

Costs and benefits of quality management in genebank and research operations

experiences at CGN

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This presentation

- specifics of
 - genebank objectives
 - genebank operations
 - laboratory research objectives
 - laboratory research operations
- benefits of quality management
- costs of quality management
- staff appreciation

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Genebank objectives

- to conserve genetic resources for the future
 - long-term objective
 - quality of operations now determines success in the future
- to promote use of genetic resources
 - user satisfaction essential
 - optimizing 'quality of distribution'
 - organizing user feed-back

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Genebank operations

- how does quality of current operations impact effectiveness of conservation and use?
 - collecting
 - what to collect to attain optimal collection composition?
 - how to balance different parts of the collection within total capacity?
 - characterization and evaluation
(essential for promoting use: no use without information)
 - how much to invest, what methodology?
 - regeneration
 - what is acceptable level of genetic shift and drift?
 - how to monitor shift and drift?

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Genebank operations

- how does quality of current operations impact effectiveness of conservation and use? *(continued)*
 - storage
 - how to optimize facilities and procedure to avoid loss?
 - how to monitor seed quality?
 - documentation
 - how to increase the quality of the information (in terms of mistakes and gaps)?
 - how to optimize accessibility?
 - distribution
 - how to guaranty availability and speed of processing requests?
 - what conditions for users can be asked?

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Laboratory research objectives

- to contribute to knowledge of genetic resources collections
 - to promote effectiveness of global conservation system
 - to increase targeted use of collections
- maintain costs by applying efficient technology
- generate reliable results

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Laboratory research operations

- how does quality of current operations impact the knowledge of genetic resources collections?
 - cost reduced by large scale, high throughput
 - automation of procedures
 - appropriate LIMS
 - appropriate management and processing of results
 - R and r quality
 - ability to repeat between sites and over time

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General properties of genebank and lab operations

- standard activities
 - procedures and protocols highly feasible
- long-term nature of operations → long-term use of results
 - documentation of data for future use
 - need for robust quality systems

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Benefits

- operations of individual genebanks/labs more efficient
 - lessons from mistakes → less mistakes
 - within genebank/lab uniformity of procedures
 - less variation in results between staff
 - easier information transfer to new staff
- global genebank system more efficient
 - current use of funds suboptimal
 - information exchange
 - composition of collections
 - molecular data on genetic resources comparable and interchangeable

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Costs (1)

■ costs of introduction

(15% of staff time in year before introduction)

- mainly staff capacity
- analyzing processes
- writing draft procedures and protocols
- agreement and adoption

■ maintenance costs

(5% of staff time while running the system)

- updating quality system
- setting and reaching improvement targets
- increased bureaucracy (logging, reporting, approving, etc.)

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Costs (2)

- benefits will probably exceed costs
 - not easy to quantify
- more costs to maintain quality system
- less costs to repair and correct mistakes and shortcomings

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Staff appreciation

- existing operations improved by documenting
 - transparency and discussion procedures is seen as having positive impact on quality
- quality vs. control system
 - performance indicators are seen as useful for monitoring the processes, not to rate performance
- bureaucracy
 - preparing reports for audit is seen as unnecessary overhead
 - system tends to grow

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Staff appreciation

■ culture of staff

- openness
 - in acknowledging mistakes (and learning from them)
 - in evaluating own approaches (and changing them when appropriate)
- ambition for increased performance
- co-operative personalities - no lonesome cowboys

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Time line for development and implementation

- too fast
 - poor quality and limited commitment and adoption

- too slow
 - overview lost and many subsequent procedure versions

- realistic: 1 – 3 years depending on
 - size of operations
 - groundwork done
 - desired detail in quality system

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Conclusions

- quality management systems pay off
 - long-term investments warrant close monitoring
- genebanks and laboratory research fit for quality management systems
 - many routine operations
- no escape from external requirements

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