Guidelines for *in vivo* conservation of AnGR

European workshop organized by
FAO/ERFP/CGN

Kor Oldenbroek

Centre for Genetic Resources
the Netherlands (WUR)

Evaluation of FAO guidelines

June 14 – 18, 2011 Wageningen

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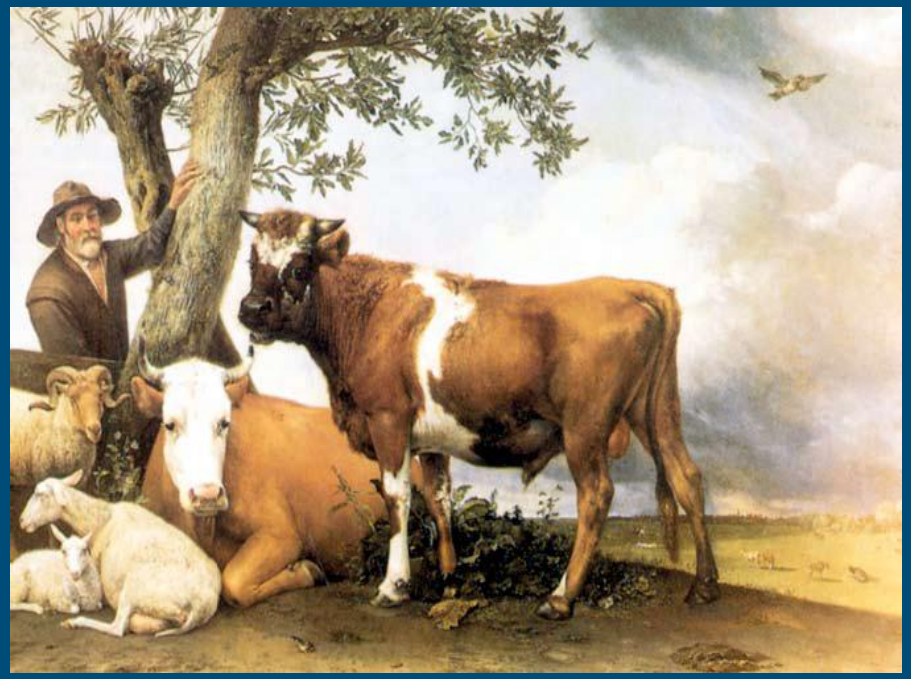
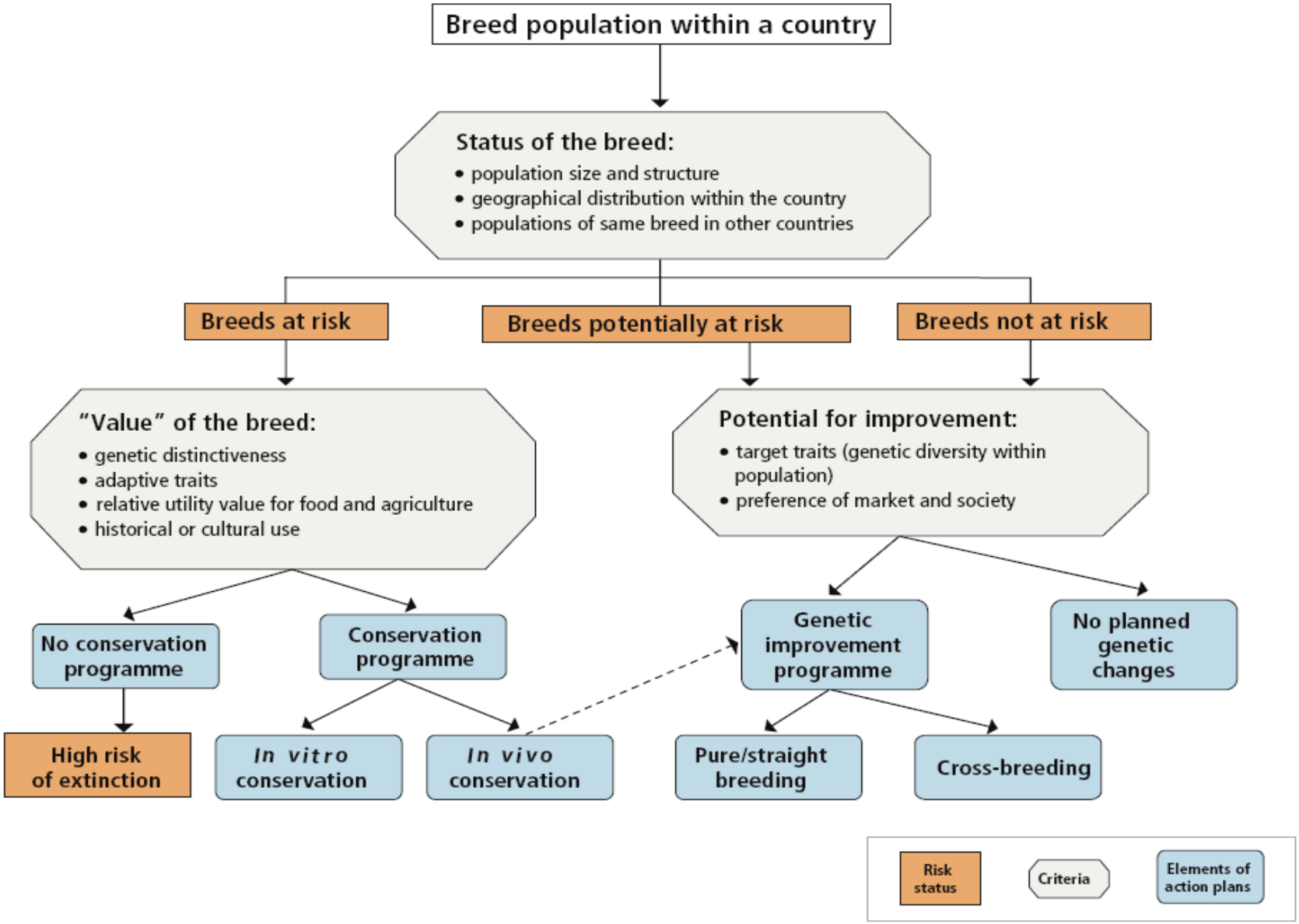
Background of the FAO guidelines

- Decline in World's AnGR (variation lost for ever between breeds and within breeds)
- Efficient conservation: *in vivo* is the method preferred
- FAO's global plan of action (2007)
- Combined effort (GO, nGO)
- Capacity building (guidelines and workshops like this one)

Chapters in the guidelines

1. Importance and options
2. Identification breeds at risk
3. Conservation value of a breed
4. Organizing the institutions
5. Designing and effective conservation program
6. Options for a breeding program
7. Increase the value of local breeds





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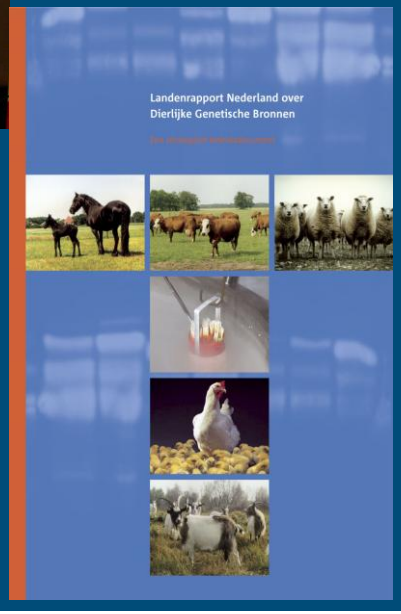
The importance of livestock in a country

Political objectives

- Food security
- Rural development
- Increasing demand
- Food safety
- Conservation biodiversity

Task 1: Evaluatie species and breeds

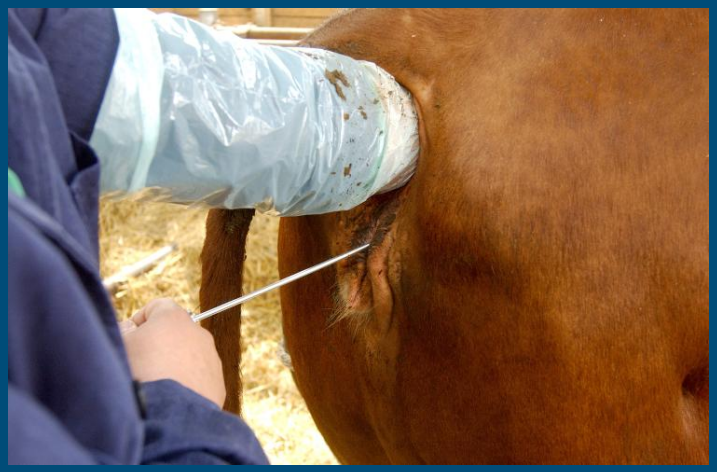


1. Sample and study input documents
2. Consult (or establish) the National Advisory Committee
3. Evaluate and update the Country Report to FAO (2002-2004?)
4. Summarize breeds within species and describe their functions

The dynamics of the livestock sector

Drivers for change

1. Growth in demand
2. Change in demand
3. Change in trade/marketing
4. Technological development
5. Environmental changes
6. Policy decisions



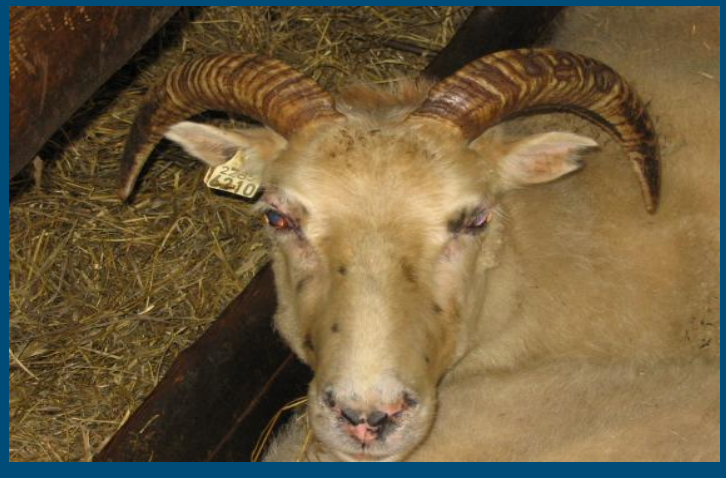
Result

Intensification/specialization

Concentration on a few breeds

Many breeds set aside

Task 2: Describe the dynamics of species (breeds)



1. Describe the use of species and breeds
2. Describe the relevant drivers for change, now and expected (anticipate!)
3. Describe the trends and the consequences for the species and breeds

The status of animal genetic resources

- Landrace breeds
- Standardized breeds
- Transboundary breeds
- Variation between and within breeds
- Extinct, at risk?

Task 3: produce numbers per breed

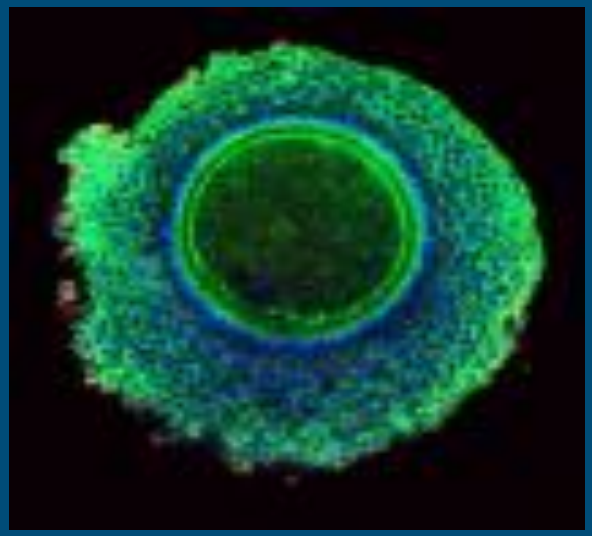
- Country report
- Update of numbers
- Analyze past-present
- Predict numbers in 10 years (optimistic and pessimistic > real estimate)

Risk of factors that threaten genetic diversity

- Focus on a few breeds for high input systems with high tech genetics / genomics
- Many breeds lost their function
- Exotic germplasm introduced
- Changes in production system
- Socio economic factors
- Disasters/climate change

Task 4: Estimate the risk factors

- Analyze drivers for change in livestock systems
- Analyze the chances for disasters and disease outbreaks
- Describe the risk factors for existence of the breeds



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Objectives for conservation

Sustainable use in the rural area:

- Economic potential
- Social cultural role
- Environmental services

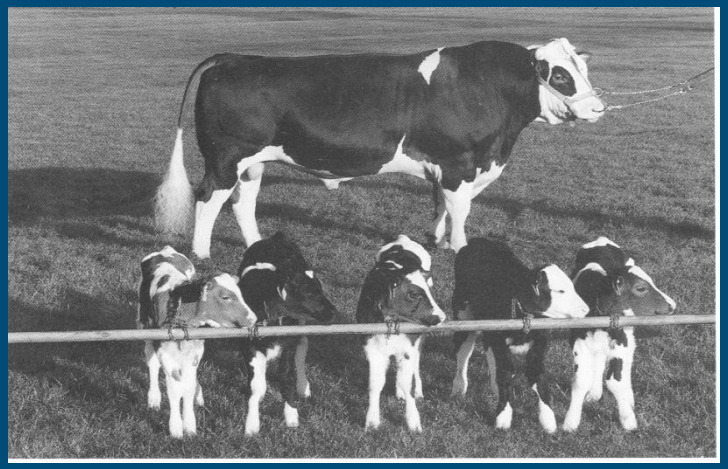
Conservation of the flexibility of the genetic system (food security):

- Risk of change of the environment
- Risk of change in demand
- Disasters (diseases)
- Research and training

Task 5: Describe relevant objectives for conservation

- Analyze per species and breed the objectives
  - Cultural value
  - Economic function
  - Unique characteristic

- Table per species / breed
  - Which objectives apply?
  - Rural area or flexibility?
  - (present use <> opportunities)



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Determine the position of a breed and a strategy

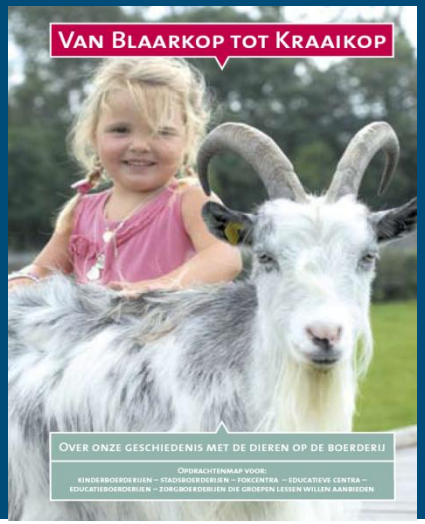


- Produce a SWOT analysis per breed

- Internal factors (strengths and weaknesses)
- External factors (opportunities and threats)
- Develop a strategy (SO), (ST), (WO), (WT)

Task 6: Prioritize SWOT and describe alternative strategies

Strengths?	**Weaknesses?**	**Opportunities?**	**Threats?**
Genetic uniqueness	Population size	Nature management	Exotics
Adaptation	Age of owners	Ecological farming	Main stream



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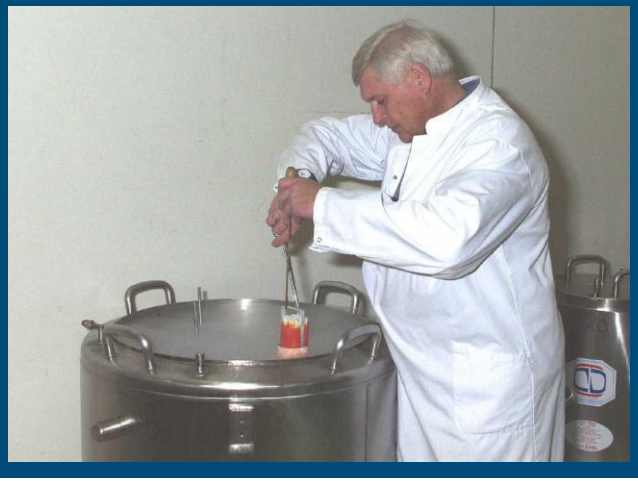
Comparison of conservation options (complementary)

- *In situ* conservation
  - Active breeding
  - Use short term
  - Conserved long term

- *Ex situ* conservation
  - *in vivo*
  - limited number
  - outside habitat
  - *in vitro*
  - cryoconservation



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Task 7: Describe relevant options for conservation



- Describe state and applicability of *in situ* and *ex situ* methods

  in situ: organizations? *ex situ: collect, freeze and store?*
- Describe the conservation options applicable for each species
- Indicate what is done and what should be done for implementation

Questions?

Evaluation of chapter 1

In five regional groups

Describe the strenghts and weaknesses of AnGR (local breeds) in your region; based on chrarcteristics of the breeds and their organizations

Describe the opportunities and threats for AnGR in your region based on drivers for changes

Evaluation of chapter 1

Prioritize the Strenghts, Weaknesses, Opportunities and Threats.

Write the two highest Strenghts, Weaknesses, Opportunities and Threats on paper

Develop a strategy based on:

1. Strengths and Opportunities
2. Weaknesses and Opportunities
3. Strengths and Threats
4. Weaknesses and Threats







Evaluation of chapter 1

- Nominate a chairperson for each region (suggestion the oldest person in the group)
- Nominate a rapporteur in each group (suggestion the youngest person in the group
- Write your findings on paper supplied

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Strengths and weaknesses (examples)

Strengths:

- Well adapted breed
- Viable population
- Unique trait
- High cultural value
- Enthusiastic breeders
- Professional breeding program

Weaknesses:

- Low production
- Inbreeding depression
- Function lost (Wool sheep)
- Old age of owners
- No organized breeding

Opportunities and threats

Opportunities

- Support breeding organizations
- Organic production
- Regional products
- Nature management
- Green care farms
- Hobby farming / breeding

Threats

- Focus organizations main stream (genomic selection)
- Sanitary rules main stream
- High (labor) costs, less income
- Exotic breeds (Scottish Highland)
- Breed standard
- Hobby breeders / herdbooks