

# Sustainable management and fair trade of Farm Animal Genetic Resources

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# Introduction

- The values of animal Genetic Resources (AnGR) is linked to:
  - Breeds differentiation
  - The genetic variation within breeding populations
- Genetic variance between breeds account for 30%-50% of the total genetic variance on a global bases



# Realisation of the value of AnGR through:

1. Utilizing sustainable breeding scheme on existing genetic diversity for:
  - a. Better productivity and animal welfare
  - b. Reduced genetic risk in the breeding operations
2. Culture, historical breeds for:
  - a. Conservation and/or
  - b. Developments of "Trade-mark" based on local breeds
3. Innovations through biotechnological products



## A challenge

I will try to discuss some elements that may clarify some of the political and professional perspectives of AnGR and its important functionalities as resource for future food production systems



# Economic considerations (1)

The values of AnGR can simply be expressed as:

## 1. Use values

a. Direct use values

Market values

b. Indirect use values

Non market

## 2. Insurance, option and other values

values



# Economic considerations (2)

The use values might be:

a. Direct use values:

- Values of sales products from Animals
- Net profit from breeding programmes
- Trademark linked to breed characteristics



# Economic considerations (3)

The use values might be:

## b. Indirect use values:

- Animal production for subsistence farming
- Landscape maintenance by animals as complimentary consume values
- Complimentary environmental values
  - ✓ positive: contribute to maintenance of biological diversity, agro biodiversity
  - ✓ Negative: decompose environment; air, soil and water



# Economic considerations (4)

The use values might be:

## c. Insurance and option values

- Genetic diversity as resources for:
  - ❑ Changing the genotypes in accordance to what environmental and political changes necessitates
  - ❑ Re-establish genotypes after a catastrophic wipe out situation for breeds or regionally slaughtering
  - ❑ Discovering private alleles from endangered breeds that might have profound values in future
  - ❑ The Biotechnological revolution



## Benefits of breeding scheme

- It is shown that the benefit/cost ratios of breeding programs in farm animals are large and estimated to somewhere between 5:1 to 50:1
- This is only assumed to be real benefit, if:
  - Genetic diversities are maintained - secure insurance values thus, food security in long terms
  - Proper breeding goal is used, means that the "Public values" are not gradually reduced by correlated response of the selection
  - It is taking account of the effect of interactions  $G \times E$
  - It has no effects on environmental values



## What is the present status

In discussion of food safety and security issues are reduced to a contamination problem in almost all official levels!!!!

- The fact that the genetic diversity:
  - Can provide resources for increasingly resistance of several health problems, is not really considered by anyone, and
  - Is providing insurance for that we have the needed genes for future
  
- The indirect effect on response of resistance towards antibiotic of human health care in long term are hardly discussed



# Important economic conclusions

- Clearly, the economic values, which have been regarded, are related to the direct use value
- These rate of returns are those that accrue, firstly, to the farmer rather than to society
- The values connected to indirect values, insurance and option values are those values which should have great tension to the public and the society interest,
  - these long term effects are linked to securities challenges



# Implications of sustainability or not

The national and global consequences:

- Sustainable management imply:
  - ❑ Maintenance of diversity and thus the values
  - ❑ Future possibilities are maintained in fully
- Non Sustainable management imply:
  - ❑ Reductions of genetic diversity and removal of future value-adding for the industry
  - ❑ Reduction of future values of insurance and indirect product values with consequences for society and public interest and thus increasingly risk of failure of supply of food



# AnGR as political issues

The above discussion clearly shows that:

- The interest of AnGR is not only a internal, isolated issue for the breeding industry, but
- Management of AnGR is an increasingly issue for political awareness with its affections on the long term consequences for public welfare, food security of the consumers and its well being



# What is a fair way of exchange FAnGR

Firstly:

- Most of the exchange/transitions of FAnGR gives benefits to both the seller and the buyer

Secondly:

- What is the most important unfair property of a business transaction of FAnGR?

Answer: Selling wrong genotypes to specific systems of production or/and environment - a genetic adaptation problem



## What consequences imply unfair trade of FAnGR?

- The non-adaptation population, genetically, is caused by interaction between genotypes and the new environmental conditions
- Meaning that the buyers get wrong material
- With the consequences that the trade may have substitute an adaptive population with something that is worthless because, it is not fitted to the actual environmental conditions

**Answer: catastrophic ruin for one or more users, but the seller may earn a fortune**



# A Solution to the adaptation problem

- Before major export of genetic material of FAnGR, the genotypes should be tested in the environment the animals are going to produce
- Or if it can be shown that the new environment is not different from the one in which the population has been tested original or in a comparable experiment, the prove testing may be ignored
- The fact that some breeding organisation do test in before hand, imply it is possible



# How can this be legalized?

The simplest way to do exchange is:

- Basing the transaction on "Material Transferee Agreement" (MTA) containing the general transaction rules and adding any restrictions in use of the material for any third parts or in patenting claims
- Included can other terms be claimed
- Or, the MTA can be a standard one which may be a result of negotiation in for example FAO
- MTA is under estimated in claiming rights in any form in animal breeding transactions



# Expectations for future

One can expect that a kind of international regulation will come, based on experiences from the International Plant Treaty. In the process of FAnGR regulation, it is important to point out:

- Major part of FAnGR is private owned
- Most of transactions are beneficiary for both parts
- It must be found a way to eliminate unfair trade
- MTA can be legal bounded to one of the national court, with focusing on national responsibility as pointed out in CBD
- Ethical responsibilities in trade will be high lighted as a "trademark" in international trade in future



# Conclusion

1. The AnGR is important and supply between 30% - 50% of the food consumption
  2. The values encompass direct use values, indirect use values, and insurance and option values which support earnings to the industry and goods to consumers and public
  3. In order to secure accumulation of positive values to both industry and the society, a sustainable management of AnGR is immediately needed
  4. Securing further sustainable development requiring new policy, more research, innovations and gain understanding of what the potential this resource possesses, but also **admit** the high risk of eroding this resources by the modern trend of policy and development
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