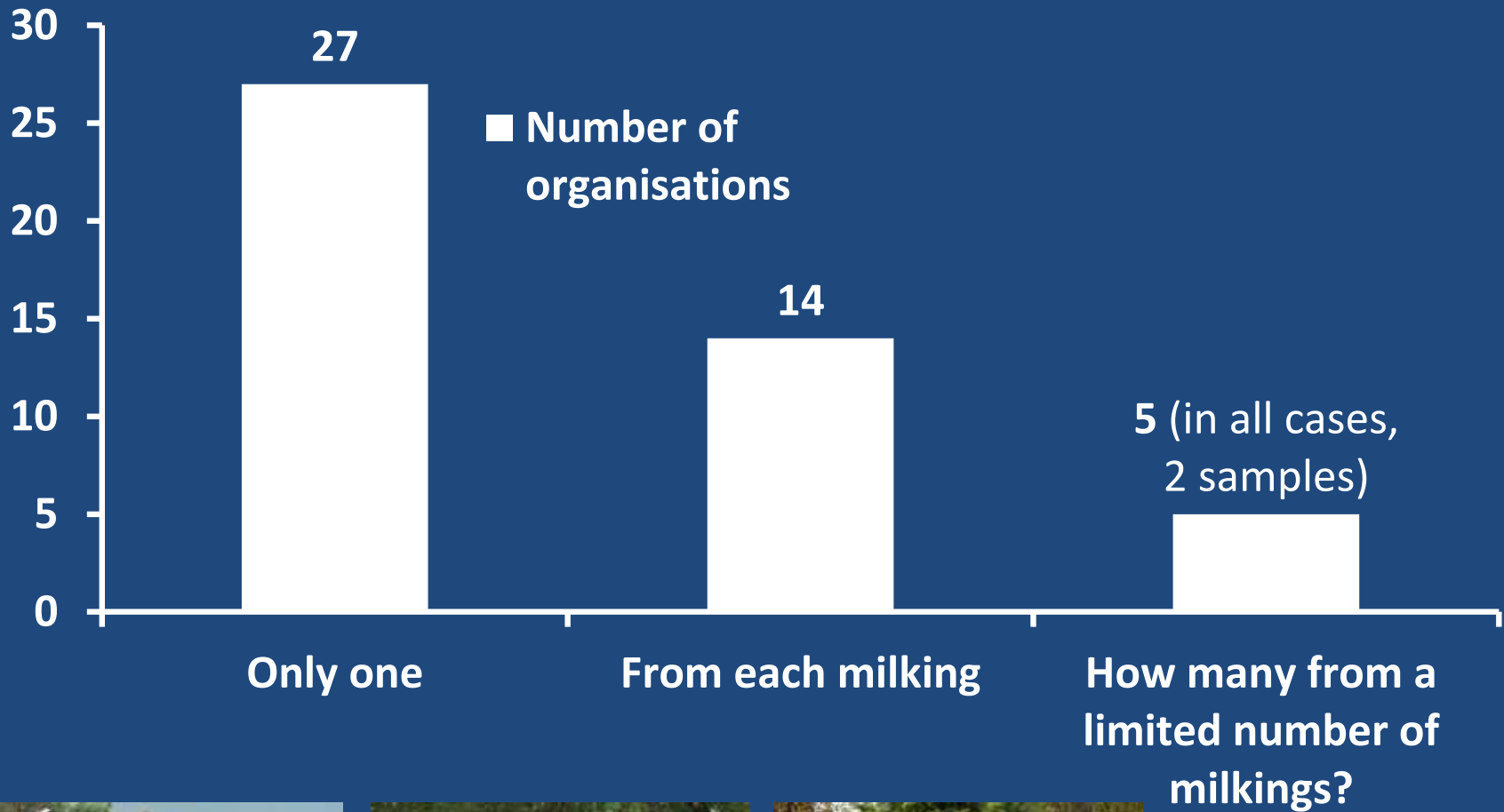# Milk recording using milking robots (automatic milking systems)

What is the minimum sampling duration on the test day (in hours)?

More than 24 hours
1 organisations
(3%)

Less than 10 hours
11 organisations
(36%)

16-24 hours
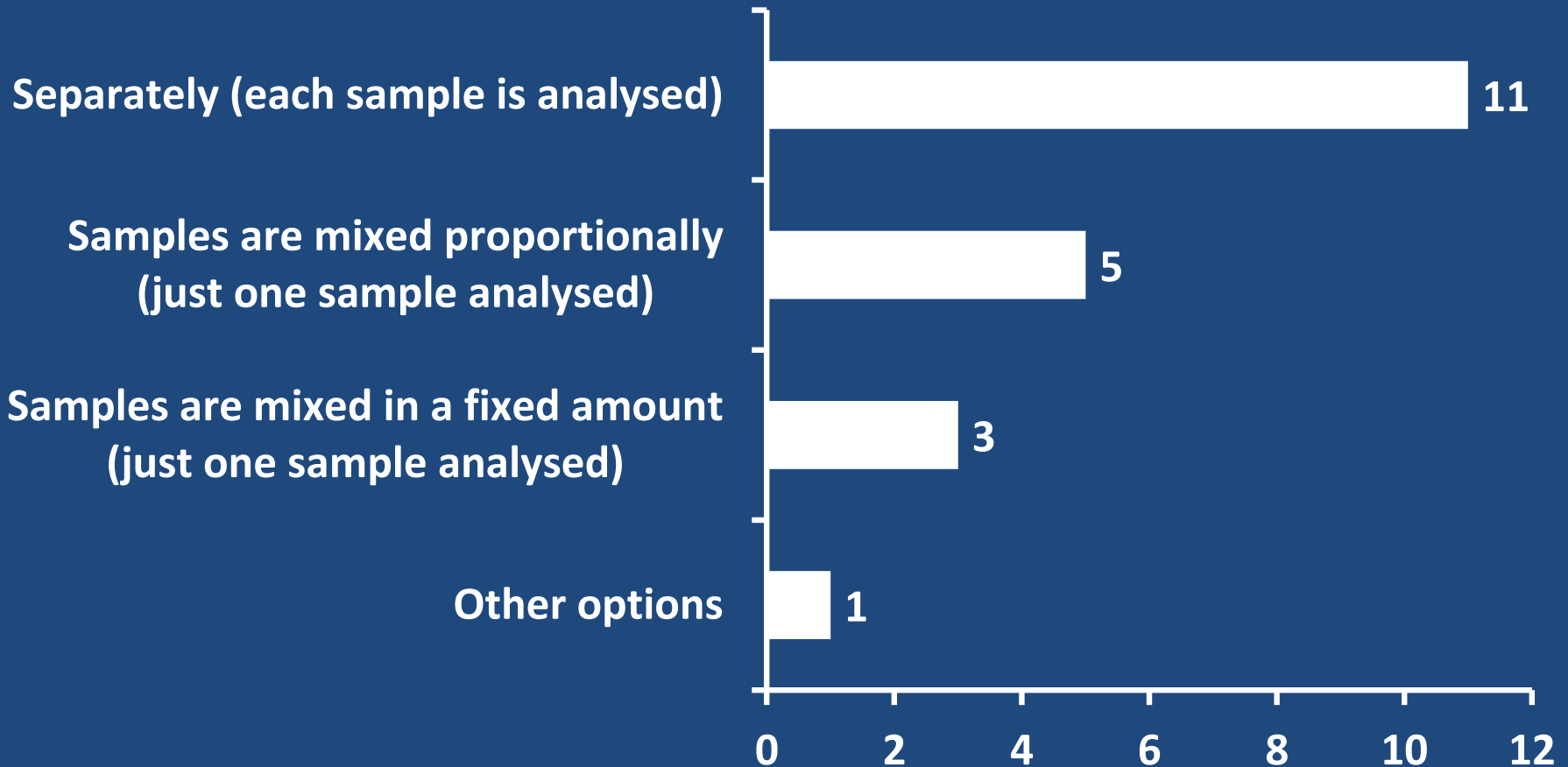15 organisations
(48%)

11-15 hours
4 organisations
(13%)

How many samples do you take during the sampling period?
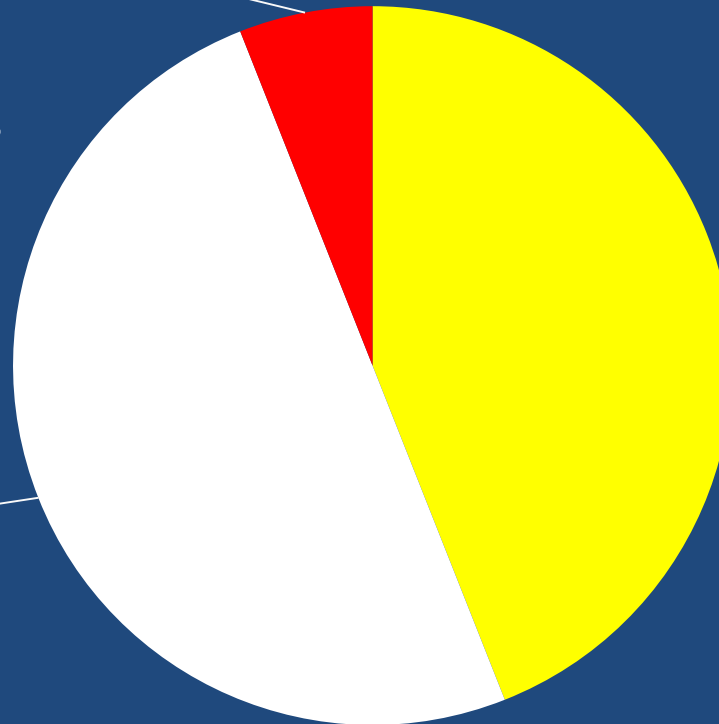
In the case of more than one sample, how are these samples taken?

Over how long a period is milk yield production recorded and calculated (e.g. 1, 5, 7 days, 1 month, etc.)?

Multiple number of days - test day excluded
2 organisations

Test day only
16 organisations

Multiple number of days - test day included
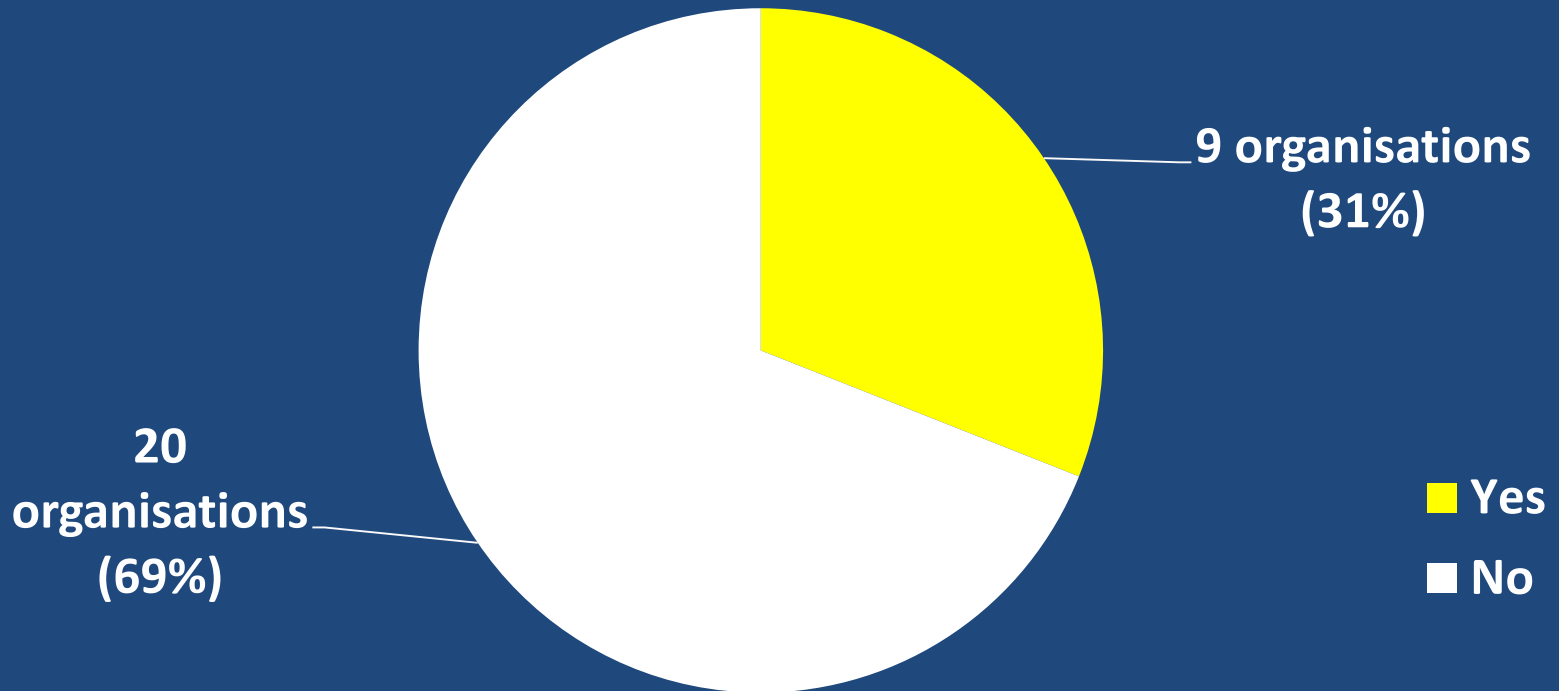**18 organisations**

25% of organisations specified 1-3 days; 19% – 4 days; 13% – 5 days; 0% – 6 days and 43% – more than 6 days. From the survey, the maximum period given was 10 days.

Stationary parlour meters

Stationary parlour meters - do you use milk yields from more than one day?

9 organisations (31%)

20 organisations (69%)

■ Yes
■ No

Over how long a period is milk yield recorded and calculated (e.g. 1, 5, 7 days, 1 month, etc.)?

Number of organisations

	Number of organisations
The test day	16
Multiple number of days – test day included	5
Multiple number of days – test day excluded	1
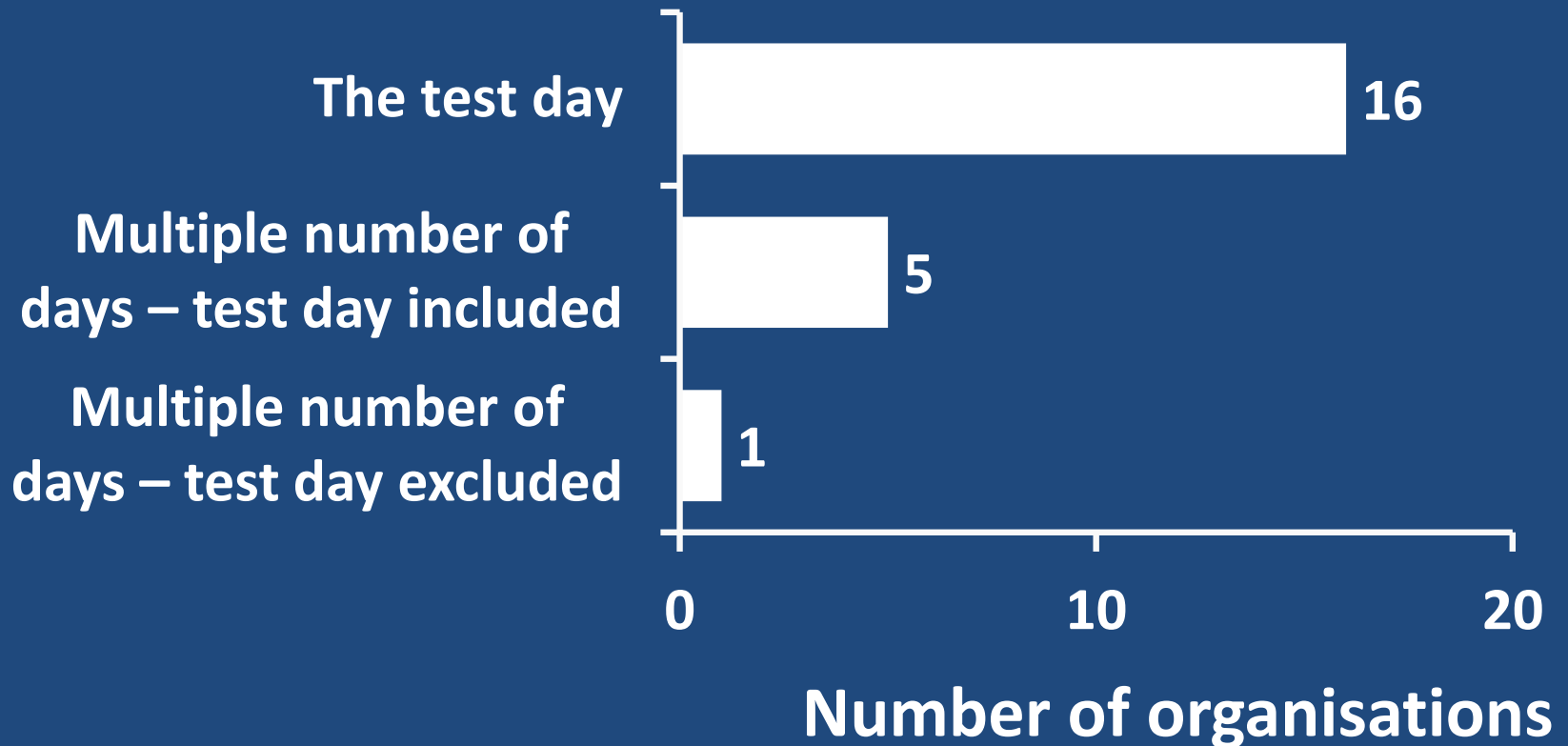
The length of the period from which milk yield production is recorded over multiple number of days is usually 7 days and for one organisation, 5 days.

Milk-recording methods

Number of organisations

Method	Value
A (technician)	38
B (farmer)	30
C (combination of A and B)	12

0　5　10　15　20　25　30　35　40
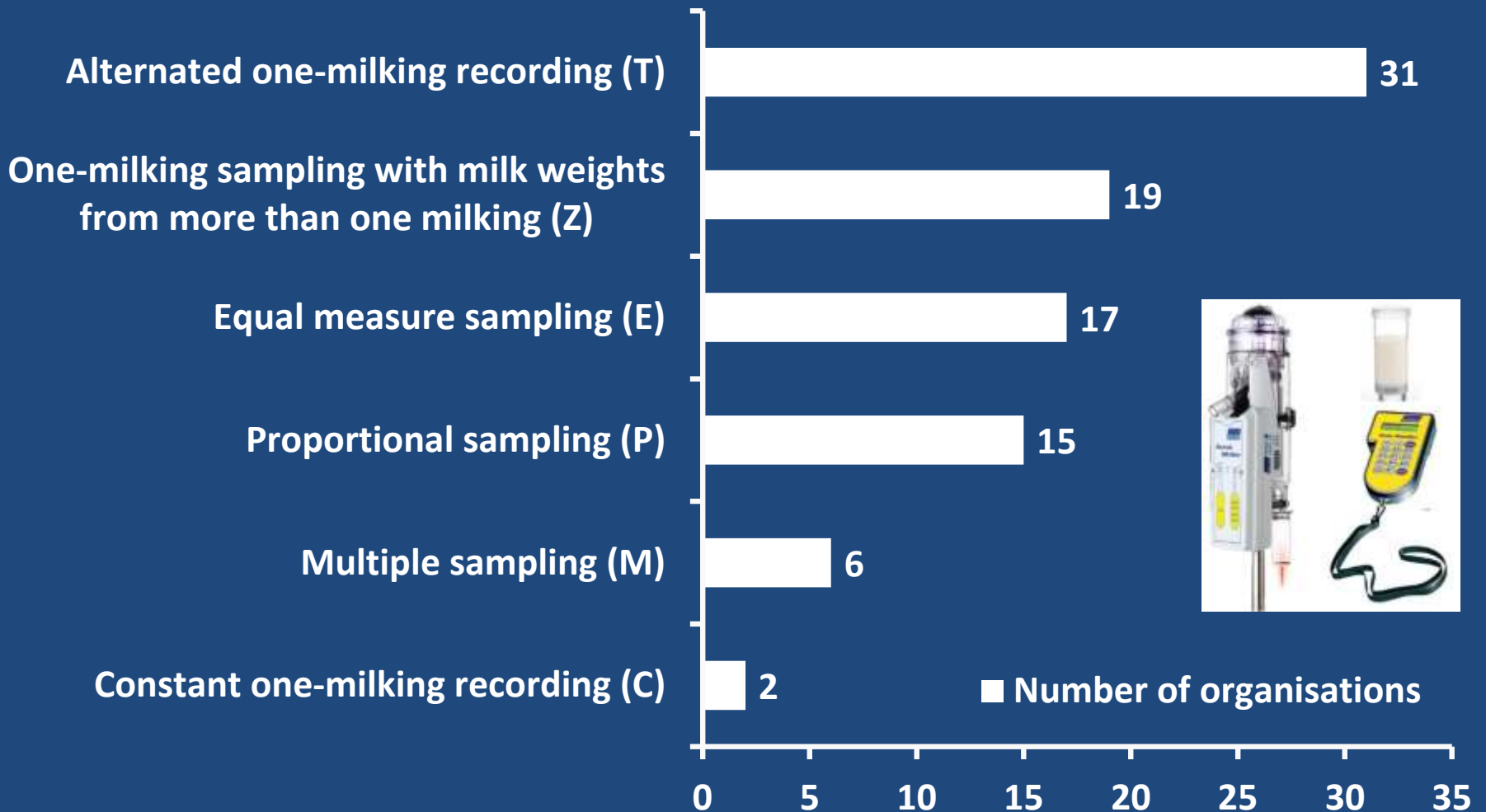
Cows (millions)

Method	Value
A (technician)	14.9
B (farmer)	5.5
C (combination of A and B)	0.4

0　2　4　6　8　10　12　14　16
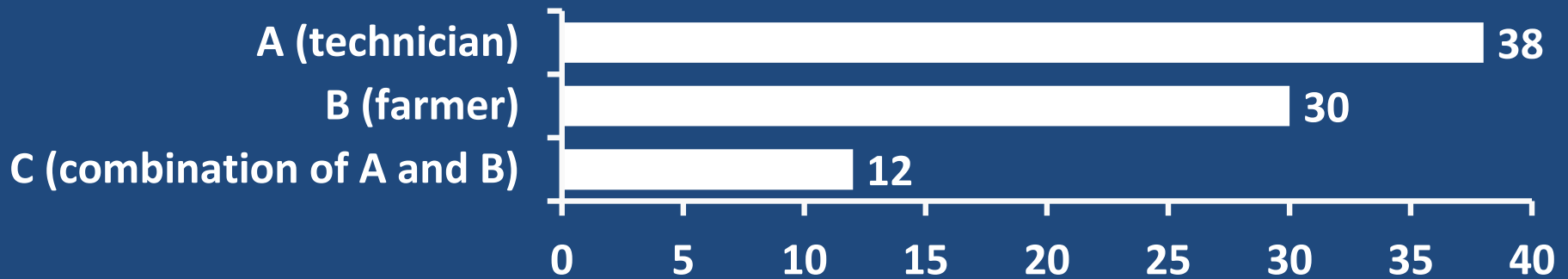
Most organisations use more than one milk-recording method in their herds. Only 1 method was used in 42% of organisations, 2 methods in 30% of organisations and 3 methods in 28% organisations.
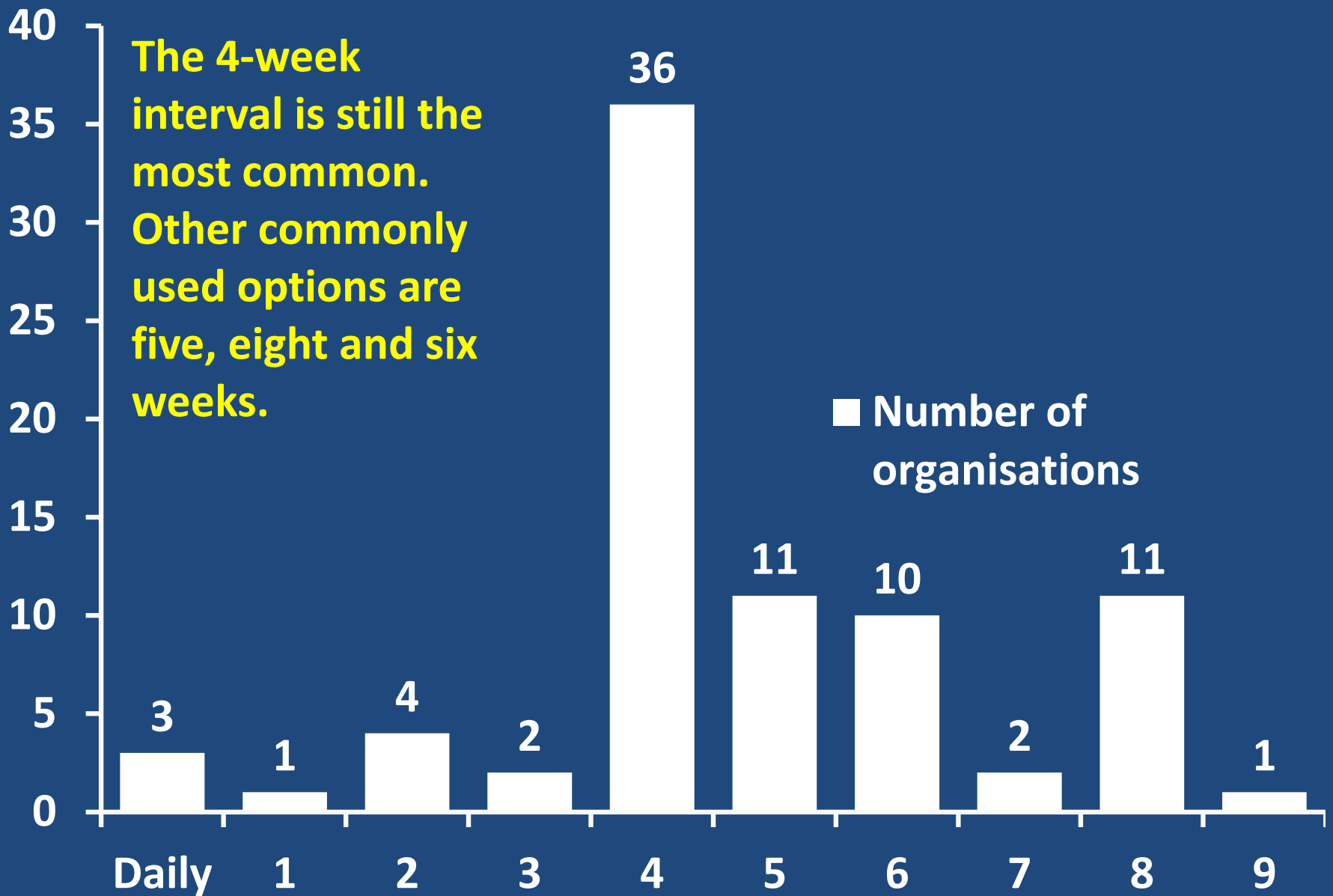
13 organisations used method A only, while 5 organisations used only method B. Method C was used in combination with other methods.

Sampling schemes

Number of organisations by sampling scheme:

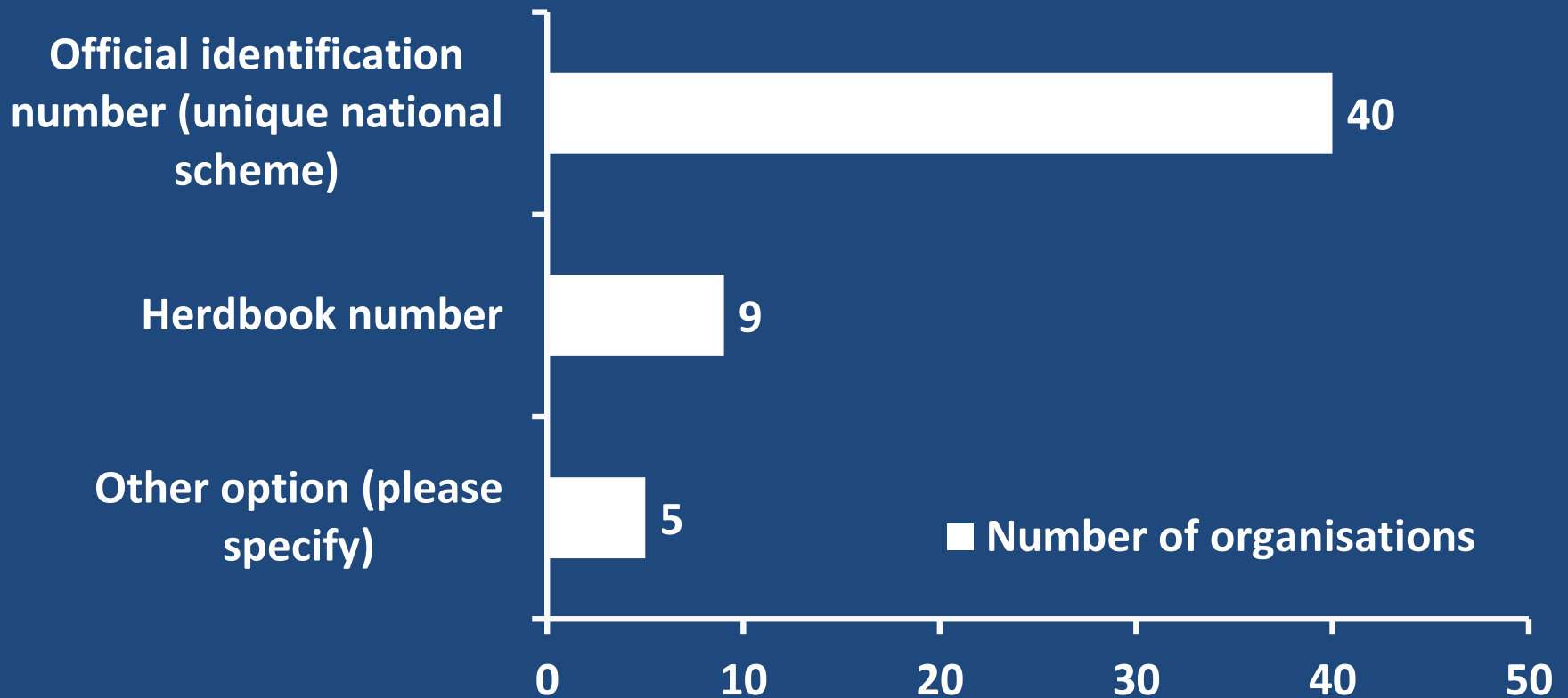| Sampling scheme	Number of organisations
Alternated one-milking recording (T)	31
One-milking sampling with milk weights from more than one milking (Z)	19
Equal measure sampling (E)	17
Proportional sampling (P)	15
Multiple sampling (M)	6
Constant one-milking recording (C)	2

Some methods were not given, but this could benefit many ICAR members and add flexibility. Method Z is an important method, but the most common method of sampling is alternate one-milk-recording T.

Recording intervals in weeks

The 4-week interval is still the most common. Other commonly used options are five, eight and six weeks.

■ Number of organisations

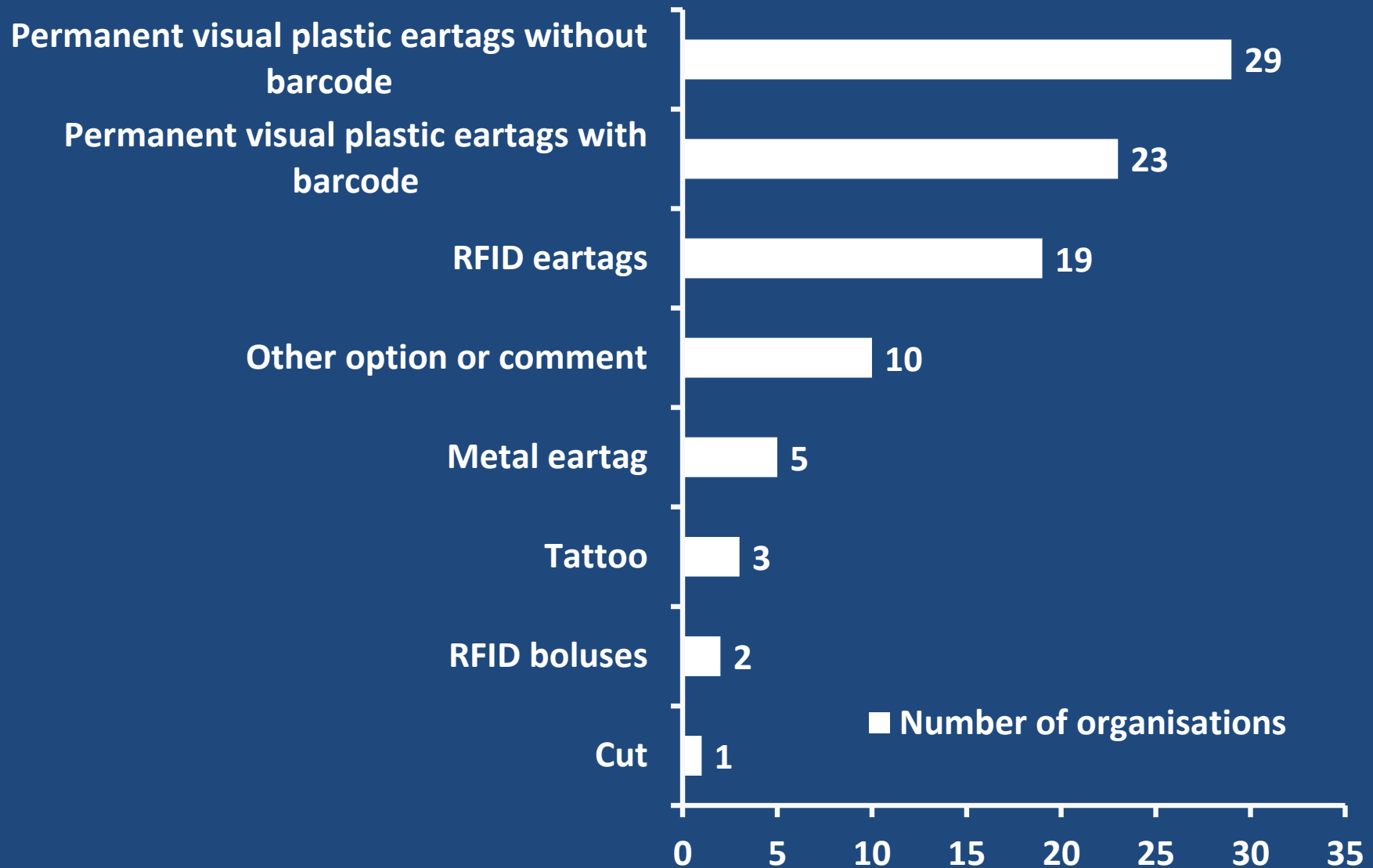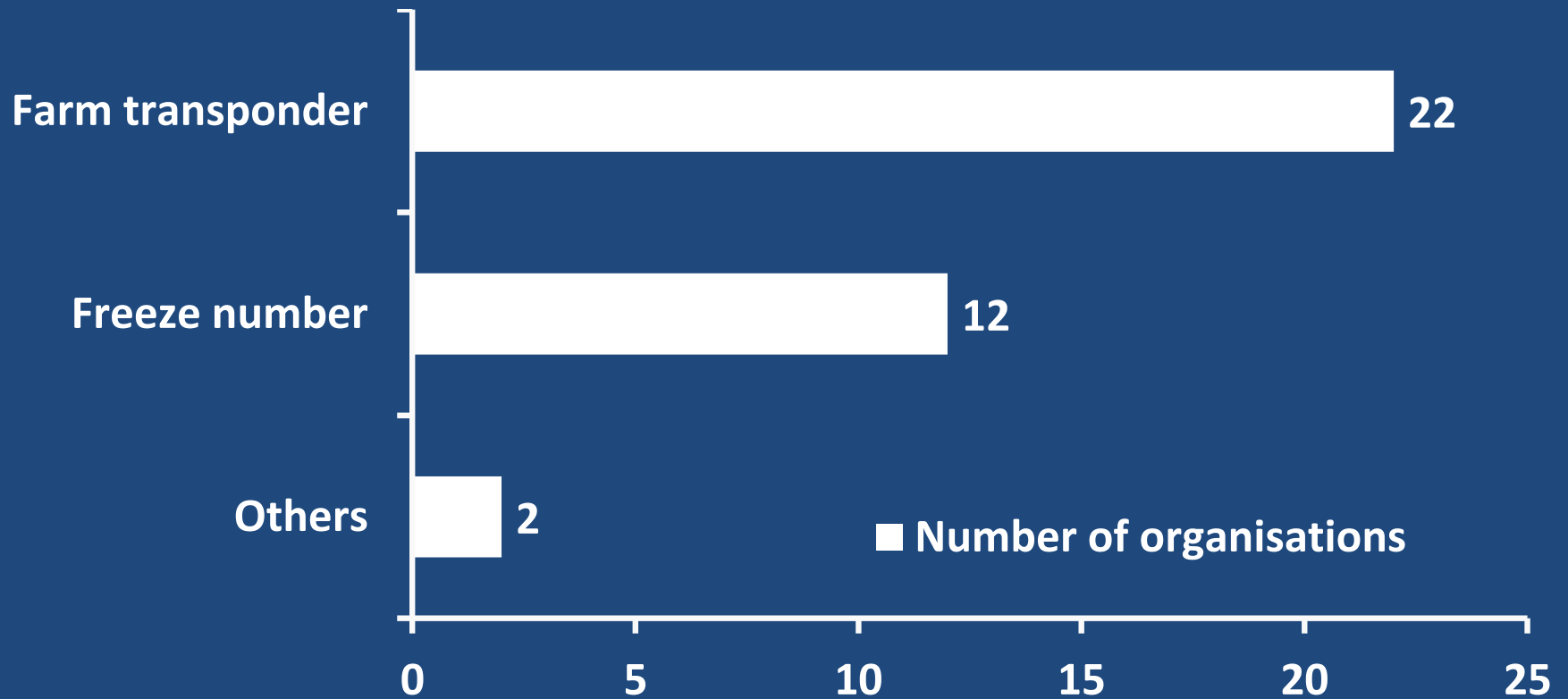| Daily	1	2	3	4	5	6	7	8	9
3	1	4	2	36	11	10	2	11	1

What system for identifying animals is approved for official milk-recording?

Which methods do you use to identify animals during milk recording?

Method	Number of organisations
Permanent visual plastic eartags without barcode	29
Permanent visual plastic eartags with barcode	23
RFID eartags	19
Other option or comment	10
Metal eartag	5
Tattoo	3
RFID boluses	2
Cut	1

Do you use any additional methods of identification (during milk recording)?

Chart — Number of organisations:
- Farm transponder: 22
- Freeze number: 12
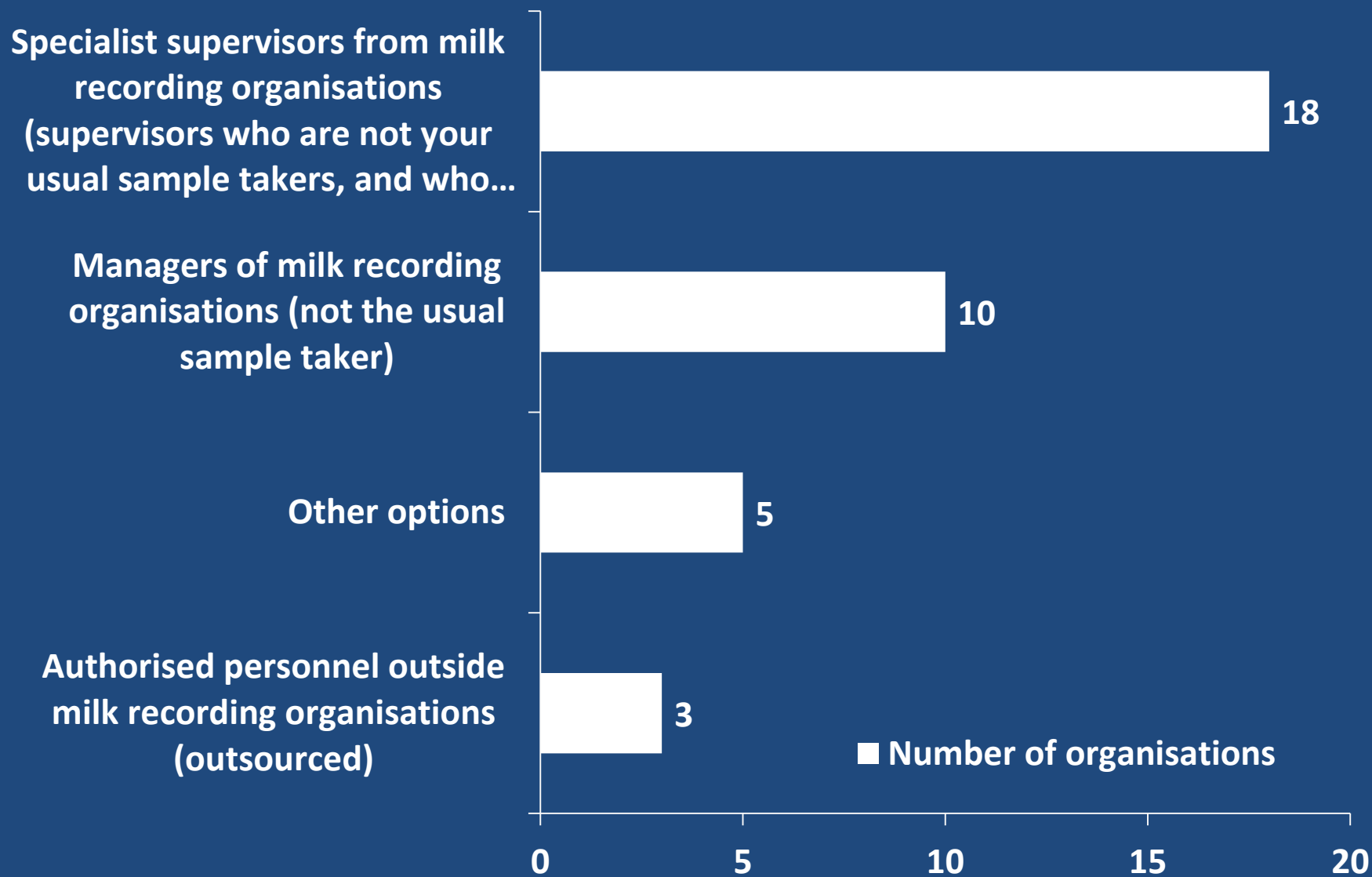- Others: 2

Repeated tests

Are repeated tests for recording (supervisory control) implemented?	• **Yes - 28 organisations** • **No - 17 organisations**
How are the supervisory controls (repeated tests, repeated recordings) carried out in the field?	• **Random - 13 organisations** • **Leading herds / cows - 17 organisations** • **Producers of AI bulls - 9 organisations** • **Herds outside confidence intervals (e.g. fat %) - 16 organisations** • **Herds with an extraordinary increase in production - 18 organisations** • **Other options - 7 organisations**
Animals inspected in repeated recordings (supervisory control, repeated tests)?	• **All - 26 organisations** • **Selected animals in the herd - 8 organisations**
Which traits do you use for repeated tests (supervisory control)?	**Milk production - 27 organisations, fat % 23 organisations, fat kg - 12 organisations, Protein % - 21 organisations, Protein kg - 12 organisations, other options - 7 organisations**

Who performs the supervisory control?

Category	Number of organisations
Specialist supervisors from milk recording organisations (supervisors who are not your usual sample takers, and who...	18
Managers of milk recording organisations (not the usual sample taker)	10
Other options	5
Authorised personnel outside milk recording organisations (outsourced)	3

Bulk tank comparison

|	
For which herds is a bulk tank comparison implemented?	• **All milk-recording herds - 20 organisations** • **Only in specific cases, e.g. method B (farmer, owner sampling) - 4 organisations** • **Not implemented - 13 organisations** • **Other possibilities and specific approaches used (please specify) - 7 organisations**
Which traits do you use to compare milk-recording with bulk tank	• **Milk yield – 26 organisations** • **Fat % - 24 organisations** • **Fat kg – 2 organisations** • **Protein % - 22 organisations** • **Protein kg – 2 organisations** • **Other – 7 organisations**

Conclusion

- Monitoring the situation in milk recording
- Serves as a basis for changes and improvements to the ICAR Guidelines. New methods have been identified.
- Feedback from participating countries, comparisons
- Survey results can offset changes within different milk-recording organisations
- Strengthening of collaboration and communication between the Dairy Cattle Milk Recording Working Group and milk-recording organisations
- This document could inspire future innovations in the field
- The survey has revealed the new requirements of milk-recording organisations

Thank you for your attention!

Acknowledgements

The Dairy Cattle Milk Recording Working Group acknowledges and thanks all participants in the survey and for their feedback used in the project.
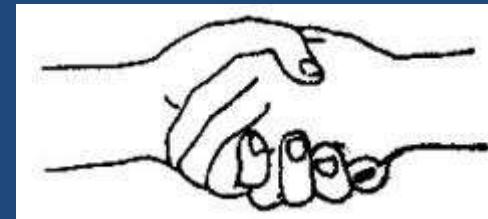
Organisations (countries) which provide raw data along with relevant contacts and responsible persons (authors from milk-recording organisations)

Country	Organisation	Respondent
ARG	Asociación Criadores de Holando Argentino	Liliana Chazo
AUT	LKV Austria	Karl Zottl
BEL	Association wallone de l'élevage asbl	Carlo Bertozzi
BGR	Executive Agency on Selection and Reproduction in Animal Breeding	Vasil Nikolov
CAN	CanWest DHI	Neil Petreny and Richard Cantin
CHE	Association of Swiss Cattle Breeders	Eric Barras
CHL	Cooprinsem	Eduardo Winkler
CHN	Shanghai Dairy Cattle Breeding Center Co., Ltd.	Pengpeng An
COL	Asosimmental - Simbrah Colombia	Filippo Rapaioli
CZE	Czech Moravian Breeders´ Corporation	Pavel Bucek, Josef Kucera (CFBA) and Zdenka Vesela (IAS)
GER	German Association for Performance and Quality Testing	Folkert Onken
DNK	RYK	Uffe Lauritsen
EGY	Mansoura University, Faculty of Agriculture	Elsaid Z.M. Oudah
ESP	Asociacion Nacional De Raza Parda	Francisco Javier Castro Gutier

Organisations (countries) which provide raw data along with relevant contacts and responsible persons (authors from milk-recording organisations)

Country	Organisation	Respondent
ESP	CONAFE	Sofia Alday
EST	Estonian Livestock Performance Recording Ltd.	Aire Pentjärv
FIN	ProAgria Group	Juho Kyntäjä
FRA	France Génétique Elevage	Gilles Thomas and Laurent Journaux
GBR	Quality Milk Management Services Ltd	Andrew Bradley
GBR	National Milk Records plc	Tony Craven
GBR	Cattle Information Services	Suzanne Harding
HRV	Croatian Agricultural Agency	Zdravko Barac
HUN	LPT LTD/Hungary	Julianna Kóti Seenger
IND	BAIF Development Research Foundation	Ramchandra Bhagat
IRL	Irish Cattle Breeding Federation	Brian Coughlan
ISL	The Icelandic Agricultural Advisory Centre	Gudmundur Johannesson
ISR	Israel Cattle Breeders Association	Yaniv Lavon
ITA	Associazione Italiana Allevatori	Mauro Fioretti and Riccardo Negrini
JEY	RJA&HS	David Hambrook
LTU	Animal Recording Control	Gintare Kisieliene
LUX	CONVIS s.c.	Armand Braun
MAR	Coopérative Mabrouka Des Eleveurs de Bovins	Nadia Mousili
NLD	CRV	Louwrens van Keulen and Hans Wilmink

Organisations (countries) which provide raw data along with relevant contacts and responsible persons (authors from milk-recording organisations)

Country	Organisation	Respondent
NOR	TINE SA	Tone Roalkvam
NZL	LIC	Bevin Harris
POL	Polish Federation of Cattle Breeders and Dairy Farmers	Danuta Radzio
ROU	Innovative Agricultural Services	Cosmin Popa
RUS	RC "Plinor" Ltd.	Olga Kachanova and Elena Turenkova
BGR	EASRAB	Vasil Nikolov
SRB	Agricultural faculty of Novi Sad	Mile Pecinar
SVN	University of Ljubljana, Biotechnical Faculty - Department of Animal Science	Marija Klopčič
SWE	Växa Sverige	Nils-Erik Larsson
URY	Instituto Nacional para el Control y Mejoramiento Lechero	Fernando Sotelo Carro
USA	AgSource Cooperative Services	Robert Fourdraine
USA	Lancaster Dairy Herd Improvement Association	Jere High
USA	NorthStar Cooperative	Kevin Haase
ZAF	South African Stud Book and Animal Improvement Association	Japie van der Westhuizen