From QMS ideal to performance reality
- a hybrid performance management approach for genebanks

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Overview

• Introduction to Trust
• Quality Management Systems
• The Ideal
• The Reality
• Trust and CGIAR approach
• Performance indicators
• Summary
• ITPGRFA
• Crop and regional strategies
• Improved information systems
• Improved transport systems
• Svalbard Global Seed Vault
• Threats to global food security
Global Crop Diversity Trust

To ensure the long-term **conservation** and **availability** of plant genetic resources with a view to achieving global food security and sustainable agriculture

More specifically:

• **Safeguard** ex-situ collections of crop diversity of global importance
• **Rescue** threatened valuable diversity
• Promote the **access** and use of diversity
• Actively **implement** Treaty Articles (5, 6, 7, 8, 12, 13, 14, 15, 16, 17)

An essential element of the Treaty Funding Strategy
Building a rational global system

Collections with high diversity and high standards

Collections with low diversity and low standards

Long-term grants

Regenerate, characterize and duplicate threatened unique accessions

Self funding collections  Collections needing assistance

EPGRC2011 - Wageningen April 4-7 2011
Genebank samples distributed internationally per year

Source: Collections online databases, publications, and personal communications between Trust and Genebank Managers, 2008-2010

EPGRC2011 - Wageningen April 4-7
2011
Distributions of germplasm samples from 211 national collections

Source: Personal communications between Trust and collection holders, 2008-09; data on average annual distributions between 2005-2007 from 211 crop collections in 77 institutes in 69 countries.
Long-term grants
Long-term grants - annual funding forever

- US$ 2.05 m per year
- 18 major crop collections

- grants increase by 2% annually

USD$0,000

2006  2007  2008  2009  2010

Aroids  Banana  Barley  Bean  Cassava  Faba bean  Forages  Grasspea  Lentil  Maize  Pearl millet  Rice  Sorghum  Wheat  Yam

EPGRC2011 - Wageningen April 4-7 2011
Quality?

Elbonia

I've been sent to teach you "Total Quality Management."

In the old days, quality was just an empty word meaning 'good.'

Eventually it evolved into a complicated method for transferring your money to business consultants.

Quality equals good (1950)
Quality = capability to meet expectations

- Ancient & Medieval worlds
  - Codes - law and life
  - Standard measures and yardsticks
  - Guilds, master & apprentices

- Industrial revolution
  - Mass production, streamlining and optimizing using technology
  ⇒ Standards and procedures

- Current
  - Including human capacity & taking a systems approach
  ⇒ Flexibility
  ⇒ Quality (technology + human capacity)
What is a Quality Management System?

“A set of policies, processes and procedures that ensure a common sense approach to the management of an organization; the system should ensure consistency and improvement of working practices, which in turn should provide products and services that meet customer's requirements”

• Number of elements

• Norm in many businesses (drug companies, food control, environmental)

• Formal (certified or accredited) or informal
## Why do genebanks need quality management systems?

### Outputs

- Stop things from going wrong
- Functioning equipment, quality supplies & processes
- Reduce costly mistakes and manage budget constraints
- Assure quality of the service or research provided
- Performance audits meeting requirements of users or funding agencies
- Harmonized, optimized and recorded procedures across individuals and departments
- Capturing experience and knowledge of past employees
- Mechanisms for feedback and improvement

### Outcomes

- Effective risk management
- Cost efficiencies
- Improved performance
- Improved trust
- Improved collaboration
- Meeting client demands
- Trained and competent staff
- Transparency and greater knowledge sharing, Perpetuate knowledge
International QMS standards

ISO 9001:2008 series – implementation of a quality system of processes CERTIFICATION

- Generic standard – can be applied to business enterprise, public administration, government department, research institute
- ISO 9001 certification certifies consistent processes are used BUT does not guarantee compliance (or quality)
- Implemented by over a million organizations in 176 countries
- Certified - IPK Germany, CGN Netherlands and other national genebanks

ISO 17025:2005 – testing and calibration ACCREDITATION

- Applicable to all laboratories, regardless of activities
- Applicable to administrative and technical operations
- Tested by 3rd party audit. Formal recognition of competence
- Accreditation – CIP (genebank and lab), CIMMYT (lab)
Ideal – Quality Management Approach

Assessment
- Define the goals
- Assess operating environment
- Identify risks
- Plan

Requirements

Feedback and response

Monitoring
- Quality control
- Audits
- KPIs
- ISO Accreditation
- Reporting

Management
- Standard Operating Procedures
- Quality Manual
- ISO/QMS Certification
- Genebanks Standards
- Best Practices

Satisfaction
Reality

- Lack of uniformity in genebank operating environments
  - geographic location, security, political stability,
  - funding, capacity and skills
- Variance in the biology and quality level of crop management
- Difficulty in defining and adhering to certified procedures for some activities in uncontrolled environments
- Internally imposed system requirements on many genebanks that reside within larger institutions
- No existing, systematised approach to date
QMS options for CGIAR genebanks
2008 Viability study

1. Documentation of processes – full or partial documentation of processes and procedures
2. Certification - ISO 9001
3. Accreditation – ISO 17025
4. Hybrid – combination of QMS (for critical, high risk, or achievable operations) plus documentation of procedures

The adequate and effective functioning of any genebank can only be guaranteed on a long-term basis if an adequate QMS is in place
Why is the Trust interested in genebank quality?

- No traditional milestones or outputs
- “Business as usual”

⇒ Needed to measure annual progress for Trust and donors
⇒ Needed to facilitate an approach for genebanks to monitor, report and improve their overall performance and effectiveness

1. Conservation of crop germplasm and recording of associated information
2. Distribution of crop germplasm and associated information
3. Contributing to the development of a global system and promoting global collaboration
• 439,943 accessions
  • Seed 409,813 accessions
  • Vegetative (mix of cryopreservation, in vitro and field) – 14,963 accessions
• Across 18 crop collections
• Held by 7 CGIAR genebanks + 1 regional genebank
Performance Indicators: development

- Focus on quantitative indicators – with targets
- Balancing the need to keep it simple while clarifying EXACTLY what is required
- Agreed/understood terminology
- Testing with users
- Harmonise with other activities and/or normal genebank operations
- Balancing the need to keep them stable against improvement
- Avoiding “perverse” indicators
- Used since 2007. Began with a baseline.
- Applicable both in CGIAR genebanks and non-CG genebanks (2009)
- Built into reporting systems of genebanks
Performance Indicators

Category A - Conserving and making available the collection (19 PIs)
“critical core operations”

Category B - Promoting global collaboration in crop conservation (11 PIs)
“leadership and collaboration”

www.croptrust.org - our work
Category A:
Conserving and making available the collection

• Sound management and planning (5)
• Long term storage and management of collection to agreed scientific and technical best practices (5)
• Safety duplication of collection (2)
• Characterisation of collection (3)
• Documentation of collection and provision of data in publicly available information systems and Gensys (1)
• Distribution of germplasm in accordance with the ITPGRFA (5)
Performance indicators: sound management and planning (x5)

- Interim approach
- Move towards redundancy of management PI's
Results: are genebanks performing?
Ensuring long term conservation

- Long term storage
- Safety duplicated
- Svalbard Global Seed vault
- Cryopreservation

Graph showing data from 2007 to 2009.
Results: are genebanks performing?
Ensuring germplasm availability

% of accessions requiring work to ensure availability or are pathogen free (averaged across all Centers)
Summary

- Quality management approach (QMA) results in greater transparency, cost efficiencies, improved quality standards, greater knowledge sharing and trust among genebanks.
- Genebanks should aim towards adopting a QMA
- Options exist, including a ‘hybrid’ approach towards QMA
  - formal QMS plus internal documentation
- Too many challenges for Trust funded genebanks to adopt a consistent QMA
- Trust adopted a performance indicator approach (meet immediate needs) but built into this, indicators and a platform to actively encourage adoption of QMA
- Trust aims to work with genebanks collectively to move towards a consistent QMA
- Adoption of quality management approach is essential for collaboration between genebanks.
  - creates transparency and builds trust
  - Key element for building a global system for PGRFA
Thank you for your attention