ICAR Reference Laboratory Network

- Objectives & Stage of Progress in 2012 -
History: ICAR Session in Ottawa 1994, => Analytical Quality Assurance (AQA) policy by ICAR

General objective: Develop an international AQA system for DHI based on harmonised laboratory practices.

Goal: Confidence, equivalence, comparability => within / between countries, => worldwide: international genetic evaluation.

Implementation by MA SC:
> Guidelines for the harmonisation of analytical practices:
  Analytical methods, Quality Assurance,

> International network of reference laboratories for milk recording analytical performances
**ROLES OF THE LABORATORY NETWORK**

ICAR Reference Laboratory Network
an international platform for milk recording

- to diffuse/promote GLP and AQA based on international guides and standards  => communication  *(Internet, website)*

- to provide precision traceability and anchorage to consensual international “true values” to routine labs via network members

  => analytical data harmonisation  *(PTs, RMs)*

- to develop collaborations / programmes for laboratory purposes

  => Co-operation  *(Education, training)*

*Model & explanation provided every year to ICAR member organisations*
**Major task undertaken by ICAR**

= Laboratory analytical anchorage

**Intent**

> to establish *(measurable)* links from local/national/regional levels to the international level

> to harmonise laboratories on an international collective reference

**Means**

> International guidelines and standards  ⇒ harmonised methodology

> Interlaboratory proficiency studies  ⇒ lab trueness traceability

> Reference materials  ⇒ trueness improvement

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland) 4
THEORETICAL STRUCTURE

ICAR INTERNATIONAL REFERENCE LABORATORY NETWORK

1st Level
INTERNATIONAL

2nd Level
NATIONAL

3rd Level
Regional Networks

PTs
RMss

REFERENCE VALUES

Expert laboratories:
- National harmonization
- National external control
- National technical assistance

NATIONAL NETWORKS
Missions / activities expected
- Eligibility criteria -

- 1- National ring test organizer
- 2- Reference Material supplier
- 3- Master laboratory for centralized calibration
- 4- Teaching and training in laboratory techniques
- 5- Information on analytical methods
- 6- Evaluation of analytical methods/instruments
- 7- Research on analytical methods
- 8- National regulatory control of analyses
- 9- Routine testing where only 1 or 2 labs/country
ICAR Reference Laboratory Network
Membership in 2011-2012

41 laboratory members from 34 countries as follows:

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</table>

(n) : number of member(s)

among which:
41 members for cow
19 members for goat
16 members for sheep

3 new members in 2011: Croatia, Germany, Japan
ICAR Reference Laboratory Network
Geographical distribution in 2011-2012
### Evolution of the composition and national roles from 1998 to 2011

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NRTO</th>
<th>RMS</th>
<th>MLCC</th>
<th>TLT</th>
<th>IAM</th>
<th>EAMI</th>
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NRTO = National Ring Test Organiser  
RMS = Reference Material Supplier  
MLCC = Master Laboratory for Centralised Calibration  
TLT = Training in Laboratory Techniques  
IAM = Information on Analytical Methods  
EAMI = Evaluation of Analytical Methods/Instruments  
RAM = Research on Analytical Methods  
NRCA = National Regulatory Control of Analyses  
DHIA = Dairy Herd Improvement Analyses  
Membership = Officially nominated by ICAR National Committees

### Evolution of the proportions of national roles from 1998 to 2011

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Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Evolution of membership and missions/activities from 1998 to 2011

ICAR network members - Evolution from 1998 to 2011 -

National Ring Test Organisers - Evolution from 1998 to 2011 -
Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Evolution of membership and missions/activities from 1998 to 2011

**Training in Laboratory Techniques**
- Evolution from 1998 to 2011 -

**Information on Analytical Methods**
- Evolution from 1998 to 2011 -

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Evolution of membership and missions/activities from 1998 to 2011

Evaluation of Analytical Methods & Instruments
- Evolution from 1998 to 2011 -

Research in Analytical Methods
- Evolution from 1998 to 2011 -

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Evolution of membership and missions/activities
- Number -

ICAR Reference Laboratory Network 1998-2011

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Evolution of membership and missions/activities - Percentage -

ICAR Reference Laboratory Network 1998-2011

Percentage of laboratories (%)

Years


NRTO RMS MLCC TLT IAM RAM NRCA DHIA Members

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
### Coverage of eligibility criteria in 2011

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<tr>
<th>Criteria N</th>
<th>Proportion</th>
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### International interlaboratory proficiency studies

| From 1996 : | International proficiency scheme organised by ICAR |
| Frequency : | twice a year (4 new PT rounds since Riga 2010) |
| Participants : | 13 to 19 members of ICAR Ref Lab Network |
| Analytical methods : | - reference methods to calibrate routine methods for fat and protein |
| | - methods for lactose, urea somatic cell counting |
| Type of milk : | cow milk |
Participation in ICAR PTs - FAT

ICAR International Interlaboratory Proficiency Studies - Fat

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Participation in ICAR PTs - PROTEIN

ICAR International Interlaboratory Proficiency Studies - Protein

Year

Number of participants


15   17    17    17   19   18   20  21  21  24  19  22  21  19  20  20  20  18  18  18  18  16  16  16  16

Protein
Participation in ICAR PTs - LACTOSE

ICAR International Interlaboratory Proficiency Studies - Lactose

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Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
Participation in ICAR PTs – Somatic Cell Counting

ICAR International Interlaboratory Proficiency Studies - Somatic Cell Counting

Year

Number of participants

0 5 10 15 20 25 30 35


SCC

Meeting of ICAR Reference Laboratory Network, 28 May 2012 - 38th ICAR Session Cork (Ireland)
From Sousse 2004, Niagara Falls 2008, Riga 2010
Interlaboratory proficiency studies are promoted for

1- Measuring laboratory performance

2- Measuring result uncertainty

3- Comparing laboratories (assess equivalence)

4- Providing traceability to international reference

5- Qualifying/selecting reference/expert laboratories

6- Assessing/certifying reference materials

In order to built-up consistent reference systems nationally and internationally
CONCLUSION ON THE NETWORK IMPLEMENTATION

Nominations by national organisations:

- **Number**: 41 members
  3 new members in 2011: Croatia, Germany, Japan

Need to **expand more widely** for a worldwide recognition purpose with new ICAR members

*e.g. Latin America, Asia, Russia & CIS*

- **Qualification**: Increase of mission numbers (eligibility criteria)

International Proficiency Testing schemes:

- **Regular** participation of about 50% of laboratory network members

- participation numbers close to average lab numbers meeting eligibility criteria
Thank You for your attention!